cadence®

Allegro® EDM
Flow Manager User Guide

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Cadence Design Systems, Inc. (Cadence), 2655 Seely Ave., San Jose, CA 95134, USA.

Contents

Preface

About This User Guide

The *Allegro® EDM Flow Manager User Guide* explains how to use Flow Manager for your design and library flows. It also explains how to customize, publish, and deploy flows.

Related Documentation

For information on the new features, see *Allegro EDM: What's New in Release*.

You can also refer the following documentation to know more about related tools and methodologies:

- For details on using Shopping Cart and Part Information Manager, see *Part Information Manager User Guide*.
- For details on how to migrate a non-Allegro EDM design, see *Allegro EDM Migration Guide.*
- For more information on using Library Revision Manager, see *Allegro EDM Version Management Utilities User Guide*.
- For detailed information on how to join a project using TDO, see *Allegro Design Authoring Team Design Option User Guide*.

Cadence Web Resources

For a list of Allegro EDM-related Known Problems and Solutions, visit Cadence Online Support.

Related Tools and Flows

- For information on various PCB design working environments such as a team of designers working on a Design Entry HDL project, implementing FPGAs in designs, working with high-speed constraints, importing IFF files for radio-frequency designs, and reusing existing modules, see *Allegro PCB Design Flows*.

- For learning how to create and configure Design Entry HDL projects, see *Allegro Project Manager User Guide*.
- For learning more about CPM entries, see *Allegro Front-End CPM Directive Reference Guide*.

Typographic and Syntax Conventions

This list describes the syntax conventions used for this user guide:

`literal`	Nonitalic words indicate keywords that you must enter literally. These keywords represent command (function, routine) or option names.
`argument`	Words in italics indicate user-defined arguments for which you must substitute a name or a value.
`|`	Vertical bars (OR-bars) separate possible choices for a single argument. They take precedence over any other character.
`[ ]`	Brackets denote optional arguments. When used with OR-bars, they enclose a list of choices. You can choose one argument from the list.
`{ }`	Braces are used with OR-bars and enclose a list of choices. You must choose one argument from the list.

1

Introducing Allegro EDM Flow Manager

A proper design and library workflow is the thread that keeps your library together. So how can you address challenges within the design and library workflows?

Workflows can be seen as the set of overarching directives that allow librarians and designers to manage a process, which could be designing a PCB, working on a highspeed design, defining the steps that should be followed for a particular task, and so on.

Using Allegro EDM Flow Manager, as an ECAD administrator, you can create a configurable work environment by defining design and library flows for your organization/company for a variety of design types, such as standard, high speed, analog, prototype. You can also modify the out-of-the-box flows provided in the Allegro EDM environment. Each flow is linked to appropriate design tools for each step in the flow.

The steps in each flow in Allegro EDM Flow Manager are shown in a tree format. Each flow step activates and displays its own flow step toolbar, which each has buttons and menus that launch the commands required to progress through the design process.

Important

Flow Manager merely guides you through a flow; it does not enforce a sequence of steps, and it does not prevent you from skipping any step in the flow and running any tool at any time.

About flowmanager.properties File

The `flowmanager.properties` file is provided by default in Allegro EDM Flow Manager. It is available at: *<ADW_CONF_ROOT>/<Company>/<Site>*`/cdssetup/projmgr/flows` and is used to configure various aspects of Flow Manager, such as:

- Defining which user will be the flow administrator who can modify the out-of-the-box flows provided in Flow Manager, such as `ADWLibraryFlow`, `ADWHighSpeedFlow`, `ADWCondensedLibraryFlow`, and who can customize and create new flows

  Typically, companies define an ECAD administrator as a flow administrator.

- Behavior of checklists defined to guide logical and PCB designers through design tasks, such as creating a highspeed design, reviewing a PCB, and so on
- Enabling or disabling the Message Center, which allows flow administrators to notify all designers of important changes, such as the installation of the latest Allegro EDM upgrade
- Restricting access to certain steps in a flow depending on the user role. For example, a flow administrator might want disable the schematic design creation step for a layout designer.

About flowmanager_errors.properties File

This file, which is also available in *<ADW_CONF_ROOT>/<Company>/<Site>/*`cdssetup/projmgr/flows`, stores all the messages displayed to designers when an error occurs in Flow Manager. Typically, EDM or flow administrators will not edit this file during EDM installation and configuration or when customizing Flow Manager.

Defining a Flow Administrator in Allegro EDM Flow Manager

Flow Manager supports two levels of operations:

- Administrator level: Typically, enterprises define ECAD administrators as flow administrators. A flow administrator can create, deploy, and modify flows. Flow Manager also provides flow administrators additional user interface commands to create new flows and edit existing flows. For example, you edit an existing flow by adding buttons or steps to the flow.

  In Flow Manager, a flow administrator is someone whose user ID has been defined in the `flowmanager.properties` file.

  To define a user as a flow administrator, you must have write access to the `flowmanager.properties` file. This permission is typically provided when Allegro EDM is installed and configured.

  Do the following to define a user as a flow administrator:

  a. Browse to the flows directory at *<ADW_CONF_ROOT>*`\`*<company>*`\`*<site>*`\cdssetup\projmgr\flows`.

  b. Open the `flowmanager.properties` file in a text editor.

c. Add your login ID in the `admin` variable.

For example, if your login ID is `smithd`, after entering your login details, the value of the *`admin`* variable will be:

```
admin= adminLogin1 adminLogin2 smithd
```

- User level: Whether as a designer or a librarian, you can use Flow Manager to run the flow steps (design flow or library development flow) for your project, but you cannot modify any flow. In this case, no modification of the `flowmanager.properties` file is needed. Any user with the requisite EDM product license can use Flow Manager.

Configuring Flow Manager in Organizations with Controlled Computing Environment

If the IT division of your company has, for security reasons, blocked Java applets, Allegro EDM Flow Manager might not run on your machine since it uses Java applets.

To address the issue of security and compatibility in browser applets on the local systems of designers, the IT division of your company, along with whoever is responsible for maintaining the Cadence installation hierarchy (often an ECAD/CAD administrator), might decide to use a Deployment Rule Set (DRS) to whitelist (mark as trustworthy) Allegro EDM Flow Manager. A DRS is a signed JAR file called `DeploymentRuleSet.jar`.

Note: Currently, the Java runtime in the Cadence installation is at version 1.7. As a result, Flow Manager does not support the `-tsa` (for time stamping) option in JDK 1.8 to sign the `DeploymentRuleSet.jar`.

You can either use a JDK 1.7 with the `-tsa` option or do not use the `-tsa` option if you want to use JDK 1.8 to sign the `DeploymentRuleSet.jar`.

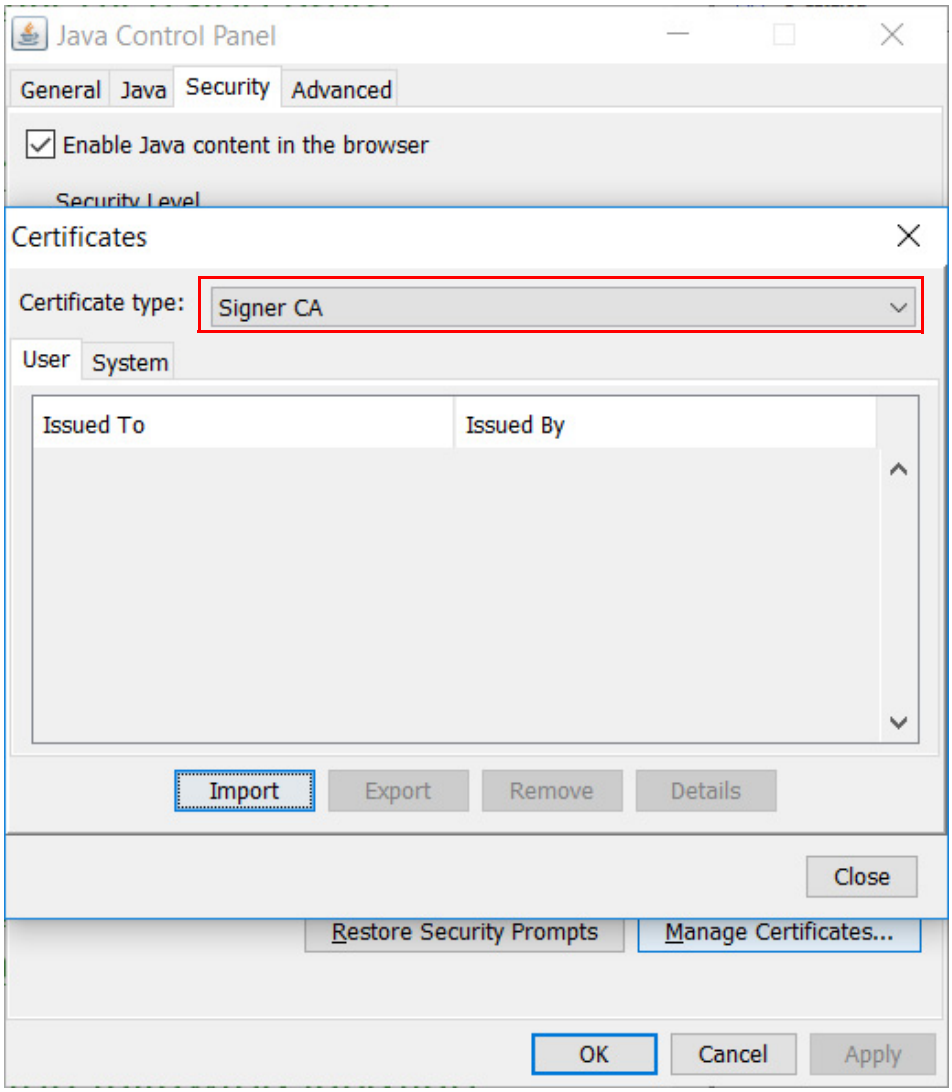
See the Oracle documentation for details about deployment rule sets and jarsigner time stamp options.

Self-Signed Certificates in the Java Deployment Rule Set

If your company used a self-signed certificate to create and sign the Java Deployment Rule Set, designers will not be able to work with Flow Manager unless you define the certificate as a trusted certificate. To define the issuer of the self-signed certificate as trusted, the ECAD administrator needs to do the following one-time procedure:

1. Launch Java Control Panel using *`<Cadence installation directory>`*`\tools\pcbdw\jre\bin\javacpl.exe`.

2. In Java Control Panel, select the *Security* tab and click on *Manage Certificates*.
3. In the Certificates dialog, select Signer CA from the *Certificate* type drop-down list.



4. Import the self-signed certificate file. You might need to set the file type filter to *All Files* to view the certificate.
5. Close the dialog.

   After you import the self-signed certificate, the `trusted.cacerts` file at the following location is updated:

   `%USERPROFILE%\AppData\LocalLow\Sun\Java\Deployment\security`

Copy this `trusted.cacerts` file to <*ADW_CONF_ROOT*>/<*Company*>/<*Site*>/`cdssetup/projmgr/JavaDeployment`.

Note: If the Allegro EDM client is set up on each individual designer's machine, as a designer, you will need to copy the trusted certificate to your <*ADW_CONF_ROOT*>.

To simplify this task, you can get the trusted certificate from the ECAD administrator and copy it to your <*ADW_CONF_ROOT*>/<*Company*>/<*Site*>/cdssetup/projmgr/`JavaDeployment`.

6. Start Allegro EDM Flow Manager.

Configuring Flow Manager to Launch Pulse Projects with Self-Signed Certificates

If you work with Pulse projects which use self-signed certificates and are in a single sign-on (SSO) environment, you will need to define the certificate as trusted before you can open such projects in Allegro EDM Flow Manager.

To be able to launch such projects in Flow Manager, as the ECAD administrator, do the following as a one-time task:

1. Launch Java Control Panel using <*Cadence installation directory*>`\tools\pcbdw\jre\bin\javacpl.exe`.
2. In Java Control Panel, select the *Security* tab and click on *Manage Certificates*.
3. In the Certificates dialog, select `Trusted Certificates` from the *Certificate* type drop-down list.
4. Import the self-signed certificate file that you are using for the Allegro Pulse web application. You might need to set the file type filter to *All Files* to view the certificate.
5. Now select `Secure Site` from the *Certificate* type drop-down list.
6. Import the certificate that defines the issuer of the certificate as trusted.

   Note: When viewing an issue from the Issues menu in Flow Manager, if Flow Manager displays a warning about the certificate being invalid or that the Certificate Authority is not trusted, try importing the certificate for the Root Certificate Authority under the Secure Site CA section in Java Control Panel.

   Note: If you work with versions of Allegro EDM Flow Manager prior to 17.2-2016 ISR 047, also do the following:

   a. Select `Signer CA` from the *Certificate* type drop-down list.

b. Import the certificate that defines the issuer of the certificate as trusted.

7. Close the dialog.

After you import the self-signed certificate, the `trusted.cacerts` file at the following location is updated:

`%USERPROFILE%\AppData\LocalLow\Sun\Java\Deployment\security`

8. Copy this `trusted.cacerts` file to *<ADW_CONF_ROOT>*`/`*<Company>*`/`*<Site>*`/cdssetup/projmgr/JavaDeployment`.

If the Allegro EDM client is set up on each individual designer's machine, as a designer, you will need to copy the trusted certificate to your *<ADW_CONF_ROOT>*.

To simplify this task, you can get the trusted certificate from the ECAD administrator and copy it to your *<ADW_CONF_ROOT>*`/`*<Company>*`/`*<Site>*`/cdssetup/projmgr/JavaDeployment`.

9. Start Allegro EDM Flow Manager.

Important

To connect to a different secure Allegro Pulse web application, you must run through all these steps again.

About Allegro EDM Projects

Allegro EDM projects contain information required to run your flows, such as:

- Type of project, such as `board`, `highspeed`, `library`, `generic`, and `systemdesign`
- Library management preferences such as local or reference libraries
- Design tool preferences
- Design details such as design author, and design manager
- Schematic details such as schematic number and schematic revision
- Part Table File (PTF) preferences
- Preferred Parts List (PPL) names
- Project workspace and project directory locations

  A project template in Flow Manager, also referred to as a project workspace, is a combination of a Resource Description Framework (RDF) file and a project definition.

Flow Manager stores information about each flow in Resource Description Framework (RDF) files, which are in the XML syntax. RDF is a W3C standard for representing hierarchical resources. RDF files are available in:

*<ADW_CONF_ROOT>**<company>**<site>*\cdssetup\projmgr\flows

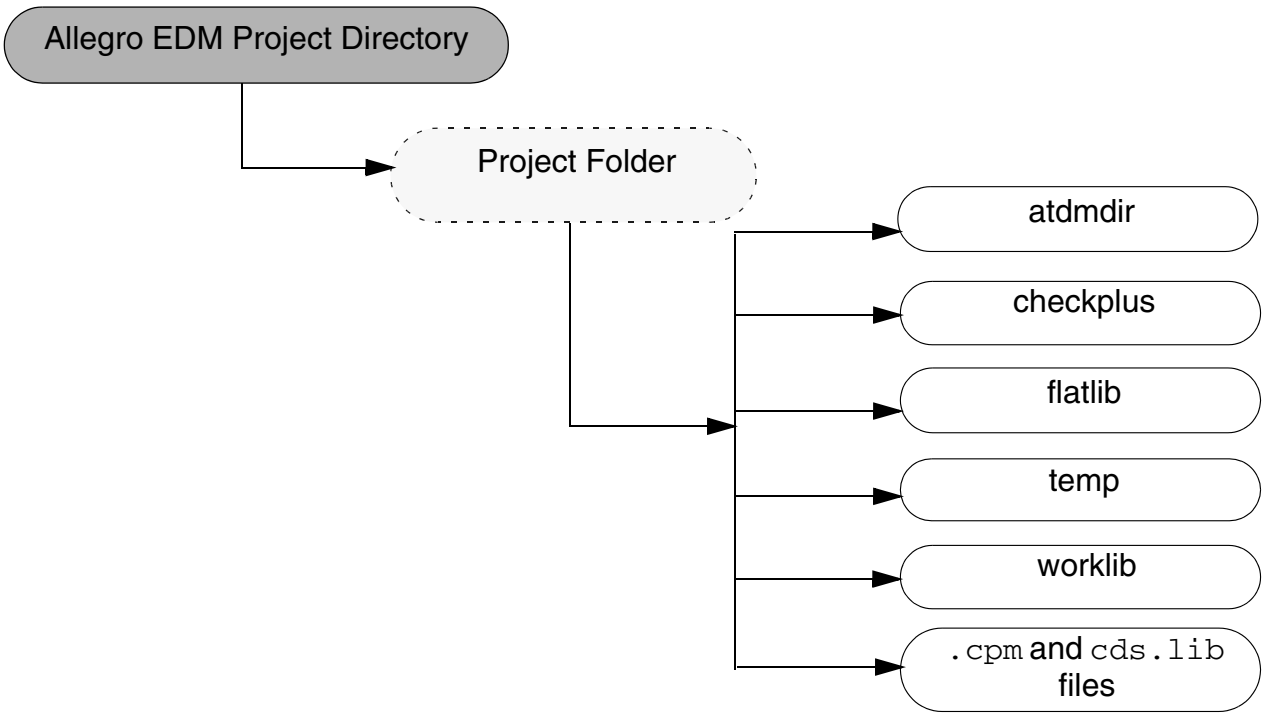
The RDF file defines the tree structure, icons, and steps that will be displayed to designers depending on the type of project and design stage they are in. For example, project types could be `board`, `highspeed`, `board_ref`, and so on.

Important

Although you can open and modify RDF files (for example, to add or remove steps or buttons) in a text editor, it is strongly recommended that you modify the files using Flow Manager.

The project definition specifies the elements that make up a project, such as a `cds.lib` file, `.cpm` file, directories such as `worklib`, `flatlib`, and so on.

An Allegro EDM project is different from the design projects you create using other Cadence applications, such as Allegro Project Manager, Design Entry HDL, or Allegro System Capture. It contains additional directories to leverage the benefits of collaborative team design and the library management environment. The directory structure of an Allegro EDM project is as follows:



The PCBDW_PROJECTS_DIR variable in the *<startworkbench>* script specifies the location of the Allegro EDM project directory. The following table describes the directories that are in an Allegro EDM project:

Table 1-1 Directory Structure for Allegro EDM Project

Directory Name	Description
<Allegro EDM_project_directory>	This is the name of the Allegro EDM project directory that was specified when the Allegro EDM client (*<startworkbench>*) was set up using Allegro EDM Configuration Manager. A project directory is the location where all your Allegro EDM projects can be stored. This name can vary from site to site and user to user.
<project_folder>	The name of the EDM project. The name matches the *Project Directory* field specified when the project was created, and varies from project to project.
atdmdir	This directory contains the data that Allegro EDM generates for an Allegro EDM project. You should never change any of the files in this directory. This directory name cannot be changed.
checkplus	This directory contains all the reports generated by the Rules Checker utility. This directory name cannot be changed.
flatlib	This is a cache of the master Allegro EDM reference library, that is, *<PCBDW_LIB>*. All library folders along with their associated cds.lib files are under this directory. This folder will contain no actual parts when you create a project. It is populated with the parts after you select them using Shopping Cart and Part Information Manager. For details on using Shopping Cart and Part Information Manager, see *Part Information Manager User Guide*. This folder is not available for non-cached project types, such as board_ref.
temp	This directory contains temporary files that are created by Allegro EDM and temporary log files.

Table 1-1 Directory Structure for Allegro EDM Project

Directory Name	Description
`worklib`	This is the directory where all your design files are stored. This directory name cannot be changed.

Catalog and Project Files

The path to the Allegro EDM projects is stored in the following two files:

- `<user_home_directory>\atdmprojects\<user>_<platform>_catalog.txt:` This file contains a list of the directory paths to the root of each Allegro EDM project. A sample catalog file is as follows.

  ```
  C:/edm/projects/demo_brd

  C:/edm/projects/test_demo
  ```

- *`<user_home_directory>`*`\atdmprojects\`*`<user>_<platform>`*`_project.txt:` This file contains the path to the last opened project, which is opened by default when you launch Allegro EDM Flow Manager.

Important

The catalog and project files are different for each user and each platform (Unix or Windows).

Note: If you are using multiple systems for EDM projects, ensure that the value of the *`<HOME>`* environment variable points to a network location that is accessible from all your systems.

Launching Flow Manager

Launching Flow Manager on Windows

You can launch Flow Manager on Windows in one of the following ways:

- Choose *Start – All Programs – Cadence – Release 17.4-2019 – Allegro EDM Products – Allegro EDM Flow Manager*.
- Double-click the *`<startworkbench>`* file.

- At the Allegro EDM System Console, type one of the following commands:
  - *<startworkbench>*
  - If you want to launch Flow Manager with a specific project, use *<startworkbench> -proj*

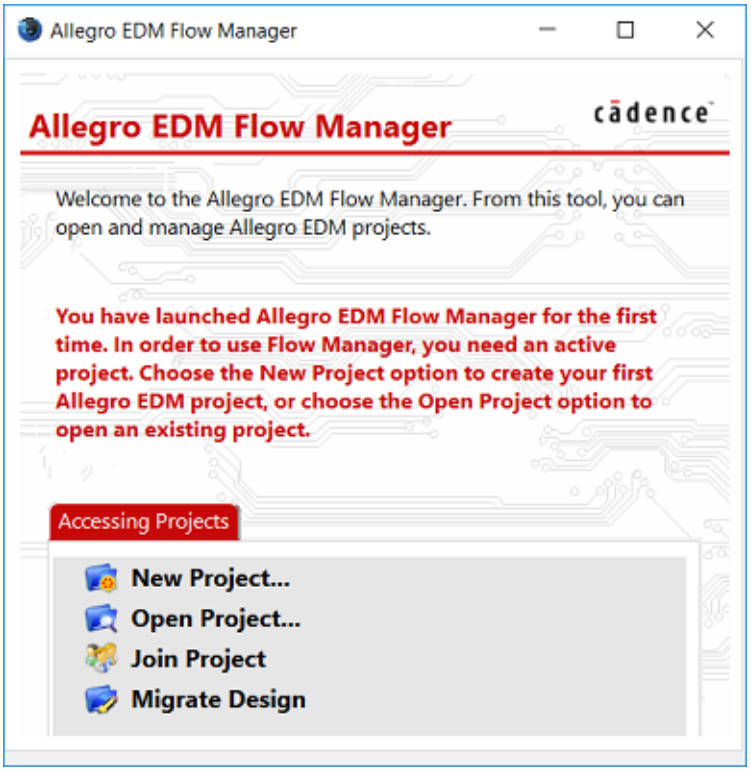
Note: If Firefox is configured as the default browser for the system, you cannot open and view more than one site at a time. You could configure multiple Firefox profiles, if required, or use a different default browser. Refer to the Firefox documentation for details about creating and managing multiple profiles.

Launching Flow Manager on Unix

Open the Allegro EDM system console and type one of the following commands:

- *<startworkbench>*

The Flow Manager welcome page appears.



Flow Manager launched for the first time without defining an active project or a project list

Flow Manager launched after defining an active project or a project list

Launching Flow Manager from a Network Drive or VPN

If *<installation_directory>* or *<adw_conf_root>* is on a network drive, or if you launch Flow Manager when using a virtual private network (VPN), it might take longer than usual to launch Flow Manager. This is because Flow Manager uses a local Java Runtime Environment (JRE) when being launched.

You can speed up the launch of Flow Manager on a network drive or VPN by doing the following:

- On the Windows platform, enable JRE caching in your local machine by setting an environment variable, `PCBDW_FM_USE_LOCAL_JRE_DIR`, to the location where the JRE cache needs be stored. This can be *<user_home_directory>* or some other location on your local machine.
- Set the following environment variable, which, by default, is FALSE:

  ```
  PCBDW_FM_USE_LOCAL_RESOURCE_DIR = TRUE
  ```

  When you launch Flow Manager or when you create a new project after setting this variable to `TRUE`, Flow Manager builds a local cache of icons and all workspaces, default and custom workspaces in `ADW_CONF_ROOT`, in the following directories:

  ```
  $HOME/.adw/fmresources/icons
  ```

  ```
  $HOME/.adw/fmresources/workspaces
  ```

Troubleshooting Flow Manager Launch

If Flow Manager does not open or takes longer than usual to open, say after installing a new hotfix, check for the following:

- Check that the *Enable Java content in the browser* check box is selected in the Java Control Panel. This indicates that Java content is enabled in Flow Manager.

  You can open the Java Control Panel by double-clicking `javacpl.exe` at: *<Cadence installation directory>*`\tools\jre64\bin`
- If Java content is enabled but Flow Manager still does not launch, it could mean that you are using a custom Allegro EDM startup script in which the HOME value is overridden. This can prevent persistence of the option to enable Java in the browser from Java Control Panel.

  The default Allegro EDM startup script has the following line: `if not defined HOME set HOME=%USERPROFILE%`

  Some custom startup scripts might modify this as follows:

```
set HOME=c:\edm\1743

set USERPROFILE=%HOME%
```

Comment out these overrides in the startup script, enable Java again in the browser and save the changes. Run the Allegro EDM startup script again.

- Check that the security level in the Java Control Panel is *Medium*.
- Set the following two variables in the EDM client startup script, that is, `<startworkbench>.bat` then launch Flow Manager:
  - `PCBDW_FM_JVMLOAD_MAXRETRIES`

    For example, `set PCBDW_FM_JVMLOAD_RETRY_INTERVAL=10`

    The value indicates the number of seconds Flow Manager will wait to check whether the JRE has been successfully loaded.
  - `PCBDW_FM_JVMLOAD_RETRY_INTERVAL`

    For example, `set PCBDW_FM_JVMLOAD_MAXRETRIES=30`

    The variable value indicates the number of times Flow Manager will try and load itself before displaying an error.

    These variables are only meant for Windows.

About Allegro EDM Flow Manager Welcome Page

The Flow Manager welcome page provides different options depending on whether:

- you launch Flow Manager for the first time, and have not defined an active project or a project list. In this case, Flow Manager displays only one tab, *Accessing Projects*, which provides options to:
  - create a new project. See Creating Allegro EDM Projects.
  - browse to where existing Allegro EDM projects are stored to select and open one, or to add a group of projects to a project list. See Opening Allegro EDM Projects in Flow Manager.
  - join a design project that has been enabled for team design. In the Allegro EDM environment, design projects are enabled for team design using the Allegro Design Management tool. Refer to *Allegro Design Management Guide* for details.
  - migrate a non-Allegro EDM project to the Allegro EDM environment. This requires you to migrate the design elements into the Allegro EDM environment.

Important

To migrate a non-EDM project into the EDM environment, as the ECAD or site administrator, you are expected to configure the enterprise design environment (including component libraries) before you begin migrating designs. For details on how to migrate a non-Allegro EDM design into the EDM environment, see *Allegro EDM Migration Guide*.

- open Flow Manager after defining an active project or a project list. In this case, Flow Manager provides the following additional options:

  Accessing Projects

  - Open the last opened project - opens the project that was last opened by you
  - Open a design project - this is the same as Open Project except that the project list is filtered to show only design projects.
  - Open a library project - the Select Project dialog is filtered to show only library projects.

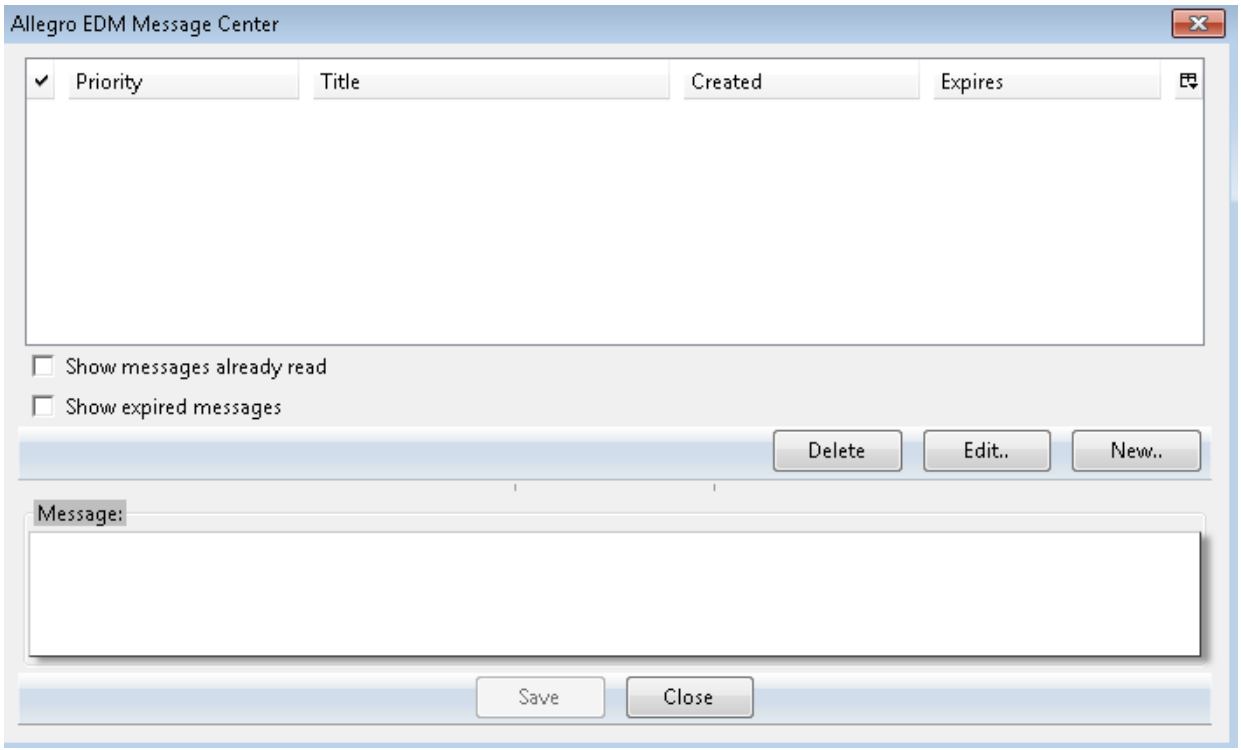
  Managing Projects

  - Copy a project. See Copying Allegro EDM Projects.
  - Rename a project. See Renaming Projects Using Flow Manager.
  - Delete a project. See Deleting Allegro EDM Projects Using Flow Manager.

  Utilities

  - Read Messages - clicking this option opens the Allegro EDM Message Center window, which displays messages created by the flow administrator. Flow Manager

can send messages to all designers logged into the server that hosts the Cadence installation hierarchy.

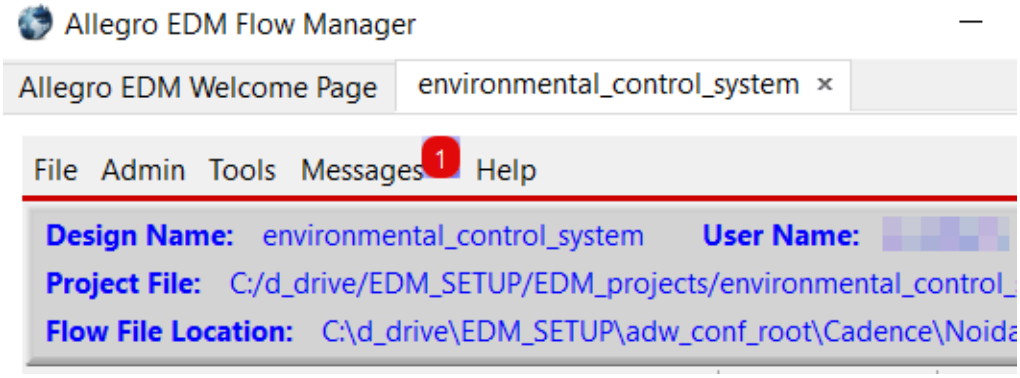


Only the flow administrator can create messages. For example, as a flow administrator, if you installed the latest Cadence incremental release, you can request designers to let you know of issues they face with as a result of the upgrade.

To create a message, click *Messages*. The Allegro EDM Message Center window opens.

Opening Message Center on Flow Manager Launch

When a designer launches Flow Manager, Flow Manager prompts designers that a new message is available for viewing if the flow administrator has defined a message.



However, if designers want to view the message, they will still need to click on *Messages*.

If you want the Message Center dialog to automatically open when there is a message, so that designers can avoid the additional step of clicking the *Messages* menu option, as the flow administrator, do the following:

Browse to the flows directory at `<ADW_CONF_ROOT>\<company>\<site>\cdssetup\projmgr\flows`.

Open the `flowmanager.properties` file in a text editor and set `message_center.autoshow = true`. Save the `flowmanager.properties` file and launch Flow Manager. Allegro EDM Message Center window opens automatically if it has any new messages.

- ❑ Open Allegro EDM System Console to run EDM tasks through the command line

Site Tools

When you customize the existing, default flows provided in Flow Manager by adding new menu and submenu options, the new menu options are displayed in this tab.

Disabling Flow Manager Welcome Page

If you want Flow Manager to automatically open with the last opened project, you can disable the welcome page.

Open the `flowmanager.properties` file from *<ADW_CONF_ROOT>**<company>**<site>*\cdssetup\projmgr\flows and either remove `open_main_page = True` or set `open_main_page = False`.

Flow Manager automatically opens the last opened project, instead of the welcome page.

Configuring License to Launch Design Entry HDL from Flow Manager

The default license to launch Design Entry HDL from Flow Manager is:

```
concept_license = Concept_HDL_studio
```

If you purchase any other license, for example, `Allegro_Frontend_PCB_Solution`, you need to reconfigure the `concept_license` variable by doing the following:

1. Browse to the flows directory at *<ADW_CONF_ROOT>**<company>**<site>*\cdssetup\projmgr\flows.
2. Open the `flowmanager.properties` file in a text editor.
3. Set `concept_license = <new_license_name>`.
4. Save the `flowmanager.properties` file.

Note: Design Entry HDL will fail to launch if you do not have the required license configured.

2

Creating and Maintaining Allegro EDM Projects Using Flow Manager

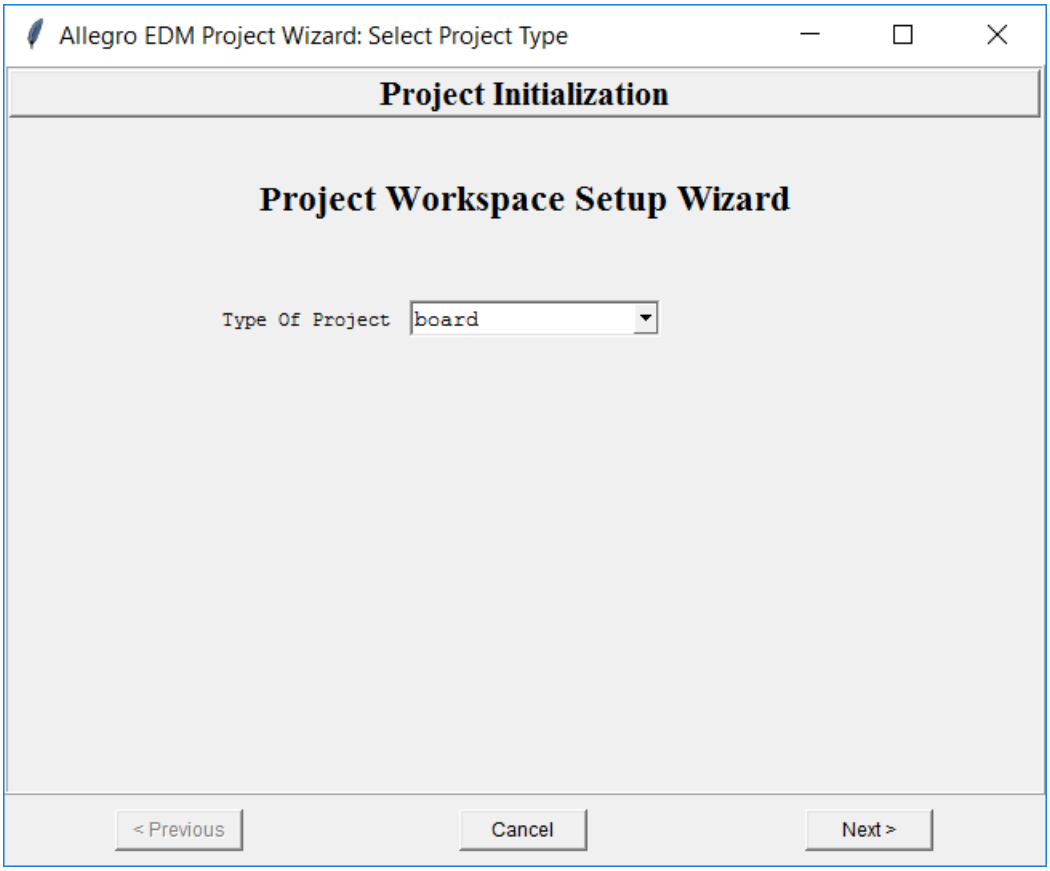
Before you can start working with a flow using Flow Manager, you need an Allegro EDM project.

Creating Allegro EDM Projects

To create an Allegro EDM project:

1. Do one of the following:
   - Choose *Accessing Projects – New Project* from the Allegro EDM welcome page.
   - Choose *File – New* from any active project tab.
   - Type the `design_init` command at the Allegro EDM system console.

The Allegro EDM Project Wizard screen appears.



2. Select the project template from the *Type of Project* drop-down list.

   The list of project types that you see in this drop-down depends on what the Allegro EDM administrator configured when installing and configuring EDM using Allegro EDM Configuration Manager. If you cannot find a particular type of project, you can configure it. See Configure Project Types in Allegro EDM.

   You can also change the order of the project types in the *Type of Project* drop-down list, if you would rather view the project types you most frequently use. To change the order of the project templates, modify the `flow_type_order` variable in the `<ADW_CONF_ROOT>\<company>\<site>\design_init\15.5\design_init.ini` file. For example, `flow_type_order=systemdesign,highspeed,generic,libflow-condensed,library`.

   If you do not specify all the out-of-the-box project types in this file, the types not specified appear at the end of the list. If you specify an incorrect project type name, that type will not appear in the drop-down list of the *Allegro EDM Project Wizard: Select Project Type* page.

Cadence provides various default project types, each of which is described in the following table:

Project Workspace Type	Description
board	Board designs created in EDM, using the `board` project type, cache any component used from Allegro EDM Reference Library (*<pcbdw_lib>*) in your local machine once you instantiate a part or add the part to the Shopping Cart from Part Information Manager. Components are cached at the following location: *<EDM Project Name>*/flatlib This means that any design you create using this project type uses library elements from the local cache instead of the central, shared reference library. A library element refers to all objects that are in the Cadence libraries and that can be managed using the library flow. While working in the Allegro EDM library flow, a library element can be any one of the following: Schematic Models PCB Models Datasheets Parts The local cache means that you can work offline and do not need to be connected to the Master Library Server to add a component to your design. A local cache isolates you, the designer, from the frequent changes made to the reference library by a librarian. If the librarian modifies the reference library, Allegro EDM prompts you that the reference library and local cache versions are out of sync. You can then update the parts in your local cache as and when required. Use this project type if you want to be notified of any changes made to the part libraries you use.

Project Workspace Type	Description
board_ref	Board designs created in EDM using this project type only reference the library elements from the shared reference library. These parts are not cached locally. In this case, changes made to the reference library by a librarian are reflected in the design automatically. You, the designer, are not notified of these changes, and you cannot retain the previous version of the library elements.
generic	Use this project type if you want to create a flow using non-Cadence tools.
highspeed	This project type is similar to the board project type, but is customized for the creation of high-speed designs.
library	This project type guides you through the task of creating a library. Flow Manager displays a sequential series of steps that help you, as a librarian, to create a library.
systemdesign	This project type facilitates the design management solution, where the design is created by a team, with each team member contributing to a part of the design.
lib-flow-condensed	This project type combines the New and ECO flow steps of the library project type into a single flow step. This project type includes additional functionality to allow the import of models created by third-party vendors. The default or the standard library flow file, `ADWLibraryFlow.rdf`, is divided into various model types and each model type has a New and ECO subflow. The Condensed Library Flow combines these two subflows into a single flow. It also includes some additional functionality to enable you to easily import models created by the third-party vendors.

Note: If you want to import OrCAD Capture libraries into Allegro EDM, you need to first enable the Capture database schema using the `adwschema` utility. The Capture library/ design flow is not provided out of the box.

Configure Project Types in Allegro EDM

If you cannot find a project type in the *Type of Project* drop-down list in Allegro EDM Project Wizard, you can enable the project type by doing the following:

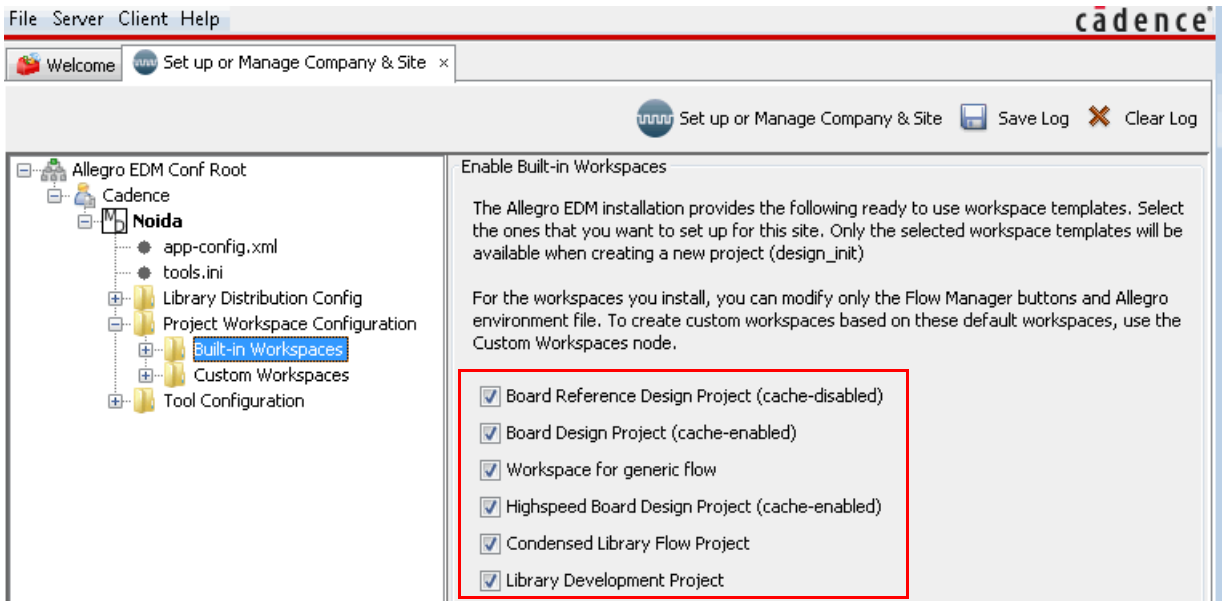
a. Launch Allegro EDM Configuration Manager.

b. Click *Set up or Manage Company & Site*.

c. The *Set up or Manage Company & Site* tab displays the `workbench.ini` file.

d. On the left tree panel, choose *`<Allegro EDM Conf Root> – <company> – <site>`* – *Project Workspace Configuration – Built-in Workspaces*.

e. Choose the required workspace templates by selecting the corresponding check box.

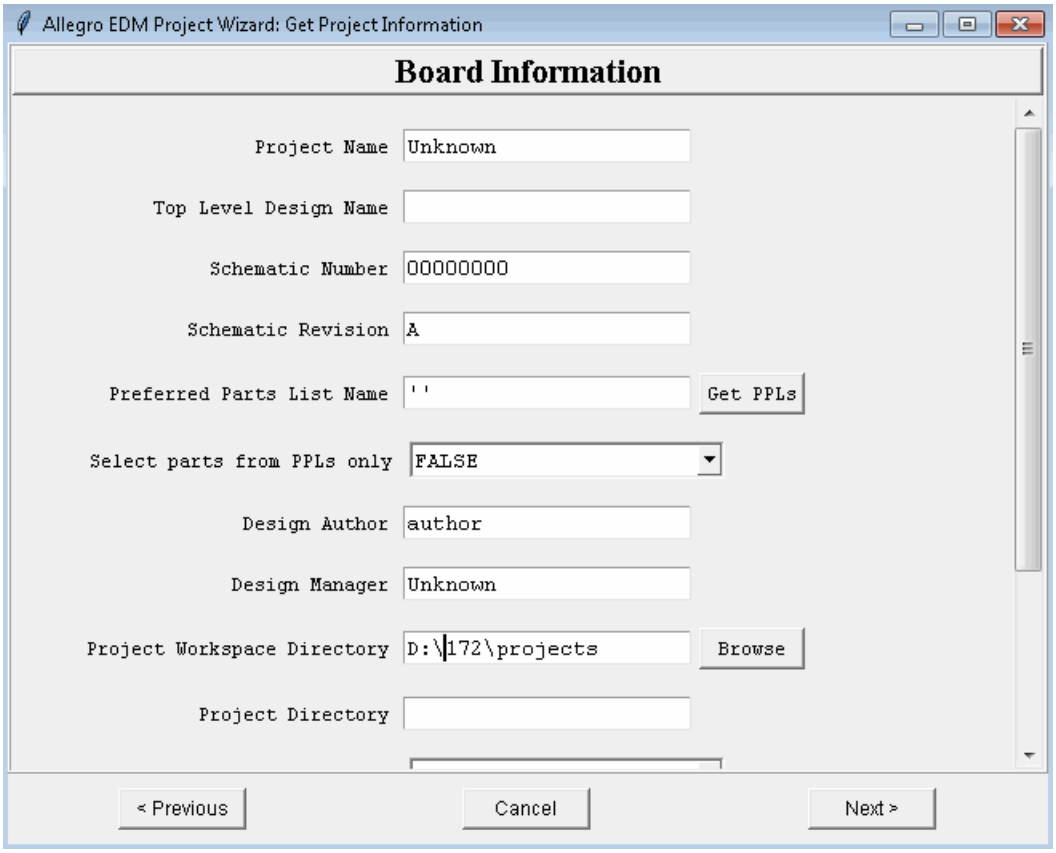


f. Click *Save*.

Note: The list of project workspaces/templates can be different at your end because you may have defined custom project workspaces in the Allegro EDM flow environment. For more information about project templates/workspaces, see About Allegro EDM Projects.

1. Click *Next*.

The *Get Project Information* screen appears.



Specify the following project parameters for your project:

Parameter	Description
Project Name	Specify the name of your Allegro EDM project.
Top Level Design Name	Specify the top-level name of your design. This is needed for hierarchical designs. In the case of library projects, you will need to specify only a design name because top-level designs are not applicable for library projects.
Schematic Number	Assign a number for the design, which can help you track the design.
Schematic Revision	Assign a revision scheme for the schematic based on the practice followed in your company.

Parameter	Description
Preferred Parts List Name (not available for `board_ref` and `library` projects)	Click the *Get PPLs* button to specify the names of one or more Preferred Parts Lists (PPLs) for your project. Be aware that PPLs are only available when the Allegro EDM server is running.
Select parts from PPLs only	■ Choose `TRUE` if you want only parts available in the selected PPLs to be used in your design. This is called the PPL Plus mode. ■ Choose `FALSE` if you want PPL-compliant parts **and** other parts to be used in the design. This is called the PPL Only mode.
Design Author	Specify the name of the designer who is creating the design project. You can use uppercase and lowercase letters, numbers, and underscores without any blank spaces.
Design Manager	Specify the name of the designer responsible for checking the design. You can use uppercase and lowercase letters, numbers, and underscores without blank spaces.
Project Workspace Directory	Specify the directory where the project workspace will be created on the file system. This field works in conjunction with the *Top Level Design Name* field to determine the root directory of the project. For example, if the top-level design name is `mydesign` and the project workspace directory is `d:\myworkspace`, the project directory resolves to `d:\myworkspace\mydesign`. Spaces in the project workspace directory path are supported.
Project Directory	Name of the project directory. By default, this is the same as *Top Level Design Name*.
Schematic Page Border Size	Choose a schematic border size from the predefined sizes: a, b c, d, e, and f.

You can customize the *Get Project Information* page. To learn how to add new fields or hide the existing fields in the page, see Appendix B, “Customizing Project Workspace Creation GUI.”

2. Specify the required information and click *Next*.

If you select the `board`, `board_ref`, or `highspeed` type of project workspace, the Design Tools Selection page appears, where you can specify the following parameters:

Parameter	Description
design_documents	Specify a version from the list of available design document templates. Select the corresponding check box to include (or copy) the contents of the `design_documents` folder from your project template into your project.
design_reviews	Specify a version from the list of available design review document templates. Select the corresponding check box to include (or copy) the contents of the `design_reviews` folder from your project template into your project.
Library Management	Depending on the type of project you selected in the first page of this wizard, Allegro EDM automatically assigns a library management method, which are as follows: ■ `local`: This value is populated when you select the `board` and `highspeed` project type. All library symbols that support front-end processes, such as schematic capture and packaging, are copied locally to the project. If the librarian modifies any of these symbols, you are notified using Allegro EDM Library Revision Manager (LRM) and can use the revised symbol by running LRM update or continue to use the current copy of the older symbol. ■ `ref`: This value is populated when you select the `board_ref` project template type. In this case, all library symbols that support the front-end processes remain in the central library, and you refer to the symbols directly from the central library. If a library symbol changes, you access the modified symbol the next time you launch any a library management-related application. There is no notification that the symbol has changed. **Note:** You cannot modify the library management method.

3. Specify the design tool selection information and click *Next*.

   The Summary screen appears listing all the settings specified for your project.

4. Click *Start*.

   A progress bar indicating project creation appears.

5. After the project is created, you are prompted to make the newly created project the current project. If you click:

   - *Yes*: an entry for the newly created project is added to the catalog file (`<user>_<platform>_catalog.txt`). The project file, (`<user>_<platform>_project.txt`), is also updated to reference the newly created project.
   - *No*: an entry for the newly created project is added to the catalog file (`<user>_<platform>_catalog.txt`) but the project file remains unchanged.

6. When the project is successfully created, the `Project initialization completed successfully` message appears. Click *OK*.

7. Click *Finish*.

Opening Allegro EDM Projects in Flow Manager

To open an existing Allegro EDM project:

1. From the Allegro EDM welcome page, choose one of the following:

   - the *Accessing Projects* tab, then click *Open Project*, *Open Design Project*, or *Open Library Project.*
   - *File – Open*, or *File – Open in New Tab* from any active project tab.

   The Select Project dialog box appears.

   If you open an Allegro EDM project from a prior release, you are prompted to upgrade the project from the prior release to the current release. Clicking *Yes* will uprev and open the project in Flow Manager. An upreved project cannot be opened in older releases.

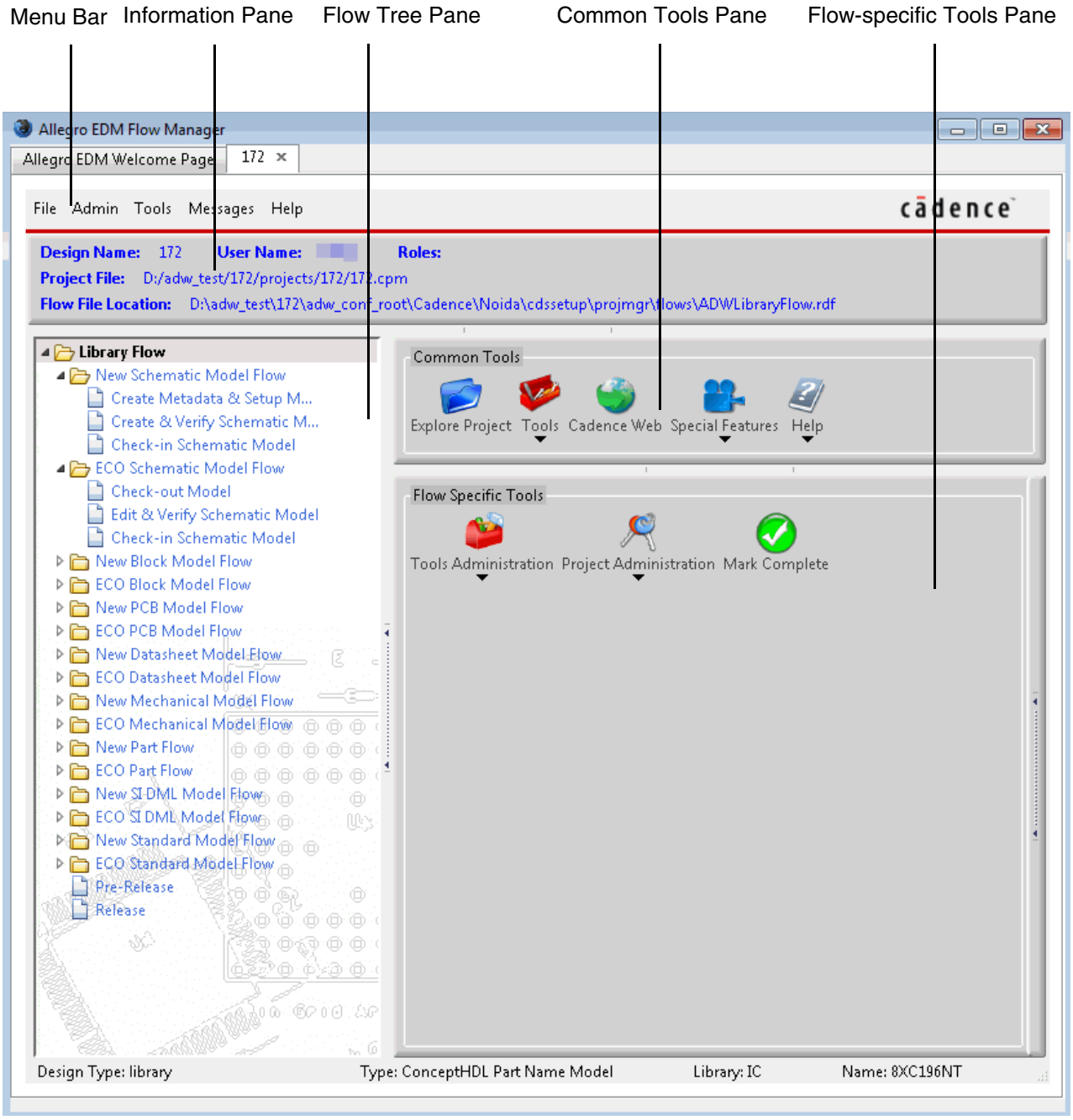
2. Choose a project from the list in the dialog box. If a project is already open in Flow Manager, it is grayed out in the Allegro EDM Project list.

3. Click *Select*.

   The selected project loads in Flow Manager according to one of the following conditions:

- If you choose *Accessing Projects – Open Last Project*, the project that was opened in the last Flow Manager session opens in a new tab.
- If you choose *File – Open*, the selected project opens in the active project tab.
- If you choose *File – Open in New Tab*, the selected project loads in a new tab.

Although the main window of projects might differ, depending on the kind of project you are working with, the following is a sample of a default library project in Flow Manager.



This window is divided into the following areas:

- Menu Bar
- Information Pane - displays key information about the open project. If you want to customize this pane, see Customizing Flow Manager Information Pane.

- Flow Tree Pane - displays a hierarchical representation of the steps required to complete the design. As you select each flow step in the flow tree, the buttons specific to the selected step of the design process are displayed in the Flow Specific Tools pane of the interface. Some of the salient points of the Flow Tree are:
  - You can add as many flow steps as you like, and create a flow as deep (many levels of hierarchy) as you like. Flow steps with subflows are displayed with a Folder icon. Flow steps with no subflows are displayed with page icons.
  - Every time you restart Flow Manager, the application restores its appearance from the last time you used it. It retains information on a per-user basis and restores the following:
    - The active flow step and its corresponding toolbar
    - The adjustments made to the sizes of the GUI panes containing Flow Tree, Common Tools, and Flow Specific Tools.
    - The expanded and collapsed flow step folders

Important

These settings are stored on a per-user, per-machine basis. In other words, when you restart Flow Manager (on the same machine), your settings are recalled. But if a different user starts Flow Manager for the same project, Flow Manager does not restore your settings for the other user. And, if you start Flow Manager for the project but on a different machine, Flow Manager will not restore your settings.

- Common Tools pane

  The Common Tools pane displays the utilities and buttons that are required at all times regardless of the flow step you are at. The buttons are customizable.

- Flow-Specific Tools Pane

  Each time you select a different step in the Flow Tree, Flow Manager displays a different flow-step-specific tool pane. These flow-step-specific tool panes contain sets of buttons appropriate for the chosen step of the flow.

- Buttons and Menus

  Each button in the toolbar has the following:
  - Title
  - Image
  - Optional set of menus and submenus.

- Optional tool tip which is displayed when you hover your mouse over the button. If no tool tip has been set, the button title will appear as the tool tip.
- Command that will be launched when you click the button (or when you select an item from the button's optional menu).

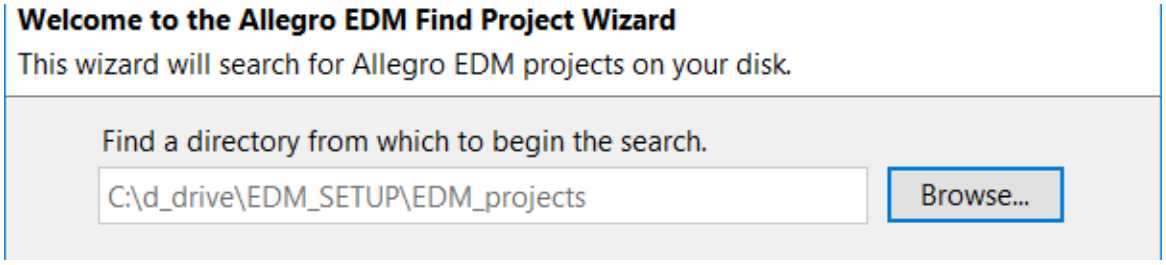
Finding Allegro EDM Projects in Flow Manager

To look for an existing project:

1. From the Allegro EDM welcome page, choose one of the following:
   - The *Accessing Projects* tab, then click *Open Project*, *Open Design Project*, or *Open Library Project.*
   - *File – Open*, or *File – Open in New Tab* from any active project tab.

   The *Select Project* dialog box appears.
2. Click *Find Projects*.

   The Allegro EDM Find Project Wizard appears.



3. Click *Browse* to specify a directory or folder you want to search.
4. Click *Next*.

   All the Allegro EDM projects in the specified directory are displayed.

   Note: Flow Manager cannot look for projects in folders or directories that span more than 15 levels of hierarchy.
5. Select the check boxes next to the projects that you want to add to the list of available Allegro EDM projects and click *Next*.
6. Click *Finish* to exit the Allegro EDM Find Project Wizard.

Deleting Allegro EDM Projects Using Flow Manager

To delete an existing project:

1. Choose one of the following:
   - *Managing Projects – Delete Projects* from the Allegro EDM welcome page.
   - *File – Delete* from any active project tab.

   The Delete Project dialog box appears.
2. Select the check box next to the project you want to delete.

   Note: If you want to delete a project that is currently open in Flow Manager, open a different project, then use the Delete Project dialog box to select the project to delete.
3. Click *Delete*.

   You are prompted to confirm whether you want to delete the project.

You cannot recover a deleted project. The deleted project and its directory is deleted physically from the hard disk.

4. Click *OK*.

Copying Allegro EDM Projects

Copying Allegro EDM projects changes the project name in each file, such as in `<proj>/atdmdir/logfiles`, including the schematic.

If you want to define extra command line arguments for the Copy Project utility, you need to define a variable, `copyproject_extraargs`, in the `flowmanager.properties` file as:

```
copyproject_extraargs = <argument1> <argument2>
```

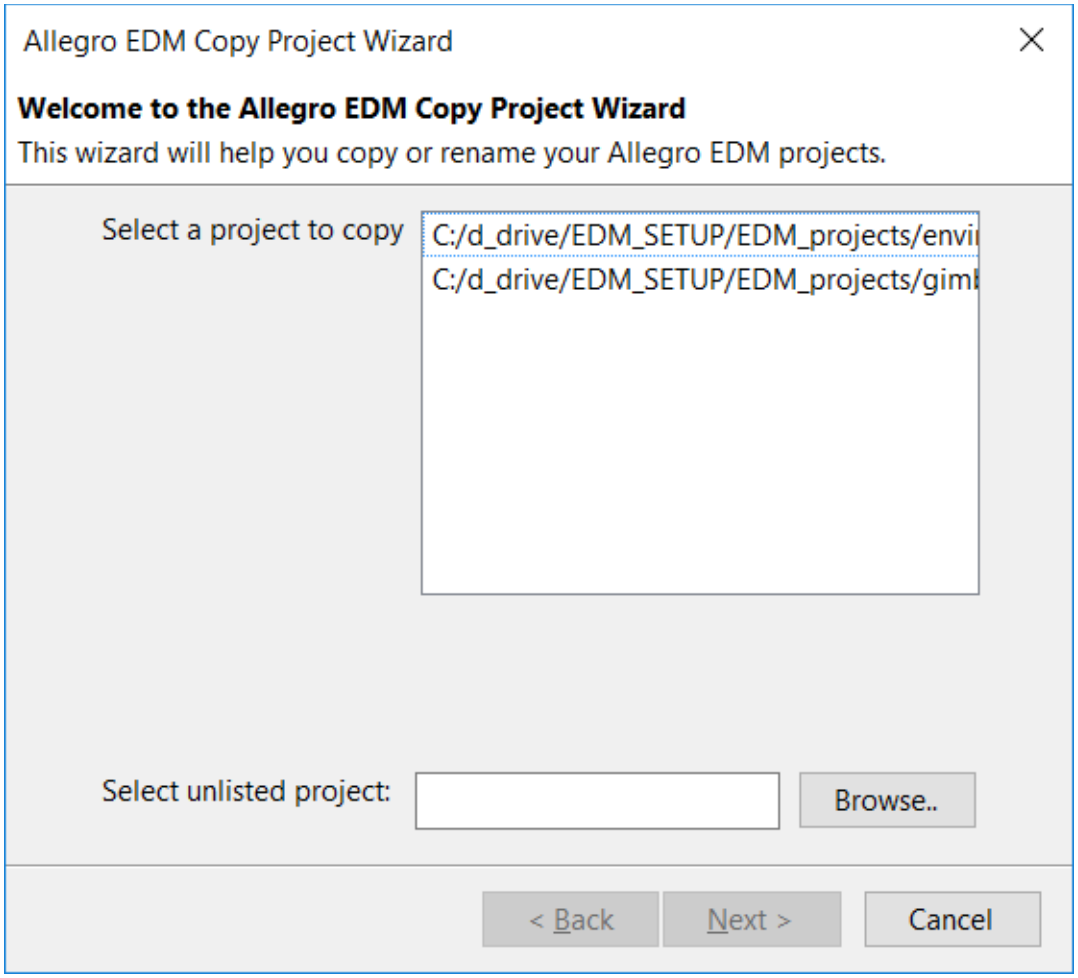
After defining this variable, Flow Manager launches the `copyproject.exe` command with the additional command line arguments.

To replicate a project and its directory structure and save it with a different name:

1. Do one of the following:
   - Choose *Managing Projects – Copy Projects* from Allegro EDM Welcome Page.

- Choose *File – Copy* from any active project tab.

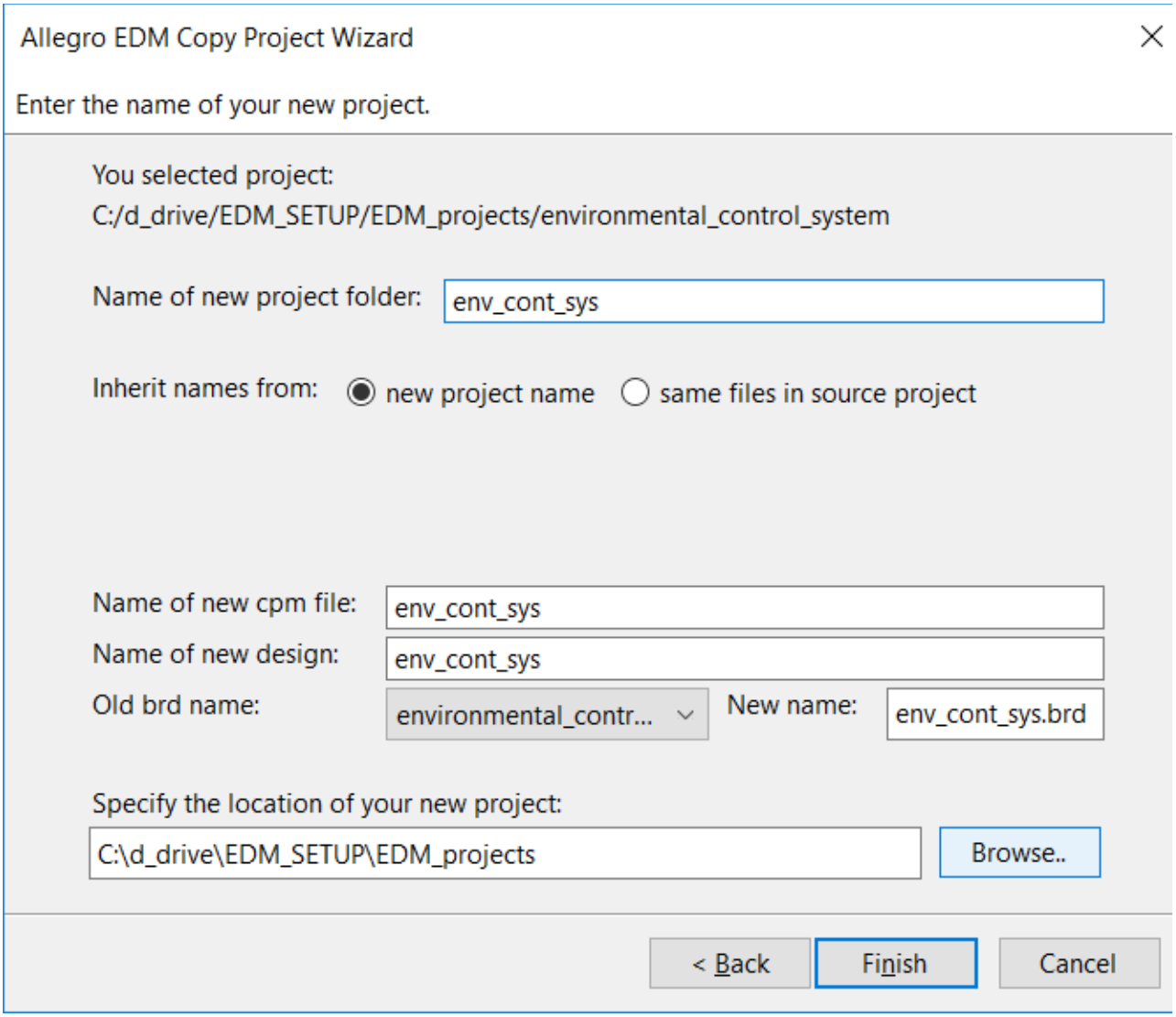
The Allegro EDM Copy Project Wizard opens with a list of available projects that you can copy.



You will see the projects stored in `<Allegro EDM_project_directory>`. If the project you need is not listed, *Browse* to navigate to its location.

2. Choose a project to copy from the list.
3. Click *Next*.
4. Specify a name for the project folder that will contain the copied project.

5. If you want to specify a new name for the CPM and design, select the *new project name* option. If you select *same files in source project*, EDM will automatically use the name of the source project that you are copying.



6. Change the name of the CPM file and design, if needed.
7. Click *Browse* to change the default location of the new project, if required.
8. Click *Finish*.

   A message that the copying process can take some time appears.
9. Click *OK* to start copying the project.

When the copying process is completed, a summary of the copy process appears. The summary includes project information, such as the location, library name, and design name of the new project.

10. Click *Close*.

Important

Make sure that you complete the copying process by manually opening the copied design in the relevant front-end application, such as Allegro Design Entry HDL or Allegro System Capture, and choosing *File – Save Hierarchy* to save it.

If you want to copy an Allegro EDM project but without Allegro EDM-specific information and directories, you can run the `copyproject` command from the Allegro EDM System Console. The syntax is:

```
copyproject -proj "<project_cpm_file>" -copytopath "<location to copy to>"
-newprojname "<name of the new cpm file>" -newlib "<new library name>" -
newdesign "<new design name>" - product "<product license>"
```

Modifying Project-Specific Parameters by Updating Projects

When you, as the flow administrator, update a project, you can change some of the project-specific parameters. You can:

- Update Project Files
- Update Project Library

This function should be used by the flow administrator.

Update Project Files

As the flow administrator, you can modify a project workspace template. When you update a project workspace template, Allegro EDM ensures that each project uses the modified template by refreshing its project files using the content in the template.

You can update project files using any of the following methods:

- Choose *File – Update – Project Files*.
- Choose *Project Administration – Update Project Files* from the *Flow Specific Tools* pane.

- Type the following command from Allegro EDM System Console:

  ```
  design_init -update
  ```

The Allegro EDM Project Wizard screen appears in *Project Update* mode with the existing parameters defined. You can change the values by progressing through various steps of the wizard. For more information about this, see Creating Allegro EDM Projects.

Update Project Library

The *Update Project Library* option is available only with the following project types: `board` and `highspeed`.

To update a project library, choose *Project Admin – Update Project Library* from the *Flow Specific Tools* pane.

This option runs the LRM to update your cached project libraries with the latest versions of cells available in the reference libraries. Using this option, you can run the LRM at any point to synchronize your cached project libraries with the reference libraries. For more information on using LRM, refer to *Allegro EDM Version Management Utilities User Guide*.

Note: LRM runs at Flow Manager startup to check for any updates in the reference libraries with respect to the cached project libraries.

Recovering Old Versions of Blocks or Cells

In Allegro EDM, you can roll back blocks or cells (in the project cache) to any of its previous available versions. Because this only works with cache-enabled projects, the *Old Models Version Recovery* option is only available for `board` and `highspeed` project types.

To revert to a previous version of a Design Entry HDL or back-end model in your design:

- If you want to roll back a cell, choose *Project Admin – Old Models Version Recovery – Rollback Cell* from the *Flow Specific Tools* pane.
- To roll back a block, choose *Project Admin – Old Models Version Recovery – Rollback Block* from the *Flow Specific Tools* pane.

For more information on using the Rollback utility, refer to *Allegro EDM Version Management Utilities User Guide*.

Renaming Projects Using Flow Manager

To rename an existing project:

1. Choose one of the following:
   - *Managing Projects – Rename Project* from the Allegro EDM welcome page.
   - *File – Rename* from any active project tab.

   The Allegro EDM Rename Project Wizard launches and a list of available projects appears.
2. Choose the project that you want to rename from the list.

   Note: If you want to rename a project that is open, close the project then rename it.
3. Click *Next*.
4. Enter the new name for the selected project.
5. Click *Finish*.

   A message that the copying process can take some time appears.
6. Click *OK*.

   A message with the information that the project was archived before being renamed is displayed.
7. Click *Finish*.

   After the project is renamed, a summary appears, which includes project information such as the location of the project, library name, and design name of the renamed project.
8. Click *Close*.

Using Flow Manager to Join Design Projects Enabled for Team Design

The Allegro Design Management utility, which is available to your enterprise depending on the license set you have purchased, allows a design project to be enabled for team design. Enabling a design project for team design is done by a user who has been defined as an integrator in Allegro Design Management. During the process of enabling a design project for team design, the integrator also defines a team of logical designers and PCB designers who

will work on the design. This allows multiple designers to collaborate asynchronously in the development of a logical design or PCB.

If you, as a designer, have been defined as a team member of a design project, you can join the project so as to check out a design object (block, constraint, board, page, and so on) assigned to you. After checking it out, you can start working on it.

To join a design project that has been enabled for team design, do the following:

1. Choose one of the following:

   - *Accessing Projects – Join Project* from Allegro EDM welcome page.
   - *File – Join* from any active project tab.

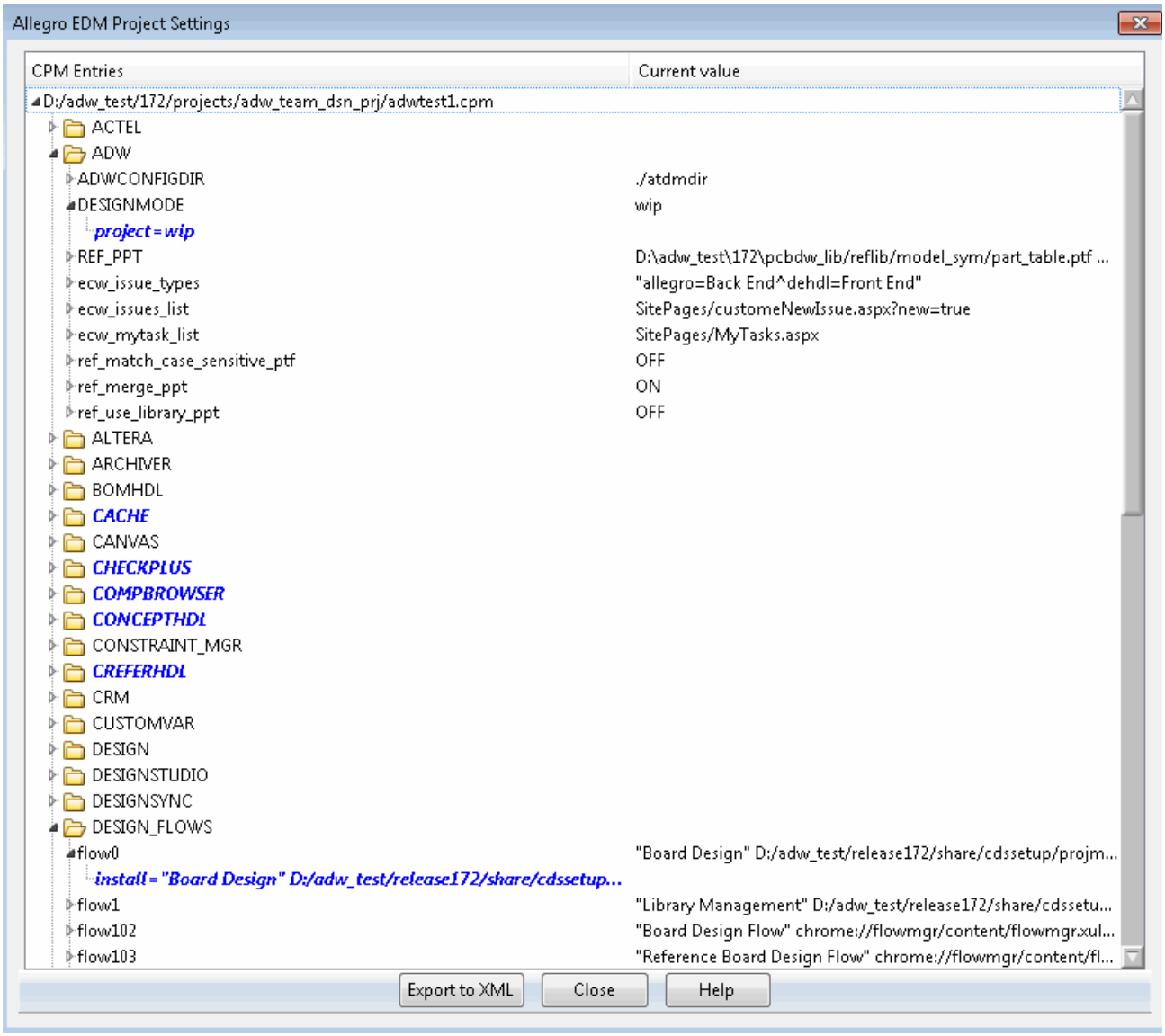
   If the Allegro Design Management utility has been configured to work with SharePoint, the utility appears along with the Login to SharePoint dialog. Enter the user name, password, and the URL of the required Web application.

   If it has been configured with the file system, a list of projects appears.

   The Join Project wizard starts. For details about joining and working with design projects that have been enabled for team design, refer to *Allegro Design Management User Guide*.

Exploring CPM Settings of Allegro EDM Projects

This window displays all the CPM entries and settings for the current project as a tree. You can only view these settings but cannot change the CPM values. These CPM settings include global directives, and other directives specific to Flow Manager and other applications, such as Design Entry HDL.



Global settings include the selection of libraries, view names, physical part table files, and property files. Project settings for individual tools are the setup options for each tool.

Be aware that if you switch between projects, either using the *File* menu or by selecting a different project tab, the Explore CPM data window is not refreshed with the project settings specific to the project you are now viewing. If you open a different project in the same tab, the project that was earlier open is closed.

You can export all the data in this window to an XML file using the Export to XML button. To learn more about CPM entries, refer to *Allegro Front-End CPM Directive Reference Guide*.

To view the CPM entries for any Allegro EDM project:

1. Launch Flow Manager.
2. Open any project.
3. Choose *Tools – Explore CPM data*.

The Allegro EDM Project Settings window opens. It contains two columns:

- CPM Entries
- Current value

To display the levels below any branch of the tree, click the icon in front of it. You can see the complete setup options you have chosen for each project for each of the following levels:

- Installation
- Site
- Project
- User

For example, in the following figure, expanding the `ADW` CPM entry:

- *ADW*

  DESIGNMODE: Indicates that the design mode is defined at the project level

- *DESIGN_FLOWS*

  flow0: Shows that it is defined at both, the local installation and site level.

Locked Directives

Project settings of front-end projects, such as those authored in Design Entry HDL or Allegro System Capture are configured in the Cadence CPM file (`cds.cpm`), the CDS_SITE area

(`site.cpm`), and in the local project (*`<project>`*`.cpm`). However, you might want to define user-specific settings, which you can customize according to your needs and retain the same settings for any project you open irrespective of the local project settings. Some examples of user-specific settings include: default printer, text editor, and panning.

The directive-locking feature of a CPM file in front-end applications, such as Design Entry HDL or Allegro System Capture, provides control over the list of directives which you can configure at the user level and which will reflect in all the projects irrespective of the project settings. This is achieved by `user.cpm`, where user-specific settings are defined.

A locked directive is defined with the keyword `LOCK` in the `.cpm` file. Locking implies that the directive is locked for all levels down from the level at which it is locked. For example, locking a directive in *`<project>`*`.cpm` implies that the directive will be honored at the *`<project>`*`.cpm` level if the directive is in *`<project>`*`.cpm`. If it is not in *`<project>`*`.cpm`, the directive will be honored from `site.cpm` or `cds.cpm` as the case may be. However, the directive, if in user.cpm, will not be honored.

In Allegro EDM Flow Manager, the Explore CPM data window provides a graphical display of:

- where a CPM directive value is locked
- the level at which a directive is locked

If a value cannot be locked at a lower level, the value is not displayed because this window only displays the values set at each level.

3

Creating Custom Design and Library Flows

In Allegro EDM, flows for design tasks, such as creating a PCB, working on a highspeed design, are preconfigured as project templates. Allegro EDM provides out-of-the-box project templates for project types such as `board`, `board_ref`, `highspeed`, `library`, `generic`, `systemdesign`. Essentially, project templates are preformatted definitions of types of projects.

To maintain independence as well as collaboration between various sites and their workflows, as a flow administrator, you might require a high degree of site, flow, and project customization. When configuring Allegro EDM to meet your company, site, and project requirements, you might want to make changes, such as the following, to the default templates:

- Library category names
- Local library structure for the projects
- Custom footprint and padstack libraries
- Custom templates for design and review documents

To customize design and library flows, you:

1. Create a flow by doing one of the following then saving the flow:
   - Create a project template/workspace based on an existing template, which creates a new project template/workspace. The template/workspace contains a copy of an existing flow file (RDF file), which you can customize.
   - Create a new flow from scratch and define it to your requirements.
   - Use an existing flow:
     - Modify an existing flow by adding flow steps and buttons then save it as a new flow.

- Make a copy of an existing flow from the disk, that is, `<ADW_CONF_ROOT>\<company>\<site>\cdssetup\projmgr\flows` and modify it to your requirements.

2. Publish the flow.
3. Deploy the flow.

Creating Custom Flows in Allegro EDM Flow Manager

Only flow administrators can create, customize, and deploy custom flows in Allegro EDM.

You can create custom flows by:

- Using the recommended method - first creating a project template/workspace based on an existing template.

  This creates a new project template, which contains a copy of an existing flow file (RDF file). You can then customize this flow file by creating a design project using the `design_init` tool and using the *Admin* menu to customize the flow steps. See Creating Custom Flows Using Project Templates/Workspaces, Publishing Flows, and Deploying Flows.

  Note: Creating a flow is not the same as creating a workspace. A flow file is an RDF file that is used in a workspace or a project template. If required, you can associate a different flow file to a workspace.

- Creating a flow from the beginning. See Creating a Custom Flow from the Beginning.
- Creating a flow using an existing flow file and modifying it to your requirements. Creating a Flow Using an Existing Flow File.

Creating Custom Flows Using Project Templates/Workspaces

To create a custom flow using a project template/workspace, you must first create a custom project template/workspace.

About Project Templates/Workspaces in Flow Manager

A project template in Flow Manager, also referred to as a project workspace, is a preformatted definition of a type of project. A project template in Flow Manager is a combination of a Resource Description Framework (RDF) file and a project definition.

The RDF file defines the steps, the order of the steps in a tree structure, and icons that will be displayed to designers depending on the type of design project and design stage they are in. RDF files are platform-independent and can be used in a shared Allegro EDM Conf Root on Windows and Unix.

These RDF files must be accessible to every team member using Flow Manager.

The project definition specifies the elements that make up a project, such as a `cds.lib` file, `.cpm` file, directories such as `worklib`, `flatlib`, and so on.

The out-of-the-box project templates that Allegro EDM provides are as follows:

- board_ref_ws
- board_ws
- design_init
- generic_ws
- highspeed_ws
- libflow_condensed_ws
- library_ws
- systemcapture_board_ref_ws
- systemdesign_ws

Project templates are defined at two levels:

- **Enterprise Level**: These templates/workspaces help you define flow and project requirements at the enterprise level. They are available at:
  <installation_directory>`\share\cdssetup\pcbdw\workspaces`

You should not modify these templates because they are in the installation hierarchy and will be overwritten in the next software upgrade. If you want to customize project templates, it is recommended that you do so at the site level.

- **Site Level**: These templates/workspaces help you define flow and project requirements at the site. They are available at:

  <ADW_CONF_ROOT>`\`*<company>*`\`*<site>*`\cdssetup\pcbdw\workspaces`

You can create a custom flow using a project template/workspace through the command line or the user interface. Both methods use the `createflow` utility.

Creating Project Template/Workspace Through the Command Line

1. Open Allegro EDM System Console.
2. At this prompt, type the following:

   `createflow <new_flow_name> <existing_flow_name>`

   For example, to make a flow based on the board design flow, type the following:

   ```
   createflow cloned_board board
   ```

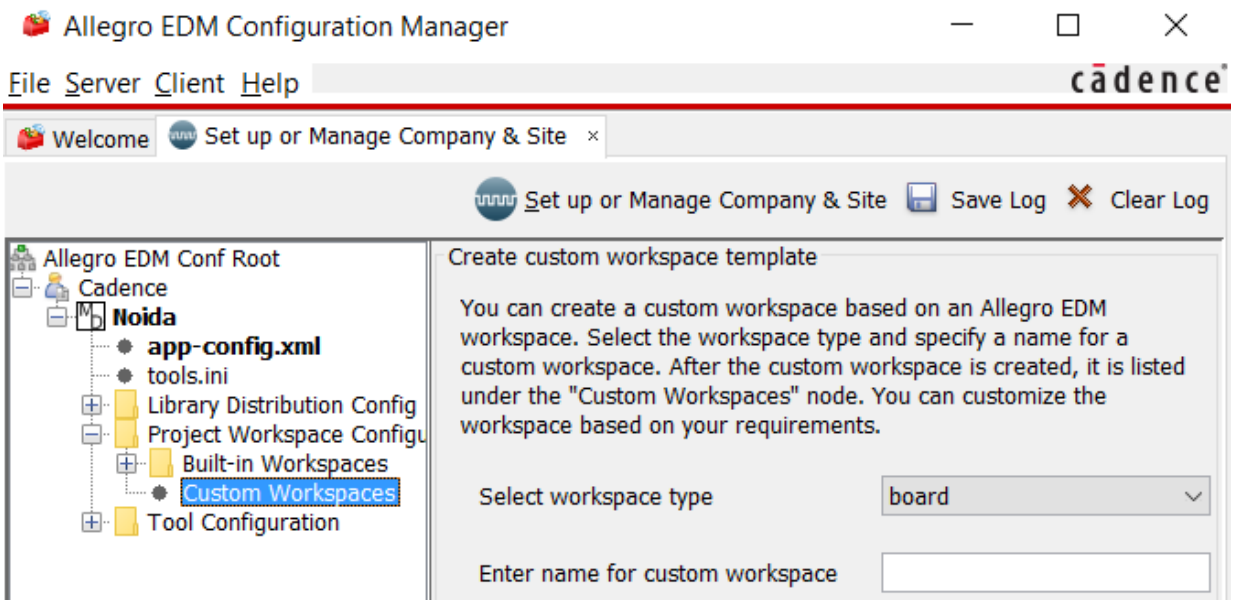
   Note: When you create projects using the default templates of Allegro EDM, Allegro EDM automatically adds the path to the library in the project file. If you use the `createflow` option to create a project template or workspace, ensure that you have the `ref_cds_lib` directive in the project CPM file. The value of this directive is the path to the library.

Creating Project Template/Workspace Using Allegro EDM Configuration Manager

1. Open Allegro EDM Configuration Manager.
2. Click *Set up or Manage Company & Site*.

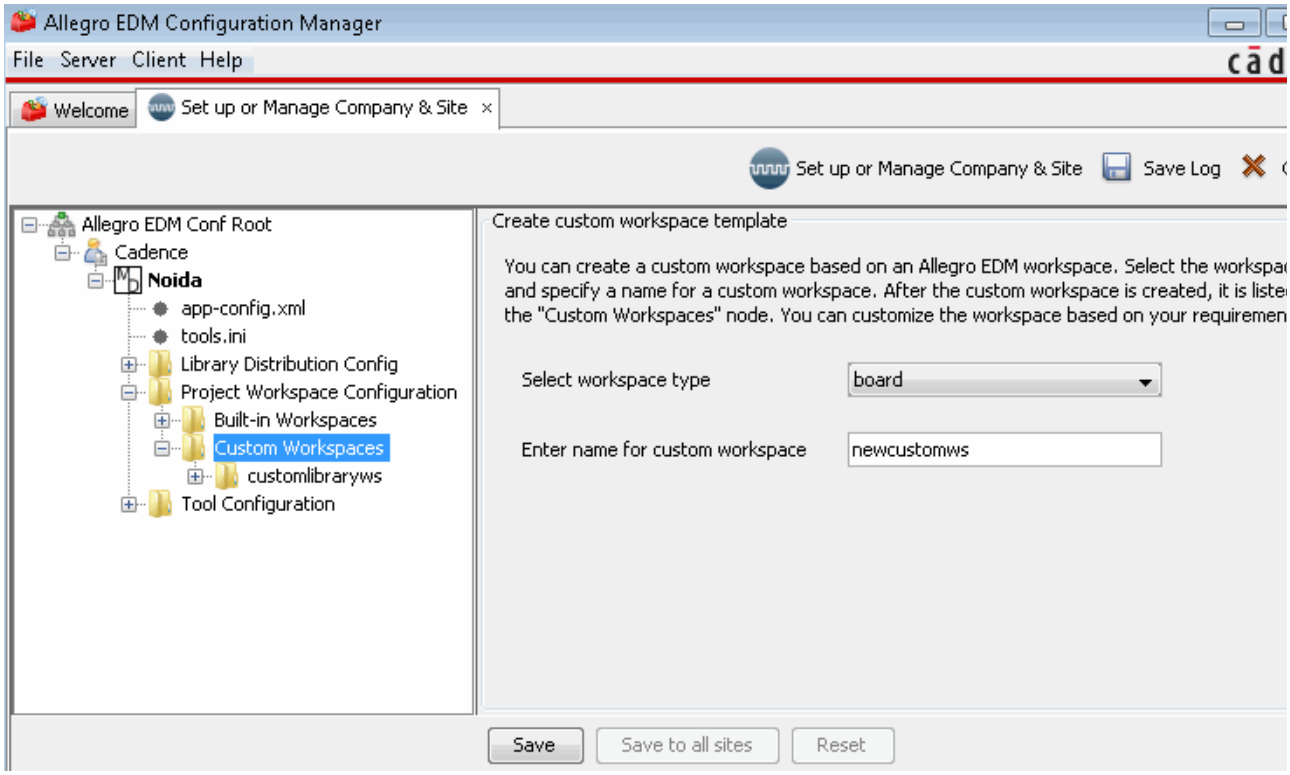
   The Set up Allegro EDM Conf Root Directory window opens.

3. On the left tree panel, choose *<Allegro EDM Conf Root> – <company> – <site> – Project Workspace Configuration – Custom Workspaces*.



4. On the right panel, choose any existing project workspace.

5. Specify a name for the new project workspace.



6. Click Save.

When the new project template is created, Allegro EDM creates the following:

- A new RDF flow file, based on the selected template, located at: `<ADW_CONF_ROOT>\<company>\<site>\cdssetup\projmgr\flows`
- The word `CustomFlow` is prefixed to the copied flow file name (for example, `CustomFlowboard.rdf`).
- A new template directory (`<new_flow_name>_ws`) is created at `<ADW_CONF_ROOT>\<company>\<site>\cdssetup\pcbdw\workspaces`. In our example, the name of the workspace directory is `cloned_board_ws`.
- A new entry for the flow is created in the `site.cpm` file located at: `<ADW_CONF_ROOT>\<company>\<site>\cdssetup\projmgr\site.cpm`
- In the `@project@.cpm` template file, the `LastFlow` is set to the new flow. This means that when you open Flow Manager for a project of this type, the project opens with the new flow. This means that the design steps and the buttons will be displayed according to the type of flow. In our example, the `@project@.cpm` contains:

```
START_PROJECTMGR

LastFlow 'CustomFlowboard'

END_PROJECTMGR
```

Note: The project template file (@project@.cpm) is located at: *<ADW_CONF_ROOT>**<company>**<site>*\cdssetup\pcbdw\workspaces\<new_flow_name>_ws\15.5\archindep\<flow_name>\common\1.0

Note: where <new_flow_name>_ws is the new project template/workspace created using the createflow utility. When you create projects using the default templates of Allegro EDM, Allegro EDM automatically adds the path to the library in the project file. If you use the createflow option to create a project template or workspace, ensure that you have the ref_cds_lib directive in the project CPM file. The value of this directive is the path to the library.

Now that you have created a flow file based on existing project template/workspace, you can edit and deploy this flow file in your workspace.

Configuring the Project Templates/Workspaces

To configure the template/workspace, do the following:

1. Browse to *<ADW_CONF_ROOT>**<company>**<site>*\cdssetup\pcbdw\workspaces\<new_flow_name>_ws\15.5\archindep\<flow_name>\common\1.0 directory, and perform these steps:

   a. Edit the @project@.cpm file to customize the library category names. This information is between the START_GLOBAL and END_GLOBAL sections.

   b. If you have a BOM template, copy it into the *<ADW_CONF_ROOT>**<company>**<site>*\cdssetup\pcbdw\workspaces\<new_flow_name>_ws\15.5\archindep\<new_flow_name>\common\1.0\atdmdir\env folder.

      Note: Perform this step only for a design template/workspace and not a library template/workspace.

2. Browse to the *<ADW_CONF_ROOT>**<company>**<site>*\cdssetup\pcbdw\workspaces\<new_flow_name>_ws\15.5\archindep\<new_flow_name>\design_documents\1.0_english\atdmdir\dossier directory, and replace the templates for the Hardware Design Document (cidd.rtf) and the Critical Item Design Spec (cids.rtf) with your templates.

Important

The Cadence-supplied flows will not have this folder.

3. Browse to the *<ADW_CONF_ROOT>**<company>**<site>*\cdssetup\pcbdw\workspaces\<new_flow_name>_ws\15.5\archindep\<new_flow_name>\design_reviews\1.0_english\atdmdir\dossier directory, and replace the templates for the Preliminary Design Review Report Document (pdr.rtf) and the Critical Design Review Report Document (cdr.rtf) with your templates.

   Note: Only newly created design workspaces, and not library workspaces, will have this folder.

Defining PCB Editor Paths in Custom Project Templates/Workspaces

In *<ADW_CONF_ROOT>**<company>**<site>*, there is a pcb folder where the paths and environment variables needed by Allegro PCB Editor are set. This enables all the layout designers to use the same Allegro path settings by pointing to *<ADW_CONF_ROOT>*. This works by default for the Cadence-supplied flows, such as board and highspeed. These flows have a corresponding .env file in the pcb folder, namely ADW_board.env and ADW_highspeed.env.

For any new workspace that you may have created, a corresponding ADW_<new_workspace_name>.env file is created in the *<ADW_CONF_ROOT>**<company>**<site>*\pcb folder. This workspace contains a custom flow that is inherited from an existing Cadence flow, such as the board flow. Before you modify this .env file, you need to understand why and how Flow Manager controls path settings for PCB Editor layout tools.

You may have various sets of footprints, for example, one for normal designs and a different set of footprints with tighter clearances for highspeed designs. To be able to control which footprint library to be used, you need to control the path that PCB Editor uses to find the footprint symbols.

Variables that Control the Flow Used

When you open a project in Flow Manager, Flow Manager creates environment variable called ADW_PCB_FLOW_TYPE.

This variable is used to determine the name of the file that sets the PCB Editor paths. Thus, you can specify different sets of paths by specifying a different value for this environment variable.

Allegro EDM sets this environment variable by reading the *<Allegro EDM_project_directory>**<project_folder>*\atdmdir\atdm.ini file. EDM first looks for the pcb_flow_type setting. If this setting is not found, it reads the gui_type setting.

For default templates/workspaces, ADW_PCB_FLOW_TYPE and GUI_TYPE are set to the same value.

The pcb_flow_type variable is **not** set by default. You will need to specify the pcb_flow_type variable in the atdm.ini file of the custom project workspace template in order to override the default behavior of using the gui_type value.

The ADW_PCB_FLOW_TYPE variable controls which environment file is used by the tools that need to access PSM or PSD paths.

Any tool launched from Flow Manager that needs an Allegro environment will source the site.env from the *<ADW_CONF_ROOT>**<company>**<site>*\pcb location. This file uses the ADW_PCB_FLOW_TYPE variable to source a file by the name of ADW_<ADW_PCB_FLOW_TYPE>.env. This is how most projects with a gui_type source the corresponding environment file. For example:

gui_type = *board* in the atdm.ini file sources the ADW_board.env file.

Example

1. Create a project workspace called test_brd_flow from the board workspace.
2. Create a project called testboard using the test_brd_flow project workspace.
3. Open the *<Allegro EDM_project_directory>*\testboard\atdmdir\atdm.ini file.
4. It should have an entry for the gui_type:

   ```
   gui_type = test_brd_flow
   ```

   Flow Manager will use this when setting the ADW_PCB_FLOW_TYPE environment variable.
5. Open a system console and type the following command:

   ```
   set ADW_PCB_FLOW_TYPE
   ```

   This should return the value test_brd_flow.

   This confirms that Flow manager set it correctly from the *<Allegro EDM_project_directory>*\testboard\atdmdir\atdm.ini file.

6. Launch Allegro PCB Editor and confirm that the correct paths get set.

   All paths should be set correctly from the `ADW_test_brd_flow.env` file.

7. Lastly, Part Information Manager should read the same paths.

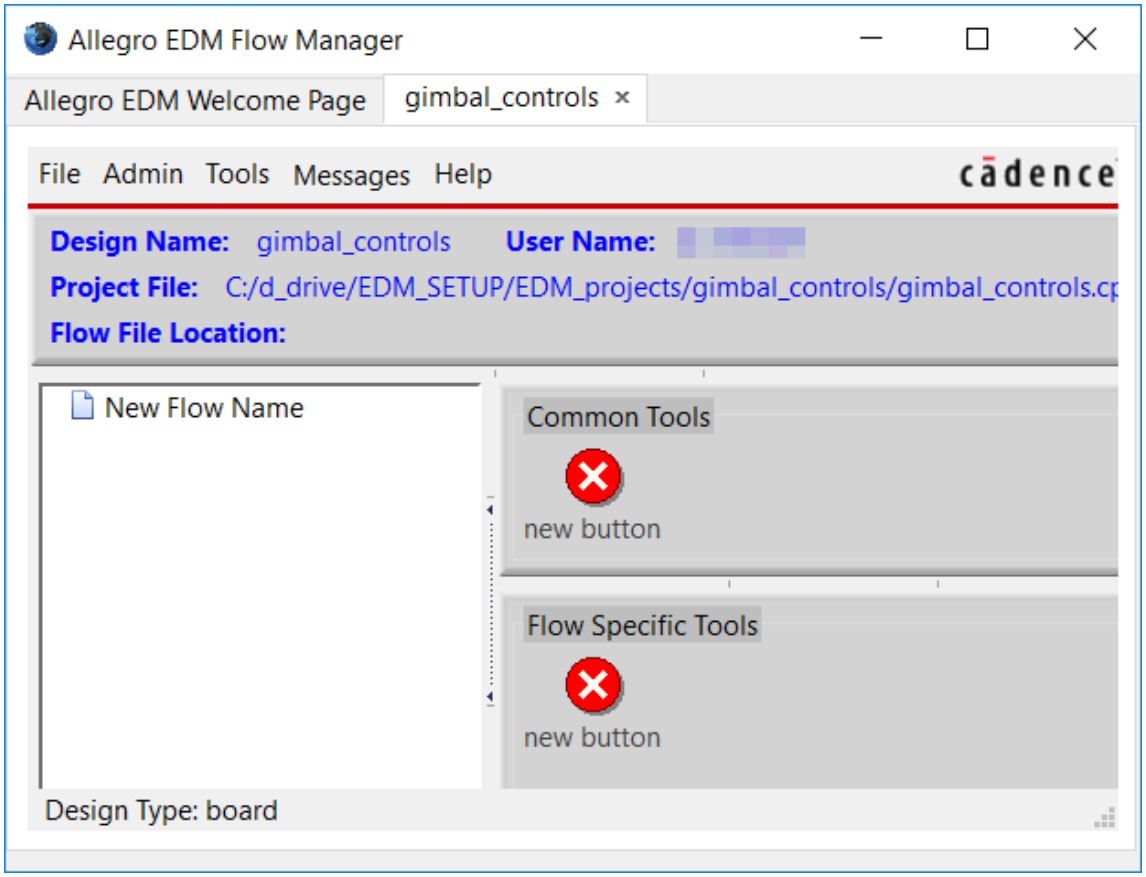
Creating a Custom Flow from the Beginning

To create a custom flow, do the following:

1. Open any existing project.
2. Choose *Admin – New Flow File*.

   Note: The *Admin* menu is not visible unless you are a flow administrator. See Defining a Flow Administrator in Allegro EDM Flow Manager.

   A new flow node appears in the Flow Manager interface.



3. Use the default values as a starting point. Modify them and add new flow steps and buttons as required. For information on how to do this, see Customizing Menu Options in Custom Flows of Flow Manager.

4. Choose *Admin – Save Flow File As* to save your flow file at the desired location.

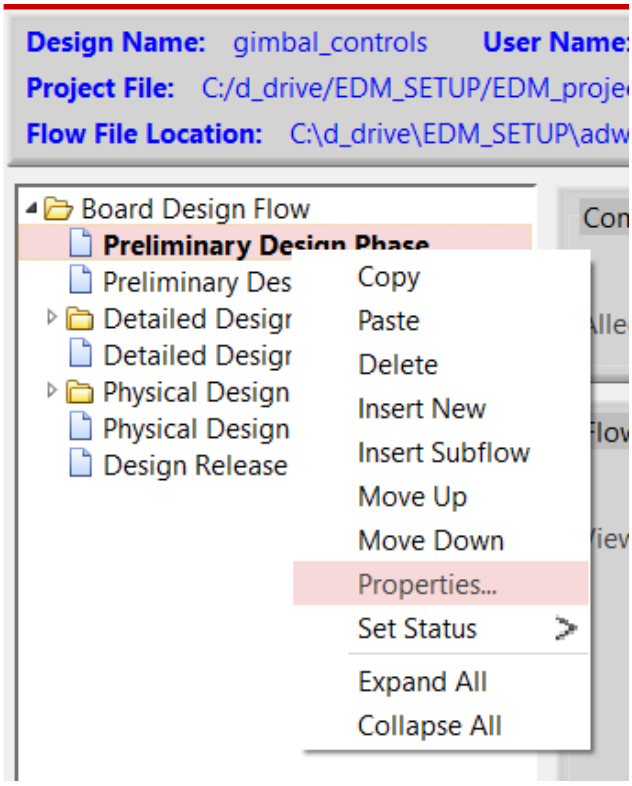
All the default flow files (`.rdf`) are available at:
`<ADW_CONF_ROOT>\<company>\<site>\cdssetup\projmgr\flows`

Creating a Flow Using an Existing Flow File

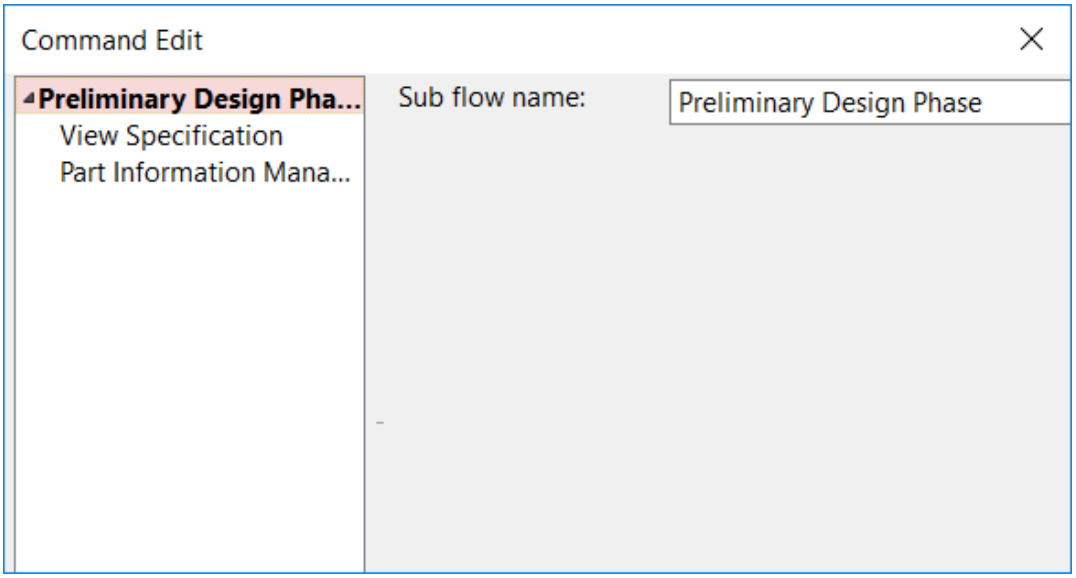
It is often easier to start with an existing flow and modify it to create a custom flow. Assume that you want to create a modified version of the out-of-the-box board design flow.

1. Choose *Admin – Open Flow File* to select an existing file, say `ADWDesignFlow.rdf`. The flow opens in the active project tab.

2. Right-click a new or existing flow step and choose *Properties*.



The Command Edit dialog box opens.



3. Use the Command Edit dialog box to make changes to this file so that it meets your needs. For example, say you want to add a subflow, or a button to the Common Tools pane in the custom flow.
4. Choose *Admin – Save Flow File As* to save your changes to a new flow file.
5. Enter a name for the flow, say `ABCD_Flow`.

   A message appears to indicate the location of the saved flow file.
6. Click *OK*.

   A dialog box appears prompting you for a unique title for this flow file.
7. Enter the title, say `ABCD Flow`, and click *OK*.

   The flow name you enter is recorded in the `START_DESIGN_FLOWS` section of the `<project>.cpm` file. In our example, the `<project>.cpm` file contains:

```
START_DESIGN_FLOWS

flow301 'ABCD Flow' 'ADWDesignFlow.rdf'

END_DESIGN_FLOWS


START_PROJECTMGR
```

```
LastFlow 'ABCD Flow'

END_PROJECTMGR
```

If you must modify RDF files, it is strongly recommended that you modify them using Flow Manager. Do not modify them manually.

Customizing Menu Options in Custom Flows of Flow Manager

Before you customize the Flow Manager menu options and user interface using the various XUL files provided in the Cadence installation directory, note the following:

- You should be competent in XUL and JavaScript programming. If not, contact Cadence Support or Services to customize the XUL files.
- Ensure that any changes you make are in XUL and JavaScript (see `https://developer.mozilla.org/En/XUL`). For example, the code in `mainpage.xul` uses overlays to control how additional GUI controls are added to the page.
- You should study the sample XUL code in the Cadence-provided XUL files because they contain some commented-out examples of how to make GUI changes.

After you create a custom flow using any of the means described in the previous sections, you can add custom menu options and submenu options to:

- Allegro EDM Welcome Page. See Customizing Allegro EDM Flow Manager Welcome Page.
- Menu bar for any project, or the menu bar specific to design, library, or custom project templates/workspaces. Customizing Menu Bar for any Project or for Project Templates/Workspaces
- Flow Manager Information Pane. Customizing Flow Manager Information Pane.

Customizing Allegro EDM Flow Manager Welcome Page

To customize the welcome page to your requirements, navigate to the following location:

*<adw_conf_root>**<company>**<site>*\cdssetup\projmgr\flows\UserFunctions

Open and edit the Cadence-provided template file — `mainpage.xul`. Using this file, you can only hide existing menu options in the *Accessing Projects*, *Managing Projects*, and *Utilities* tabs.

Customizing Menu Bar for any Project or for Project Templates/Workspaces

You can modify and customize the menu bar for any project, or the menu bar specific to design, library, or custom project templates/workspaces. You can do the following by way of customizing the Flow Manager menu bar:

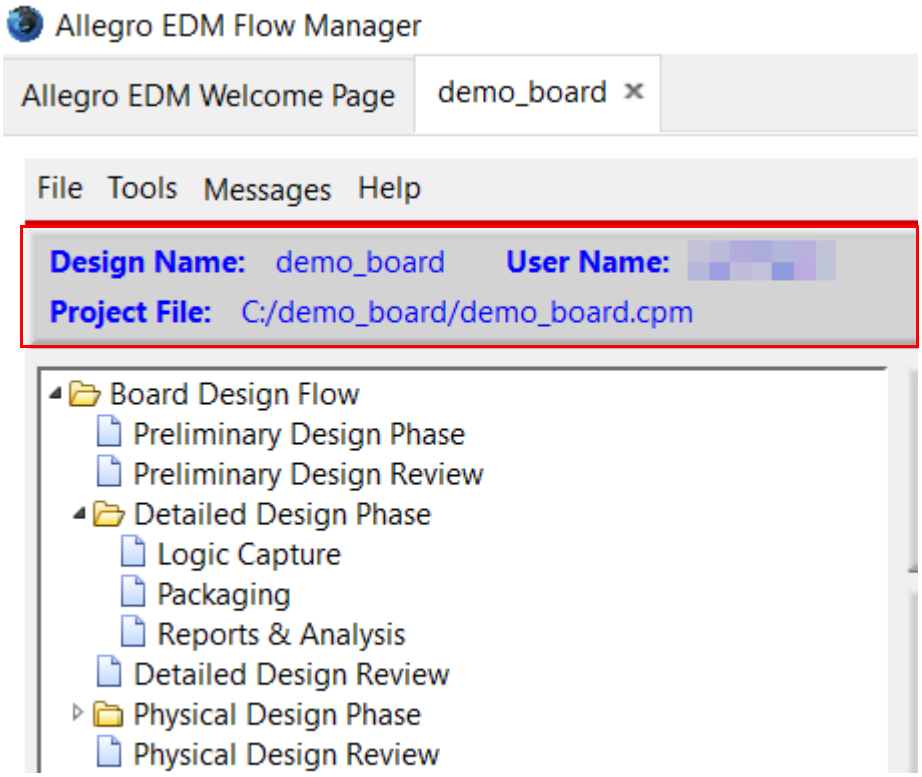
- Add new menus
- Add new options and commands to any menu
- Hide existing menu items
- Modify existing menu items

The `.xul` template files that you need to modify are at:
<adw_conf_root>`\`*<company>*`\`*<site>*`\cdssetup\projmgr\flows\UserFunctions`

- To modify the menu bar for any project, modify `flowmgr_overlay.xul`.
- To modify the menu bars specific to a project type, modify the specific template files, such as:
  - `board_overlay.xul` for design projects
  - `library_overlay.xul` for library projects
  - *<customized_project_workspace_name>*`_overlay.xul` for any customized project workspace that you may have created using the `createflow` command.

Customizing Flow Manager Information Pane

The information pane in Allegro EDM Flow Manager displays the name of the design that is open, the name of user who has opened Flow Manager, and the complete path to the project file location.



If you want to customize the information displayed in this area, do the following:

1. Depending on what it is that you want to customize, create the required custom JavaScript and save it in the following directory:

   `<adw_conf_root>\<company>\<site>\cdssetup\projmgr\flows\UserFunctions`

   Ensure that the JavaScript file is saved with a `.js` extension.

   For example, for a specific project type, such as `board`, `highspeed`, `board_ref`, you might want to display the project `.cpm` name in the design information pane instead of the root design name which is the default. You can even create different functions for board and library projects.

Function to...	Function name	Calls the following local function
specify the project type	`function fm_hookFor_<project type>() {`	`setUIDesignName();`
modify the design name		`setUIProjectName();`

A sample script would be as follows:

```
function fm_hookFor_board() {

    /**
    * this is a way to place hooks in the Flow Manager to execute custom scripts
    * for a specific type of project.
    * in this case, we are placing a hook for the board type of project to
    * show the project cpm name in the design information panel instead of
    * the root design name that is the default
    */
    function fm_hookFor_board() {

         // call a local function to show project cpm in the design information panel
         setUIDesignName();

         // call a local function to show project cpm path differently in the design information
    panel
         setUIProjectName();

        // get and display user name differently
        var userName = fm_globals.getUserName();
        //say hello to user
        userName = 'Hello ' + userName;
         document.getElementById("userName").setAttribute('value', userName);
    }

    /**
    * overrides the FM internal function by same name
    * add a couple of lines about what this is doing
    */
    function setUIDesignName() {
        var cpmName = "unknown";
        try {
            cpmName = makeNativeFileName(getCPMName());
            var f = new File(cpmName);
            cpmName = f.leaf;
            document.getElementById("designName").setAttribute('value', cpmName);
```

```
    } catch(e) {
        alert(e);
    }
}

/**
* overrides the FM internal function by same name
* add a couple of lines about what this is doing
*/
function setUIProjectName() {
     var cpmName = fm_globals._spi.getProject();
    /** replace all / with \
    */
    cpmName = cpmName.replace(/\\\\/g, '\\');
     document.getElementById("cpmFileName").setAttribute('value', cpmName);
}
```

Customizing Flow Steps and Buttons

Flow administrators can modify a flow tree, the location (for example, move a button from the Common Tools pane to the Flow-Specific Tools pane) and appearance of flow buttons, and define programmatic behavior for buttons and menu items.

Programming, in Flow Manager terminology, refers to the actions you can add to a button event (such as click). These actions help you associate commands related to Allegro EDM features and utilities to a button.

To understand how to customize a flow step and a button, consider a sample scenario.

Sample Customization of a Flow Step and Button

In a project in the `ADWCondensedLibraryFlow.rdf`, you want to add a new step to purge padstacks and add a button executing `dbdoctor -purge_padstacks` in the Footprint Model flow. You want to add the step before *Verify Footprint Models*.

To add a step and a button executing `dbdoctor -purge_padstacks` for Footprint Models, do the following:

1. Add the required script to the `optlibflow.js` file, available at: *<ADW_CONF_ROOT>*`\`*<Company>*`\`*<Site>*`\cdssetup\projmgr\flows\UserFunctions`

   For example, a sample script could be as follows:

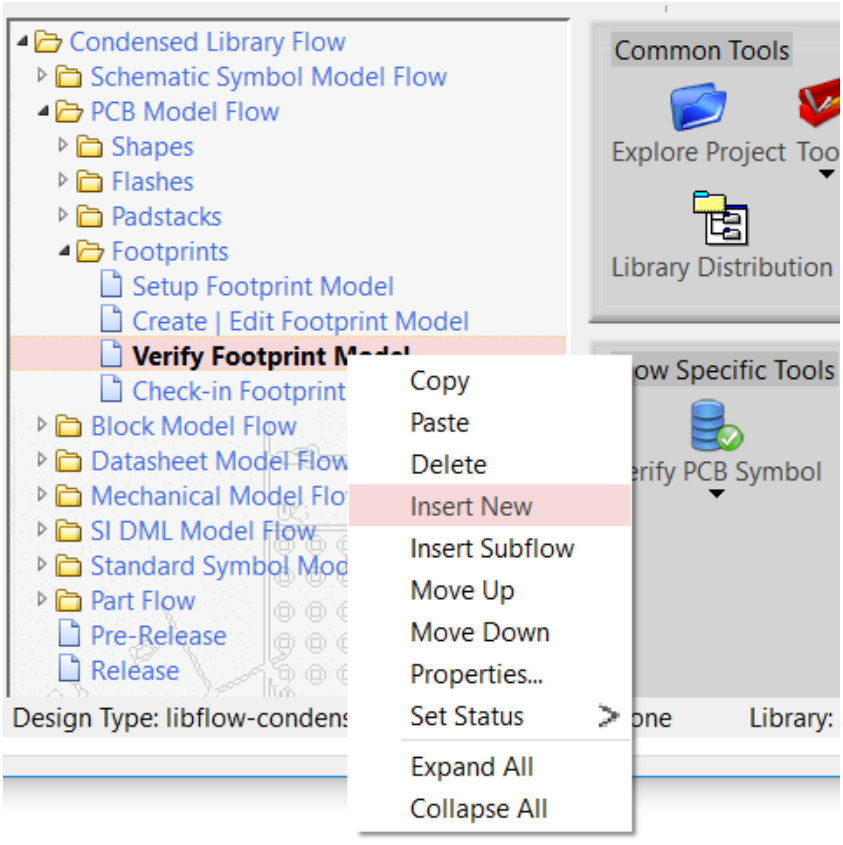
```
function fm_purgePadstacks() {


    var modelType = adw_getAtdminiValue("active_model","model_type");
    if (modelType != "Allegro Footprint Model") {
       fm_alert("Active model is '" + modelType + "'\nThis command requires an active Footprint model.");
        return;
    }
    var modelLibrary = atdmIniBundle.getProperty("active_model", "model_library");
    modelLibrary = modelLibrary.toLowerCase();
    var activeCell = atdmIniBundle.getProperty("active_model", "model_name");
    activeCell = activeCell.toLowerCase();
    var toolVersion = adw_getAtdminiValue("active_model", "tool_version");
    var projDir = getenv("ATDM_PROJECT_DIR");
```

```
    try {
        cmd = "dbdoctor -purge_padstacks  " + projDir + "/flatlib/
model_jedec/" + toolVersion + "/" + modelLibrary + "/" + activeCell +
".dra";
        var runCmd = new CmdString().execShNoWait(cmd);
    }

    catch(cmd) {
        alert(cmd);
    }
}
```

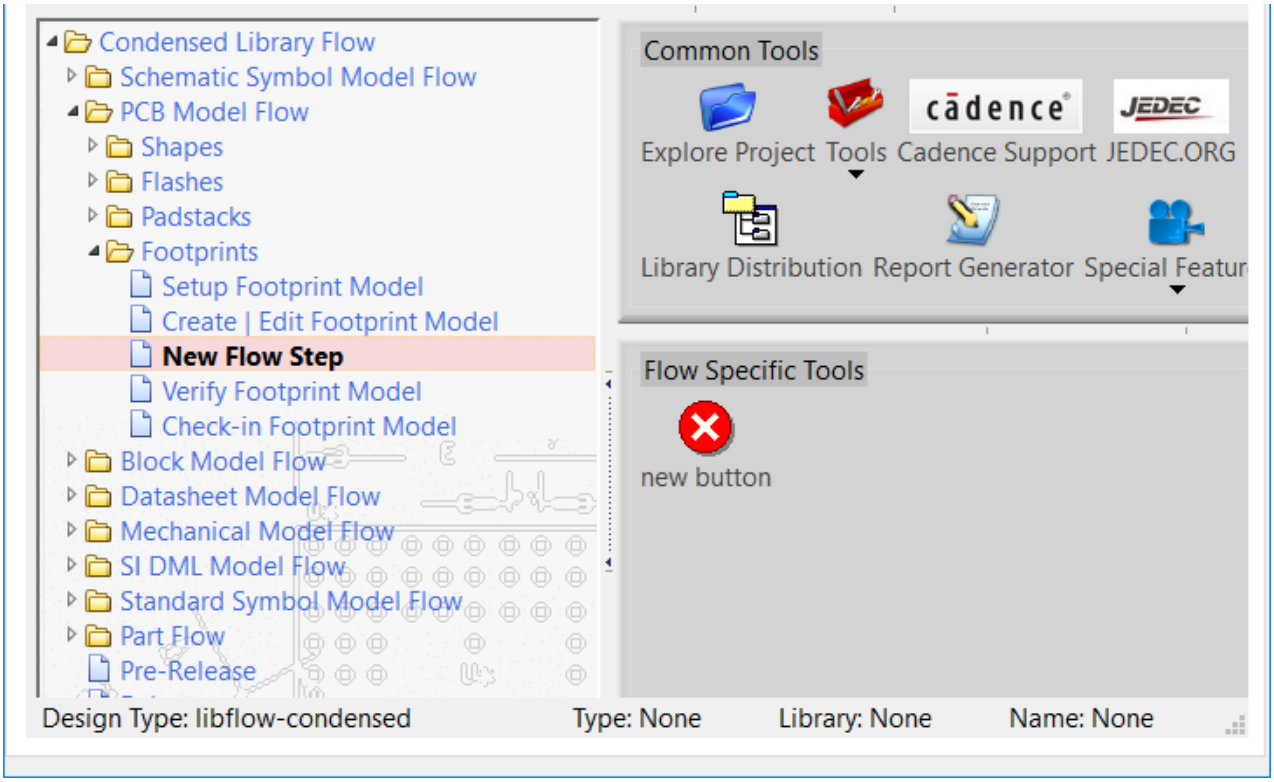
2. Save the file.
3. Launch the required project in Flow Manager.

   Note: Ensure that the footprint model is either checked out or that you are working on a local copy.

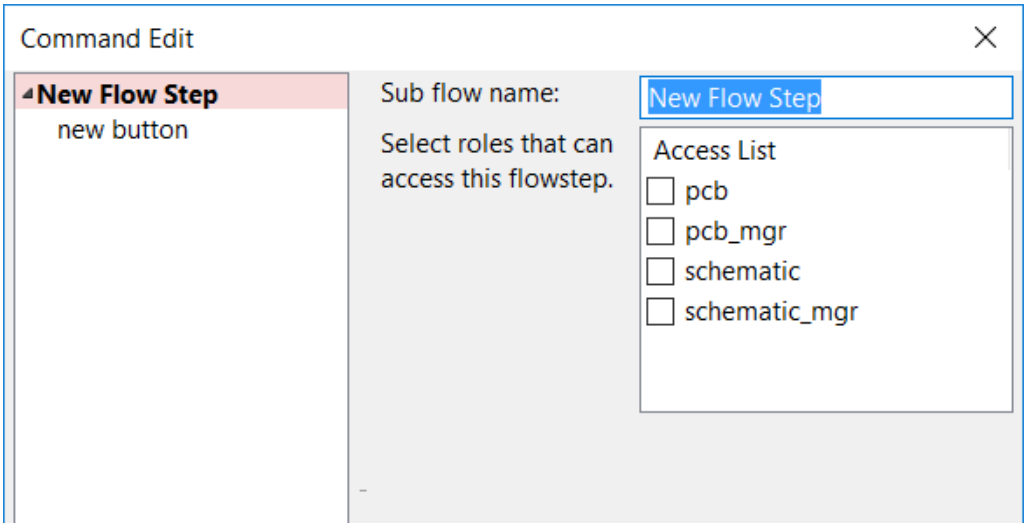
4. Right-click on the *Verify Footprint Model* step and choose *Insert New*.



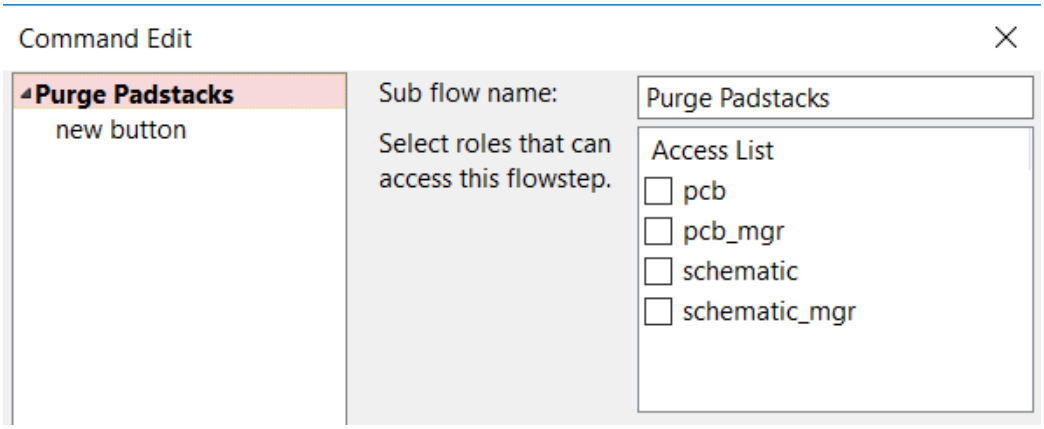
A new flow step is added, and a new button is added in the Flow-Specific Tools pane.



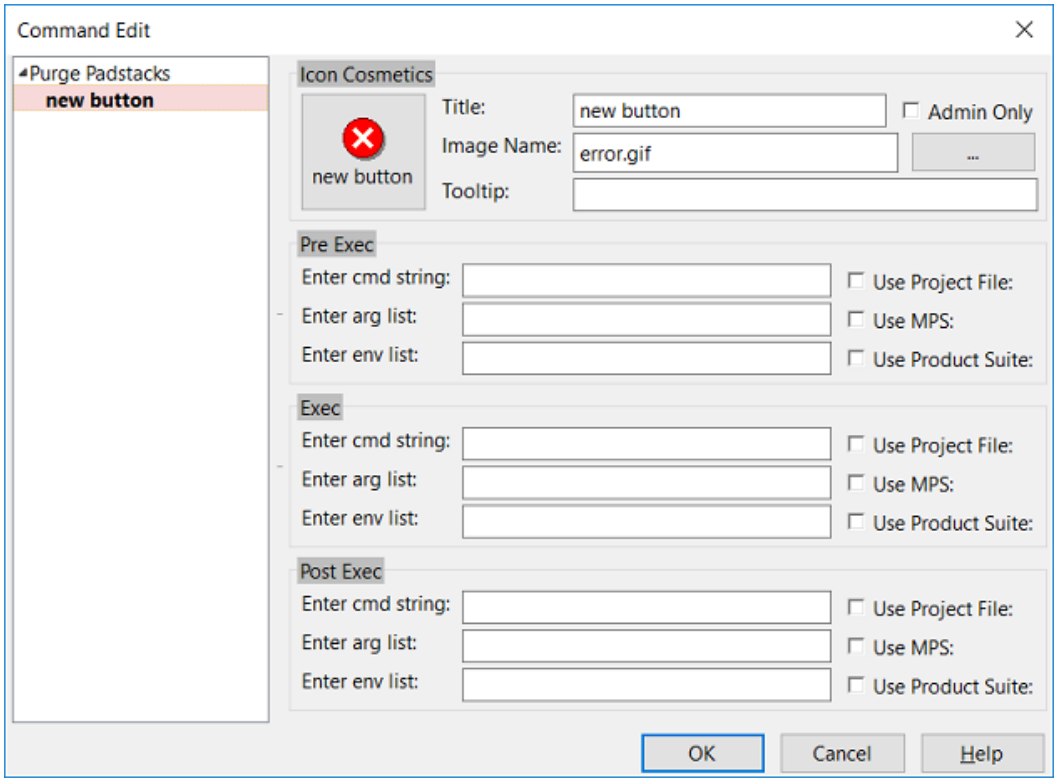
5. Right-click on *New Flow Step* and choose *Properties*.
The Command Edit dialog is displayed.



6. In the *Sub flow name* field, type `Purge Padstacks`.



7. Select *new button* in the left pane and modify the button properties.



   a. In the Title field, type a label for the button. For example, `Purge Padstacks`. The button label appears at the bottom of the button.

b. Do not select the *Admin Only* box. When this check box is selected, the button is only visible and accessible to flow administrators. Other users cannot view or work with such buttons.

c. Use the browse button to add a new image for the flow button. When the file browser opens, by default, it lists the images in the following icon directory:

`<ADW_CONF_ROOT>\<company\<site>\cdssetup\projmgr\flows\icons`

Button images can be `.gif`, `.png`, or `.jpeg` files. When you select an image from the icon directory, the flow file stores the image name (`image.gif`, for example), but does not store the full path name. Flow Manager requires you to save all such images only in the icon directory.

If you use the file browser to select an image from a directory other than the icon directory, Flow Manager copies these images to the icon directory so that all flow users can reference them.

d. Enter a helpful tool tip text for this button or menu option. The tool tip appears when you hover mouse over the button. For this sample exercise, add `Purge Unused Padstacks from Current Footprint Model`.

e. If required, define the programmatic behavior of the button. In this sample, add the following *cmd string* in the *Exec* step:

```
javascript:fm_purgePadstacks()
```

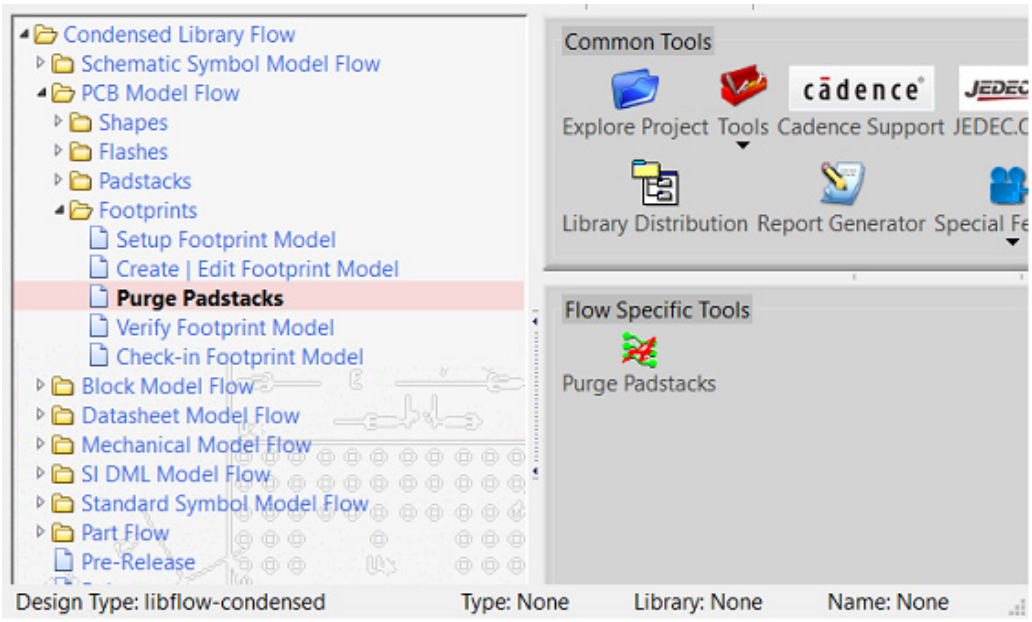
Programming, in Flow Manager terminology, refers to the actions you can add to a button event (such as click). These actions help you associate commands related to Allegro EDM features and utilities to a button. For details on adding programmatic behavior, see Defining Programmatic Behavior of Flow Manager Buttons and Menu Items.

f. If you want to add submenus to the flow button, right-click in the left pane of the Command Edit dialog box, and choose the *Add Menu Item* command. A menu option is added to the button. Define the programmatic behavior of this step.

For this example, do not add a submenu to the *Purge Padstacks* button.

8. Click *OK*.

The new step and button are added to the flow.



The following tables describe all the popup menu options for flow steps and buttons:

Table 3-1 Pop-up Menu Commands for Flow Steps

Command	Description
Copy	Copies the currently selected flow step (node) and all its associated buttons so that they can be pasted onto another node in the flow tree.
Paste	Inserts a copied flow step immediately above the selected flow step.
Delete	Deletes the currently selected flow step and its corresponding toolbar. **Note:** If you delete a hierarchical flow step (one that has subflow steps), the selected flow step and each of its subflow steps are also deleted.
Insert New	Inserts a new flow step above the currently selected flow step. It is initially named `New Flow Step` and has its own toolbar. The newly created toolbar contains a default button called *new button*. **Note:** Use the default values to customize and add new buttons to your new flow step. From this point, you can change the names of the flow step and default button, and can add new buttons.
Insert Subflow	Adds a sub-flow step to a flow step. If the selected flow step does not have any node and you add a sub-flow step, the flow step changes into a hierarchical flow step with the sub-flow step as its child node; and the corresponding default icon of the flow step changes to a folder icon. If you use this command on a flow step that is already hierarchical, another sub-flow step will be added under the selected flow step.
Move up	Causes the currently selected flow step to move up in the flow tree by swapping positions with the flow step immediately above it.
Move Down	Causes the currently selected flow step to move down in the flow tree by swapping positions with the flow step immediately below it.

Table 3-1 Pop-up Menu Commands for Flow Steps

Command	Description
Properties	Opens the Command Edit dialog box, which allows you to change the contents of the selected flow step. Using this dialog box, you can edit the name of the currently selected flow step, and the buttons and commands of the flow step.
Set Status - *<stage>*	Saves the status of the current stage of the flow. The possible statuses for a stage are: ■ Complete ■ Clear ■ Error ■ Info ■ Lock ■ In Progress ■ Skipped

Table 3-2 Pop-up Menu Commands to Change the Appearance and Programming of Flow Buttons

Command	Description
Copy	Copies all the information about the current button so you can paste it in the same flow. *Important* This command works within a single Allegro EDM flow and cannot be used across different flows.
Paste	After you copy a button, choose the *Paste* command to insert the copied button before the active button.
Move Forward	Causes the currently selected button to move to the left of the toolbar by swapping positions with its adjacent button.
Move Back	Causes the currently selected button to move to the right of the toolbar by swapping positions with its adjacent button.

Table 3-2 Pop-up Menu Commands to Change the Appearance and Programming of Flow Buttons

Command	Description
Delete	Deletes the currently selected flow button and all its menu items, if any.
Insert New	Creates a default button and inserts it before the currently selected button. **Note:** You can modify the new button using the *Properties* command to set the title, image, tool tip, and programming.
Properties	Opens the Command Edit dialog box that allows you to change button properties such as: ■ Button title, image, and tool tip text ■ Button menu and submenu options ■ Button and menu programming

Defining Programmatic Behavior of Flow Manager Buttons and Menu Items

In Flow Manager terminology, programmatic behavior refers to the actions you can add to a button event (such as click). These actions help you associate commands related to Allegro EDM features and utilities to a button.

Basic Programmatic Behavior for Flow Manager Buttons and Menu Items

In Flow Manager, each button or menu item corresponds to a command. A Flow Manager command can be as simple as a single program to launch, or can be complex, invoking several programs and using a combination of shell programs, environment variables, and so on to accomplish the job.

Each command can consist of three separate programs that run in a sequence of three steps:

1. pre-exec step
2. exec step
3. post-exec step

You can create a command consisting of a single step, two steps, or all three steps.

If the pre-exec step runs without any error, Flow Manager continues to the exec step. If the exec step runs correctly, Flow Manager continues to the post exec step. In other words, if any of the first two steps results in an error, the command stops at that step and does not proceed further.

Most EDM commands are launched via a `.bat` file wrapper. So, as an example, let us consider creating a custom button to launch a batch file on Windows.

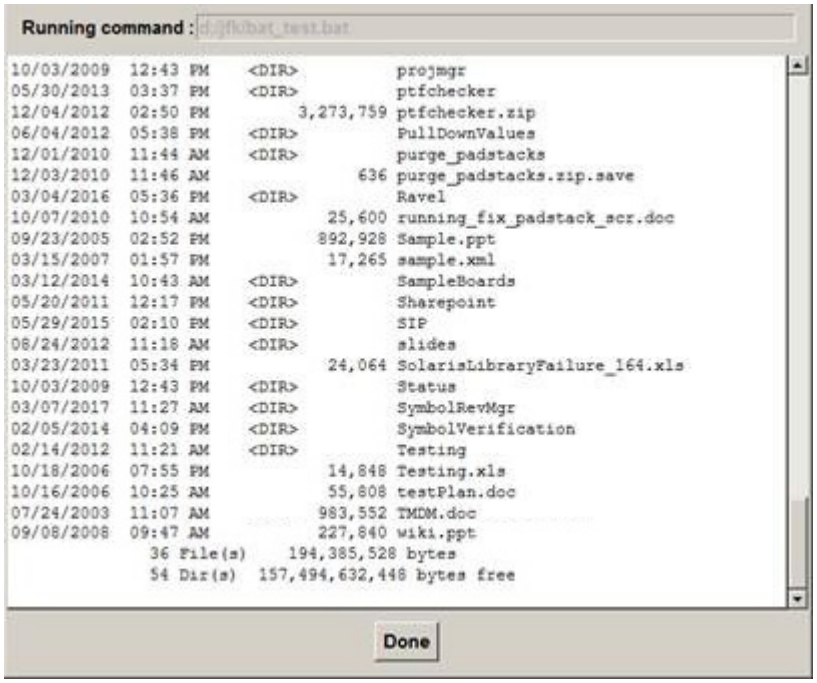
Do one of the following depending on what you want:

- To launch a batch file wrapper that does not require user input and does not generate any output, such as error messages or informational text, type *<batch filename with full path>*`.bat` in the `exec` step of the Flow Manager button.
- If your batch file will provide output and you want to view or capture the output, type `runexe` in the Allegro EDM console to view the arguments. For example, to view the contents of a directory, you will use the following command:

  ```
  runexe -absolute -cmd D:/somedir/bat_test.bat
  ```

  where `bat_test.bat` contains a single line of text: `dir`

  This launches the `runexe` user interface window where you can view the progress of the `.bat` file output.



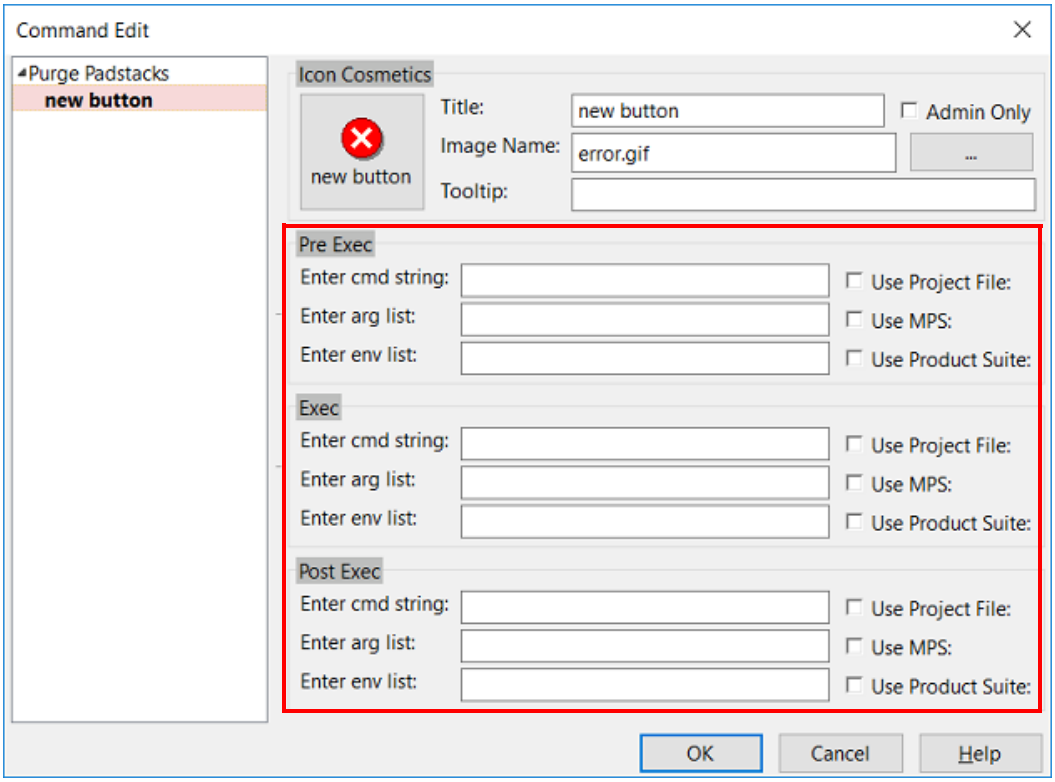
Note: This method is only for viewing or capturing the output. You cannot provide any inputs to the `.bat` file.

- If your `.bat` file prompts you for user input, add the following to the `exec` step of the Flow Manager button:

  ```
  start cmd /c <batch filename with full path>.bat
  ```

User Interface for Pre-Exec, Exec, and Post-Exec Steps

Using the Flow Manager user interface, you can define programmatic behavior for each step of a command - pre-exec, exec, and post-exec steps.



Field	Lets you
Enter cmd string	Specify the command to run when a step is performed.
Enter arg list	Specify any command line arguments to pass.

Field	Lets you
Enter env list	Specify environment variables to be set before running a step. The syntax for this field is `<name>=<value>;<name>=<value>...`
Use Project File	Select this check box to pass the `-proj <your_project>.cpm` string to the command. *Important* Many Cadence tools need to understand the context of the active project and should be launched using this setting to make sure they recognize the active project.
Use MPS	Select this check box to specify that the command accepts the `-mpssession` and `-mpshost` arguments in its command line. When you select this option, these arguments are passed to the command when it is launched. This is used when this command is enabled for Cadence Message Passing System (MPS). This means that the command is capable of communicating with other Cadence tools using MPS.
Use Product Suite	Select this check box to specify that the command accepts the `-product` argument in its command line. When you select this option, the `-product <suite-name>` argument is passed on to the command with the currently selected product in Flow Manager.

Advanced Programmatic Behavior for Flow Manager Buttons and Menu Items

The command string and the argument list strings can be simple strings to run, but they can include complex commands, with special keywords and syntax to enhance the capabilities of the command. There are special capabilities built into Flow Manager as it processes each command string. This section explains the following special capabilities:

- Special Commands
- Embedded Shell Commands
- Accessing Environment Variables

- Accessing CPM File Contents
- Accessing Allegro PCB Editor Board File
- Accessing JavaScript and Java Functions

Special Commands

A set of special commands can be used in a command string. The following table lists these commands.

Table 3-3 Special Commands

Command	Description
cd	If a command string starts with `cd`, Flow Manager changes the current working directory to the directory specified in the command string. This remains the current working directory for the duration of the pre-exec, exec, and post-exec steps. When the command is completed, the working directory restores to the initial state before the command was run. For example, to run a command from the physical directory of a project, you can use the following pre-exec command string: `cd <ATDM_PROJECT_DIR>/worklib/ $CPM.global.design_name/physical`
http	If a command starts with `http`, Flow Manager assumes that you are specifying a Web address (URL) to open in a new browser window. Flow Manager opens that Web page in a new Web browser window. *Caution* ***Instead of closing the new Web browser window, if you choose to exit, all windows close (including the Flow Manager window).***

Embedded Shell Commands

You can also embed shell commands into the command and argument strings. Flow Manager recognizes shell commands, runs them, and substitutes the command results with the command or argument string. Shell commands are delimited by back quotes, as in `` `pwd` ``. Here is an example to explain this:

Sample Command

```
openfile -type text worklib/`find_project -findname`/physical/placement.txt
```

Actions Performed

1. `find_project -findname` resolves as shell command to your current design, for example *myDesign*.
2. The command string is changed to: `openfile -type text worklib/myDesign/physical/placement.txt`
3. The command is run.

Accessing Environment Variables

You can embed environment variables into command strings and argument strings. Flow Manager recognizes the environment variable within the command string if it matches the `$varname` syntax. When the environment variable syntax is found, Flow Manager finds the value of the environment variable and inserts it into the command or argument string. Here is an example:

Sample Command

```
cd ${HOME}
```

Actions Performed

1. `$HOME` is resolved from the environment variable that points to the user's home directory. For example: `D:\homedir`
2. The command string is changed to: `cd D:\homedir`
3. The command is run.

Accessing CPM File Contents

Many of the Cadence project settings are stored in the project file. You can access settings from the project file using a special `$CPM` environment variable available within Flow Manager. When Flow Manager detects an environment variable within the command string, it checks to see whether the environment variable matches the format:

`${CPM.<programName>.<directive>}`

If the CPM environment variable matches the syntax, Flow Manager reads the CPM file and locates the value for that *<programName>* and *<directive>*. The resulting value is then inserted into the command string before the command is run. Here is an example:

Sample Command

```
Openfile -type text worklib/${CPM.global.design_name}/bom/bom.log
```

Actions Performed

1. `{CPM.global.design_name}` is resolved as special CPM environment variable to `myDesign`.
2. The command string is changed to: `Openfile -type text worklib/myDesign/bom/bom.log`
3. The command is run.

Accessing Allegro PCB Editor Board File

Flow Manager provides a special environment variable that you can use to access the last opened PCB Editor board filename. If you add the keyword `$ALLEGRO_BRD_NAME` within the cmd string or arg list, Flow Manager substitutes the PCB Editor board name for that variable before running that command. Here is an example:

Sample Command

```
Report -v pcp ${ALLEGRO_BRD_NAME} placement.txt
```

Actions Performed

1. `${ALLEGRO_BRD_NAME}` is resolved as a special environment variable in `myBoard.brd`.
2. The command string is changed to: `Report -v pcp myBoard.brd placement.txt`
3. The command is run.

Accessing JavaScript and Java Functions

Flow Manager can run JavaScript code and JavaScript functions embedded in command strings. This section explains the following topics:

- JavaScript Prefix
- The eval() Function
- Creating JavaScript Functions

JavaScript Prefix

If a command string starts with `javascript:`, Flow Manager treats the remainder of the string as JavaScript code to be run. For example, if you associate the following command string with a button:

```
javascript: alert('Hello World!');
```

when you click the button, the Hello World! alert appears.

Important

Usually, this command string contains the name of a tool to be launched. When you use the `javascript:` prefix, Flow Manager runs the rest of the string as Javascript instead of launching a Flow Manager command. This is very useful for customizing Flow Manager buttons.

The eval() Function

To embed JavaScript into a command so that it is evaluated and then inserted into the command string, you can use the `eval()` function. If the eval function appears in the command string, the code between the parentheses is evaluated as JavaScript and the results are placed into the string for Flow Manager to run.

For example, to run `report.exe` on Windows, but report results on all other platforms, use the following command string:

```
eval(var s = "report"; if (getPlatform() == "win") { s = "report.exe"
}; s)
```

In this example, the code between the parentheses will return either `report` or `report.exe`. That string is inserted into the command string and run.

Note: The `getPlatform()` function is an internal function of Flow Manager.

Creating JavaScript Functions

It is also possible to create your own JavaScript functions and invoke them from Flow Manager by doing the following:

1. Create a JavaScript file (with `.js` extension) in the following directory:

   *<ADW_CONF_ROOT>**<company>**<site>*\cdssetup\projmgr\flows\UserFunctions

2. Add your JavaScript functions to this file.

   Each time Flow Manager starts, it reads all `.js` files from the directory. All JavaScript functions then are accessible to Flow Manager and can be used in a command string.

   Note: You must restart Flow Manager before functions in those `*.js` files are read.

3. After you restart Flow Manager, program one of your flow buttons to call your function; and edit the command string to use the `javascript:` prefix followed by the function name.

For example, to create your own JavaScript function called `myNewFunction()`, do the following:

1. Browse to the `UserFunctions` directory.
2. Create a file (`myFunctions.js`).
3. In the `myFunctions.js` file, create a function, `myNewFunction()`, which is:

   ```
   function myNewFunction() {
   var platformName = getPlatform();
   alert(" this computer is running " + platformName);
   }
   ```

4. Edit one of your flow buttons and change the command string to:

   ```
   javascript: myNewFunction();
   ```

5. Restart Flow Manager, and click the button.

   The new function runs, and an alert appears about the platform you are on.

Controlling Access to Specific Steps of a Library or Design Flow

Your company may want to limit control or access to certain steps in a flow based on the role defined or configured for a designer. For example, your company might not want a layout designer to access the schematic design creation step.

To limit access based on the role of a designer, the flow administrator will need to do the following:

1. Open the `flowmanager.properties` file from:

   `<ADW_CONF_ROOT>\<company>\<site>\cdssetup\projmgr\flows`

2. Modify the following commented-out section:

   ```
   ## roles = pcb, pcb_mgr, schematic, schematic_mgr

   ## roles.pcb_mgr = pcbmgrlogin

   ## roles.pcb = pcblogin1, pcblogin2

   ## roles.schematic = englogin1, englogin2

   ## roles.schematic_mgr = engmgrlogin
   ```

   These roles are just examples. You can define any role you want. For example, a schematic designer role can be defined as `sch_manager`, `schematic_mgr`, `schematic_mgr`, and so on.

3. Define the users against each role. For example:

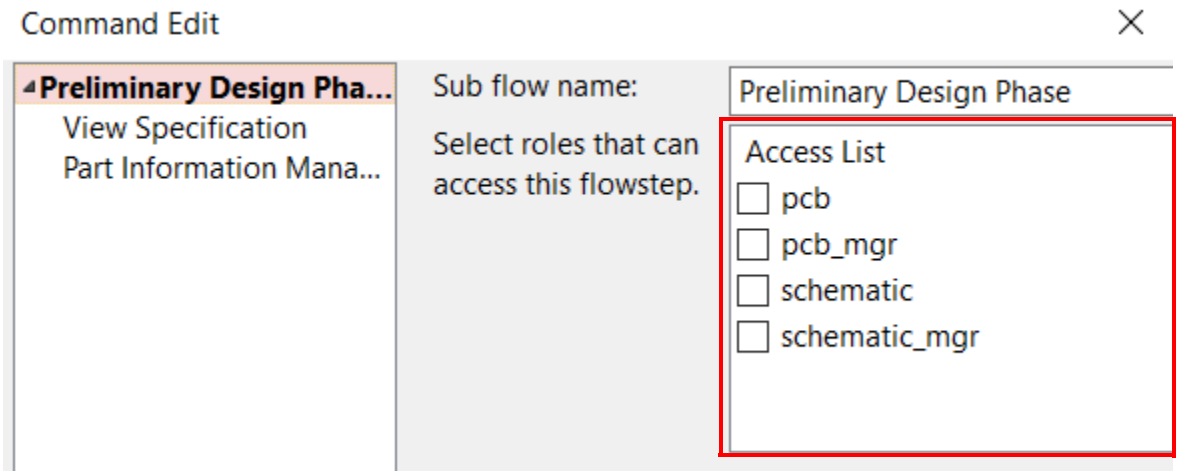
   ```
   roles.pcb = johndoe, janedoe

   roles.pcb_mgr = johnsmith

   roles.schematic = johnroe

   roles.schematic_mgr = janesmith
   ```

4. Save the `flowmanager.properties` file.
5. Launch Flow Manager.
6. Open the project in which you want to limit access to certain steps in a flow for your logical and layout designers.
7. Right-click the flow step for which you want to define access.

8. Choose *Properties*.

   The Command Edit dialog box opens.

9. Define who can perform this flow step by selecting a role from the *Access List* section and click *OK*.



10. Choose *Admin – Save Flow File*.

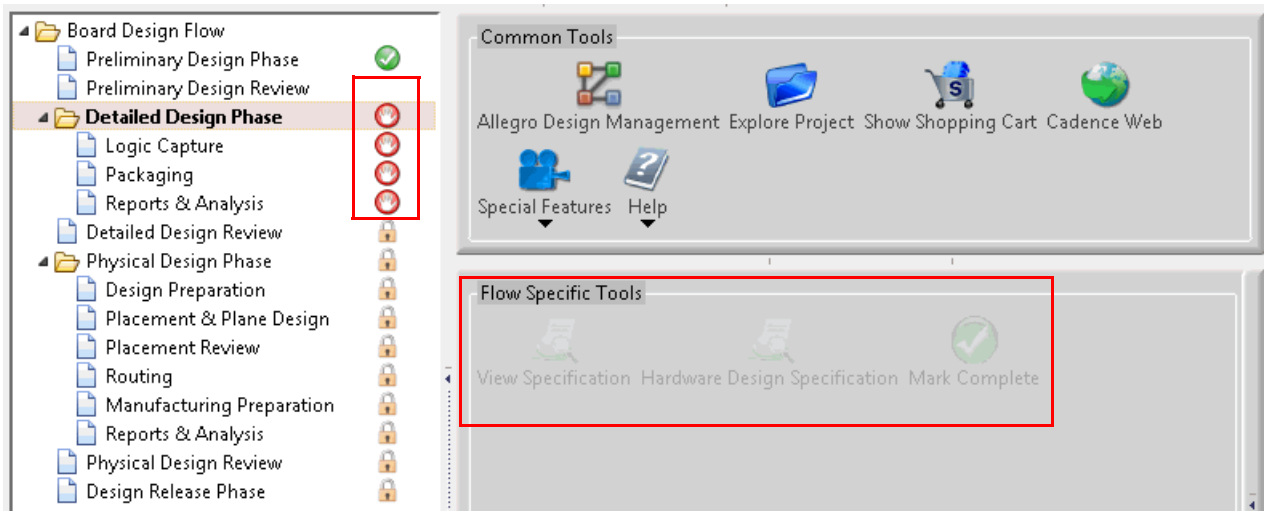
    A message appears to indicate that the flow file has been saved.

11. Click *OK*.

Important

Any project that using this flow (RDF) file will inherit the access control defined in this flow file.

From this point, in a flow step to which you do not have access, you will see a hand icon and the Flow Specific Tools pane will be disabled.



Publishing Flows

After you create new flows, either from the beginning or from another flow, the next step is to attach these flows to your projects and to make them accessible to your team.

When you associate this flow file to a custom project workspace, it will be this flow file that will be used when you create a new project using the custom project workspace.

This section explains how to link flow files to the Allegro EDM projects. Each Allegro EDM project has a flow associated with it. This information is specified in the *<project_workspace_directory\<project_folder>\<project>*.cpm file, in the following manner:

```
START_DESIGN_FLOWS

flow6 'ABCD Flow' 'chrome://flowmgr/content/
flowmgr.xul?file=ABCD_Flow.rdf'

END_DESIGN_FLOWS

START_PROJECTMGR

LastFlow 'ABCD Flow'

END_PROJECTMGR
```

The `LastFlow` entry is set automatically when a different flow file (RDF file) is opened within a project using the *Admin – Open Flow File* command.

The `<project>.cpm` file is created when you create a new Allegro EDM project using a custom project workspace.

The project workspace template (`@project@.cpm`) is created when you create a new project workspace using the `createflow` utility.

In our example, the title, `ABCD Flow`, is used to identify the new flow file. This title must match one of the flow entries in the `START_DESIGN_FLOWS` section of the `site.cpm` file. The `site.cpm` file is available at the location:

*<ADW_CONF_ROOT>**<company>**<site>*\cdssetup\projmgr

The `site.cpm` file has entries similar to the following:

```
START_DESIGN_FLOWS
```

```
flow3 'Library Import' '$CDS_SITE/cdssetup/projmgr/flows/
libimportflow.htm'

flow102 'Board Design Flow' 'chrome://flowmgr/content/
flowmgr.xul?file=ADWDesignFlow.rdf'

flow103 'Reference Board Design Flow' 'chrome://flowmgr/content/
flowmgr.xul?file=ADWDesignRefFlow.rdf'

flow104 'Library Flow' 'chrome://flowmgr/content/
flowmgr.xul?file=ADWLibraryFlow.rdf'

flow105 'High Speed Board Design Flow' 'chrome://flowmgr/content/
flowmgr.xul?file=ADWHighSpeedFlow.rdf'

flow106 'Block Library Flow' 'chrome://flowmgr/content/
flowmgr.xul?file=ADWBlockFlow.rdf'

flow107 'Block Design Flow' 'chrome://flowmgr/content/
flowmgr.xul?file=ADWBlockDesign.rdf'

flow108 'System Design Flow' 'chrome://flowmgr/content/
flowmgr.xul?file=ADWSystemDesignFlow.rdf'

flow109 'Generic custom flow' 'chrome://flowmgr/content/
flowmgr.xul?file=ADWGenericFlow.rdf'

END_DESIGN_FLOWS
```

To enable the designers to use this new flow `ABCD Flow`, move the flow definition from the `START_DESIGN_FLOWS` section of your *<project>*`.cpm` file and to the `START_DESIGN_FLOWS` section of the `site.cpm` file.

In our example, move the entry `flow6 'ABCD Flow' 'chrome://flowmgr/content/flowmgr.xul?file=ABCD_Flow.rdf'` to the `site.cpm` file.

Flow Manager reads the `LastFlow` entry in the *<project>*`.cpm` file, and then finds the corresponding entry in the `site.cpm` file. Once a match is found, Flow Manager (operating inside a Firefox Web browser) attempts to open the URL associated with that flow entry. In our example, the title, `ABCD Flow` matches with the following URL and it is opened:

```
chrome://flowmgr/content/flowmgr.xul?file=ABCD_Flow.rdf
```

This URL contains two parts:

- Chrome address: This part invokes Flow Manager. In our example, it is: `chrome://flowmgr/content/flowmgr.xul`

- File argument: This part helps Flow Manager decide which flow file to use. In our example, it is: `file=ABCD_Flow.rdf`

  Flow Manager searches for the RDF file specified at the location *<ADW_CONF_ROOT>*`\`*<company>*`\`*<site>*`\cdssetup\projmgr\flows`. After the file is located, Flow Manager reads that it to render the buttons, images, flow steps and commands that make up the flow.

Deploying Flows

Once you have published the new flow file by moving the flow definition from the `START_DESIGN_FLOWS` section of your *<project>*`.cpm` file and to the `START_DESIGN_FLOWS` section of the `site.cpm` file, you can start using this flow.

To enable the launch of new flow automatically, do the following:

1. To specify this flow as the default flow for a custom project workspace, edit the project workspace template, `@project@.cpm` that is used for creating new designs.

   Navigate to the location:
   <adw_conf_root>`\`*<company>*`\`*<site>*`\cdssetup\pcbdw\workspaces\<custom_flow_name>_ws\15.5\archindep\<custom_flow_name>\common\1.0`

It is recommended not to modify the default template file (@project@.cpm) in the installation directory. You must create a new project workspace using the createflow command and then deploy this newly created flow file in the new project workspace.

2. To enable the launch of new flow automatically, edit the `@project@.cpm` file by:

   a. Locating the following section:

   ```
   START_PROJECTMGR

   LastFlow 'Board Design Flow'

   END_PROJECTMGR
   ```

   b. Replacing the `LastFlow` value with the flow file you created.

   In our example, the edited section will be:

   ```
   START_PROJECTMGR

   LastFlow 'ABCD Flow'

   END_PROJECTMGR
   ```

Now when you will create any project using the custom project workspace, it will use the new flow, `ABCD Flow`.

4

Tracking and Controlling Design and Library Tasks

As a flow administrator, you may need to modify existing flows or create new flows. In either case, you must understand how to save your work into a flow file and how to make your flow available to other users.

By providing design steps in a certain, sequential order, Flow Manager helps logical and PCB designers to go through a task, such as designing a block, packaging a design, reviewing a board, and so on. When you, as a designer, launch an application such as PCB Editor or Database Editor, you may need to complete many tasks within it.

To help designers complete their tasks, Flow Manager provides flow administrators various options. For example, as a flow administrator, you can define checklists and stage statuses, define flow-step-based control to some steps, and role-based access.

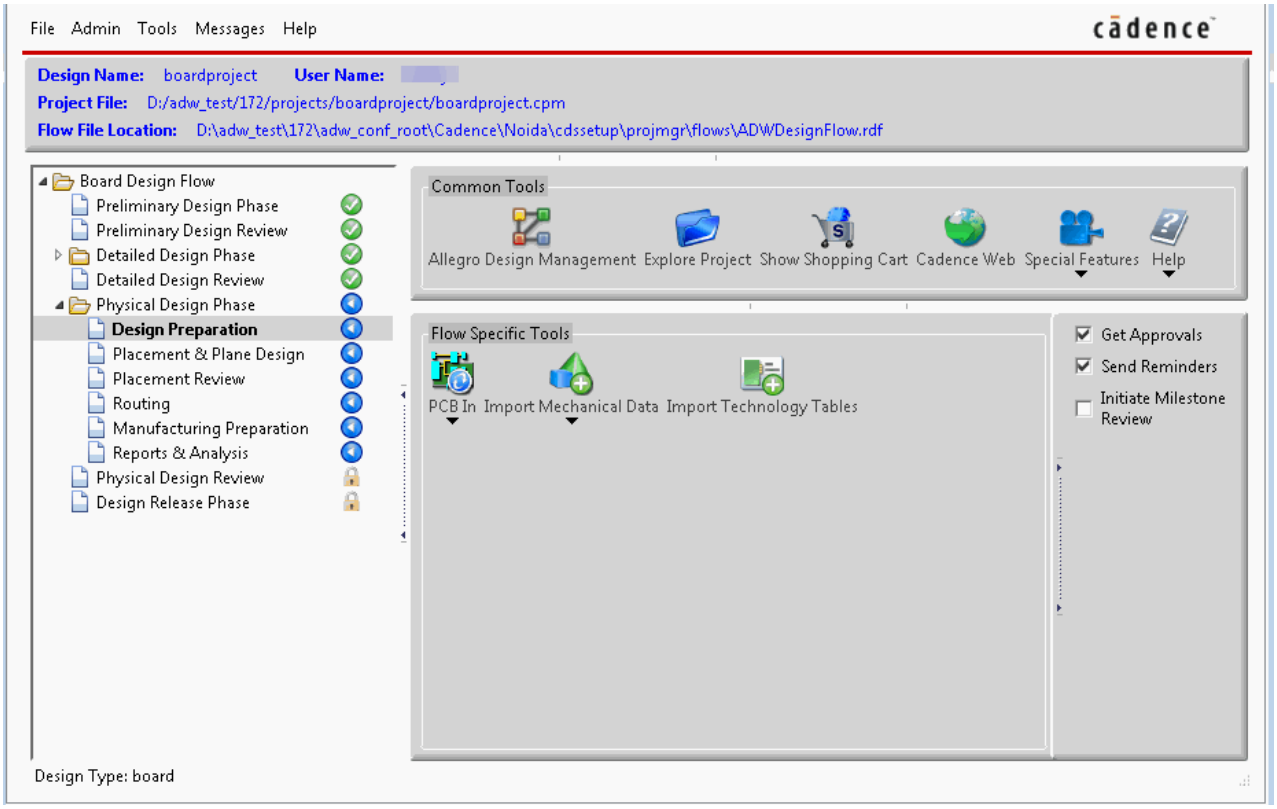
These features are turned off by default by commenting out certain entries in the `flowmanager.properties` file.

If you want to enable any of these features, uncomment the required entry in the Flow Manager properties file. Ensure that you have the latest `flowmanager.properties` file in your installation.

Using Checklists to Track Design and Library Tasks

To track design and library tasks, as a flow administrator, you can add a checklist in Flow Manager, which can provide detailed guidance to designers at any given step of a flow. It also provides a means to track what has been completed for any given flow step.

Each flow step can have its own checklist. As you reach a flow step, its checklist appears.



The administrator creates the checklists and then saves them in the workspace (or project template) folder. The status of each checklist item is saved, and is available every time Flow Manager is launched next. For details on the use model, see Checklists Use Model.

The date and time of any checklist status is recorded in the project log file.Like with the flow steps, these checklist items are tracked and recorded.

The administrator creates a set of checklists for a given project workspace type and this is saved in the *<Allegro EDM_project_directory>**<project_folder>*\atdmdir folder as checklist.xml. After completing the checklist creation, you as an administrator need to copy the checklist.xml file to a project template (also called workspace) folder. Thus, any project subsequently created using this project template inherits the set of checklists from that XML file. Once inherited at project creation time, the regular user (not the administrator) would be able to set or clear the checklists items but will not be able to modify them.

Checklists Use Model

Here is how checklists are implemented:

1. Start Flow Manager.

   If you do not have administrator rights, you will not be able to see the *Admin* menu. See the Defining a Flow Administrator in Allegro EDM Flow Manager section to learn how to get Allegro EDM administrator rights.

2. Reviews each flow step and create corresponding checklists.

3. Copy the `checklist.xml` from the local project's `atdmdir` folder into project workspace `atdmdir` folder.

   For example:

   The `checklist.xml` file is located at `<project_folder>\atdmdir\checklist.xml`.

   Copy this checklist file to a workspace template available in the `atdmdir` folder within a workspace, such as:

   <adw_conf_root>`\`*<company>*`\`*<site>*`\cdssetup\pcbdw\workspaces\<workspace_name>_ws\15.5\archindep\<workspace_name>\common\1.0\atdmdir`

   When you create a new project using this project workspace, an empty checklist file is propagated to this project.

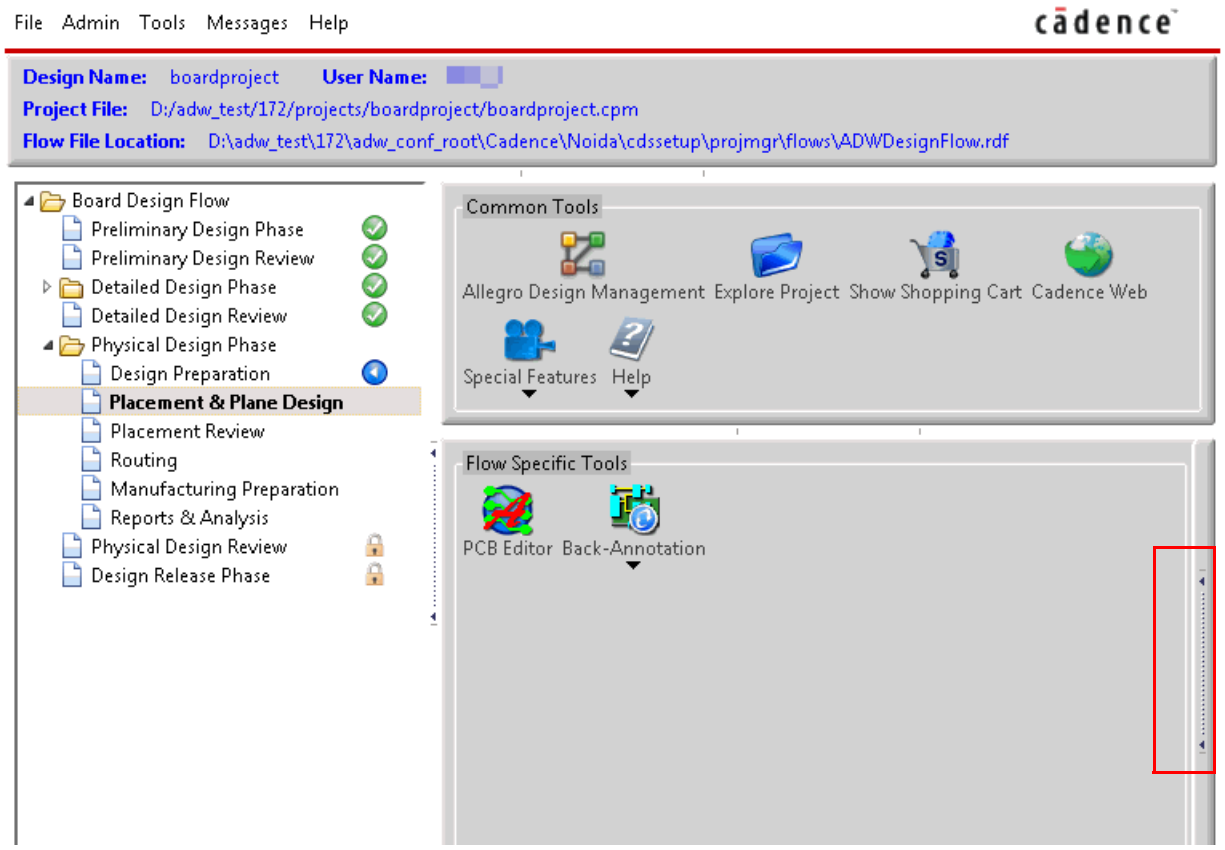
Note: Users (and not administrators) of this new project can see the checklists and can select or clear checklist items but cannot modify them.

Creating and Editing a Checklist

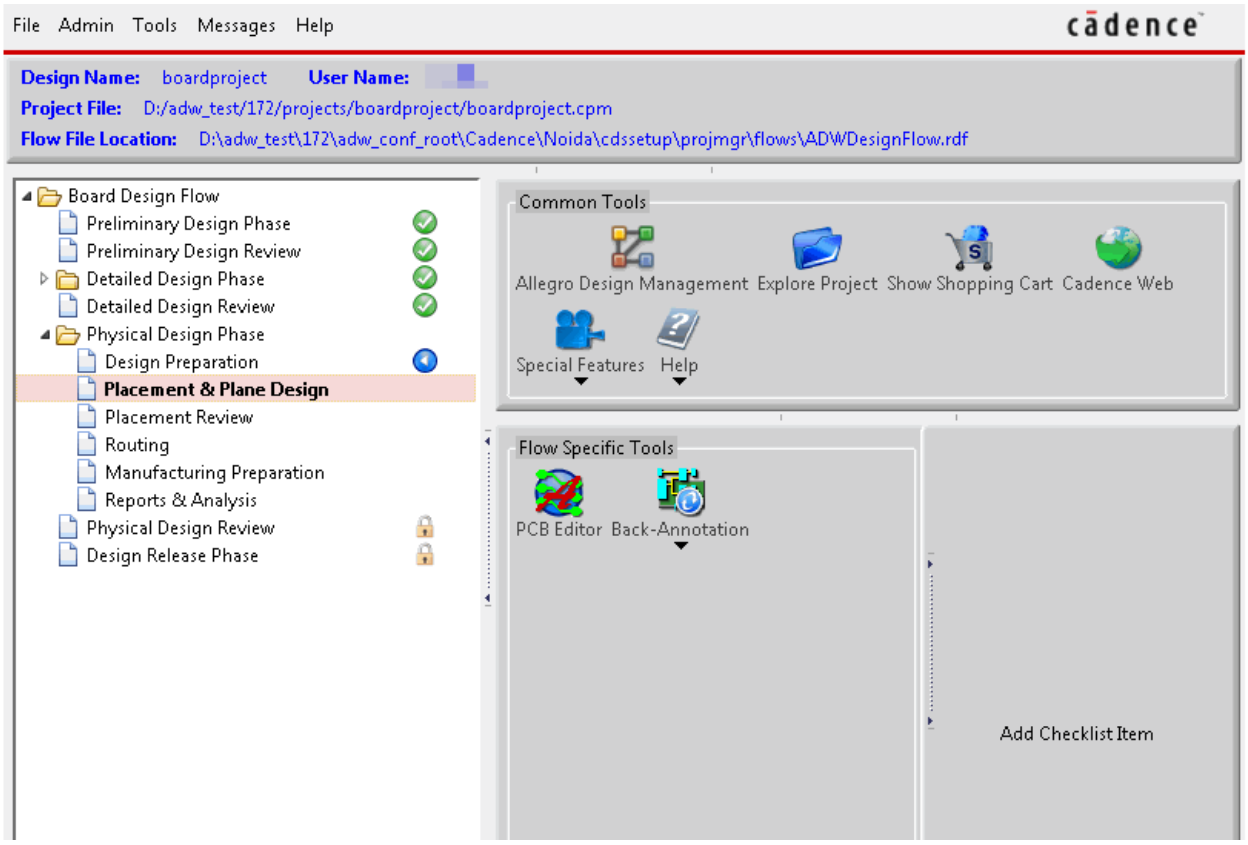
To create or edit a checklist, do the following:

1. Navigate to the flow step.

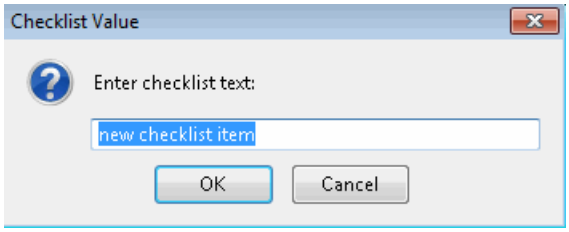
2. Extend the lower-right border of the Flow Specific Tools pane to see the checklist panel.



3. Right-click and choose *Add Checklist Item*.



4. Specify a value.



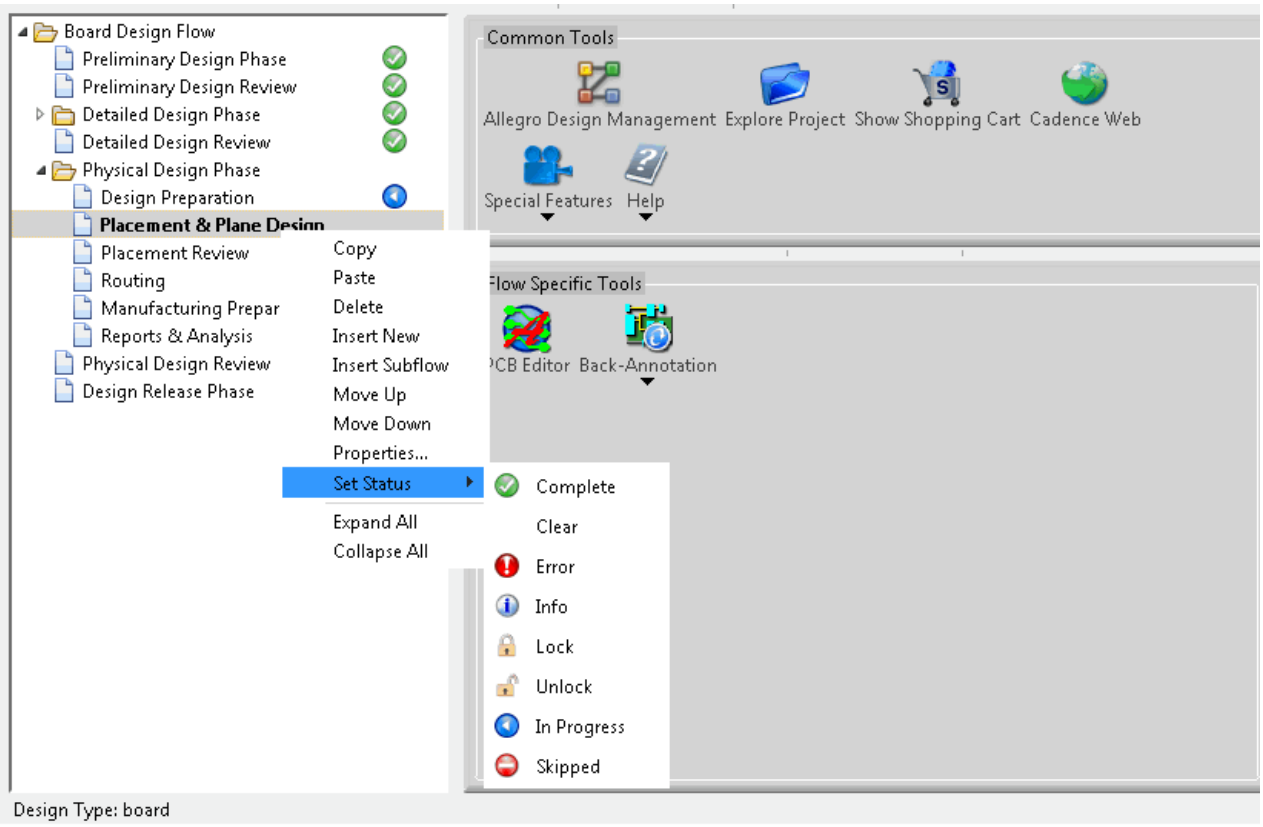
5. For example, specify the value as Click *OK*.
6. Repeat for all the flow steps that need checklists.

Defining Status for a Design or Library Task

You can indicate the progress through a project's flow by setting a status on each flow step. Right-click any flow step and choose *Set Status*.

The status settings can include:

- Complete
- Clear
- Error
- Info
- Lock
- Unlock
- In Progress
- Skipped



Important

These statuses are for information only. However, the Lock status for a flow step means that you cannot work on that step. To learn more about the Lock state see, Locking a Flow Step.

The available flow-step statuses are controlled by the `flowmanager.properties` file. If you have the administrator rights, you may have access to one set of statuses, and a non-administrator user can have access to an entirely different set. For information on setting up status choices for each type of user, see Setting up Values for Flow-Step Status.

Setting up Values for Flow-Step Status

The flow-step status choices are defined in the `flowmanager.properties` file that is available at:

*<adw_conf_root>**<company>**<site>*\cdssetup\projmgr\flows

To set up different flow-step status choice for a user with Allegro EDM administrator rights, use the following syntax:

```
flowstepstates.admin = complete incomplete error info lock unlock active skipped
```

To set up different flow-step status choice for a user without Allegro EDM administrator rights, use the following syntax:

```
flowstepstates.user = complete incomplete error info active
```

Note: A subset of the above may be used, but you cannot add any new entry to the given set of flow states for each type of user.

Features of Flow-Step Status

The status associated with a flow step has the following properties:

- States of flow steps are saved in the `atdm.ini` file of the respective project.
- Setting a state for a step cascades down to all its subtasks (from parents to children).

For example, a state of Complete is inherited by all the tasks in a flow step as shown in the following figure.

- When all substeps in a task (children) are set to a state, for example Complete, the task (parent) automatically gets marked as Complete.
- Both administrators and non-admin users can set the state of flow steps.

  Property file specifies which states can be used. See the Setting up Values for Flow-Step Status section for details of this file and how to use it.

Associating Checklist and Flow-Step Status

1. To associate the status of checklist items with the status of a flow step, activate the following entries in the `flowmanager.properties` file and save it:

   ```
   checklist.display = true

   checklist.set_flowstate = true
   ```

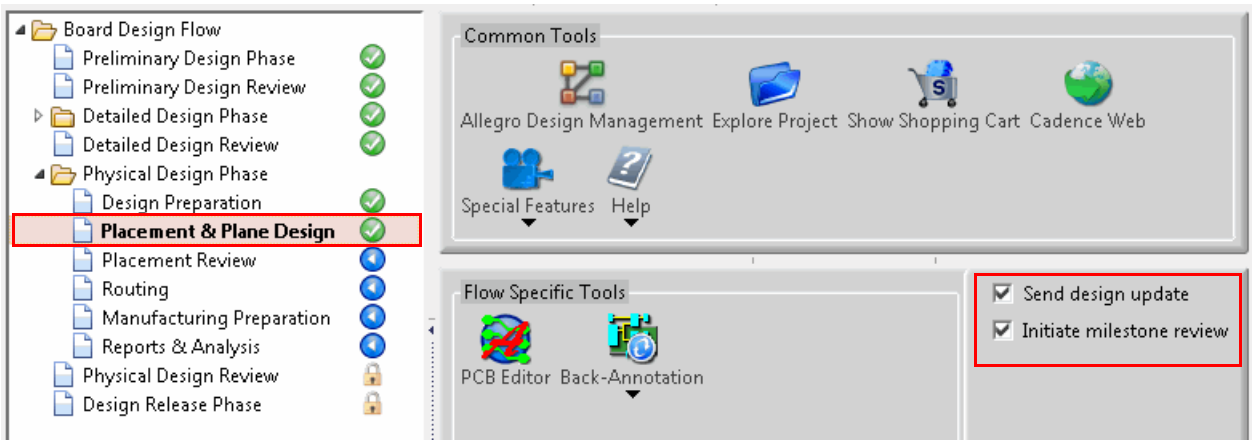
   These entries will allow the flow step to be marked complete when you select all the checklist items for a flow step.

   ```
   checklist.order_dependent = true
   ```

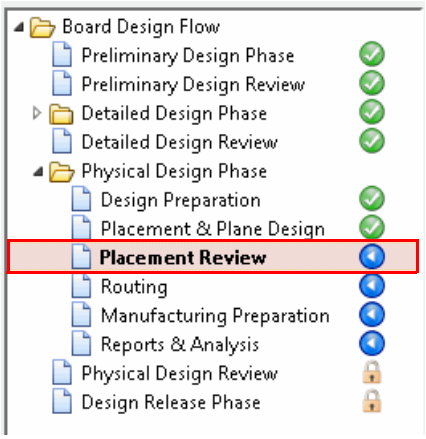
   If you clear a checklist item before the last item, this entry clears all the checklist items following it.

2. Launch Flow Manager.
3. Open the required project.
4. After you select all the checklist items for a flow step, that is complete the checklist for that flow step:

a. the status of that step is automatically set to Complete.



b. the control shifts to the next flow step.

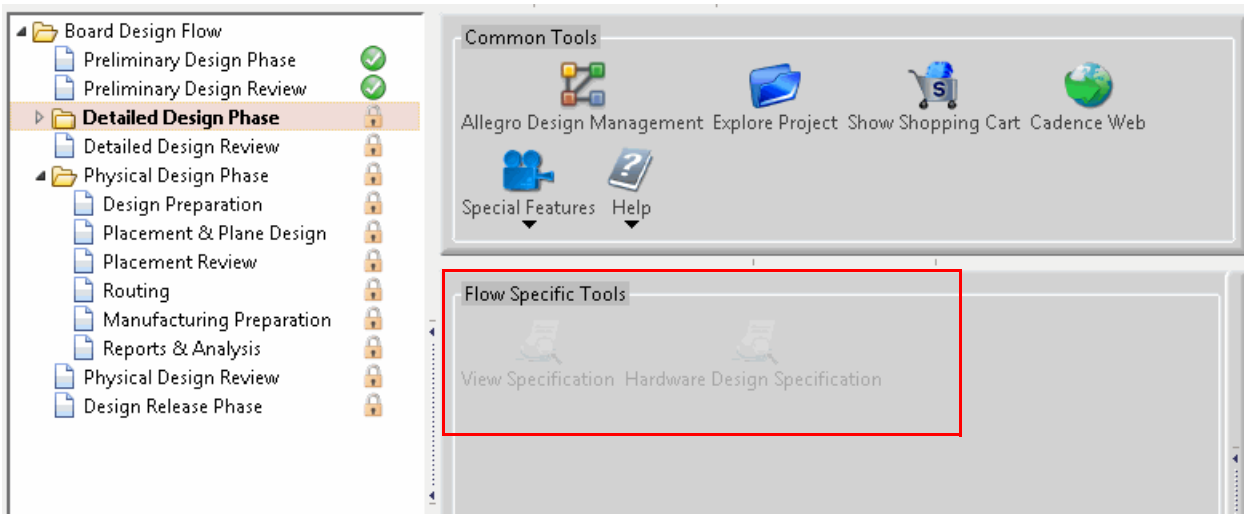


If you clear a checklist item, the items following that item are also cleared and the flow step status is changed to In Progress.

Locking a Flow Step

A design project consists of a set of steps to be performed in a sequential manner. To ensure that you follow the sequence, the flow steps are locked and get unlocked when a particular flow step is marked complete. In order to limit your access to the design phase that you are currently working on, the administrator locks the remaining steps.

The Lock status disables the flow step as shown in the following figure.



Activating Lock Status Feature

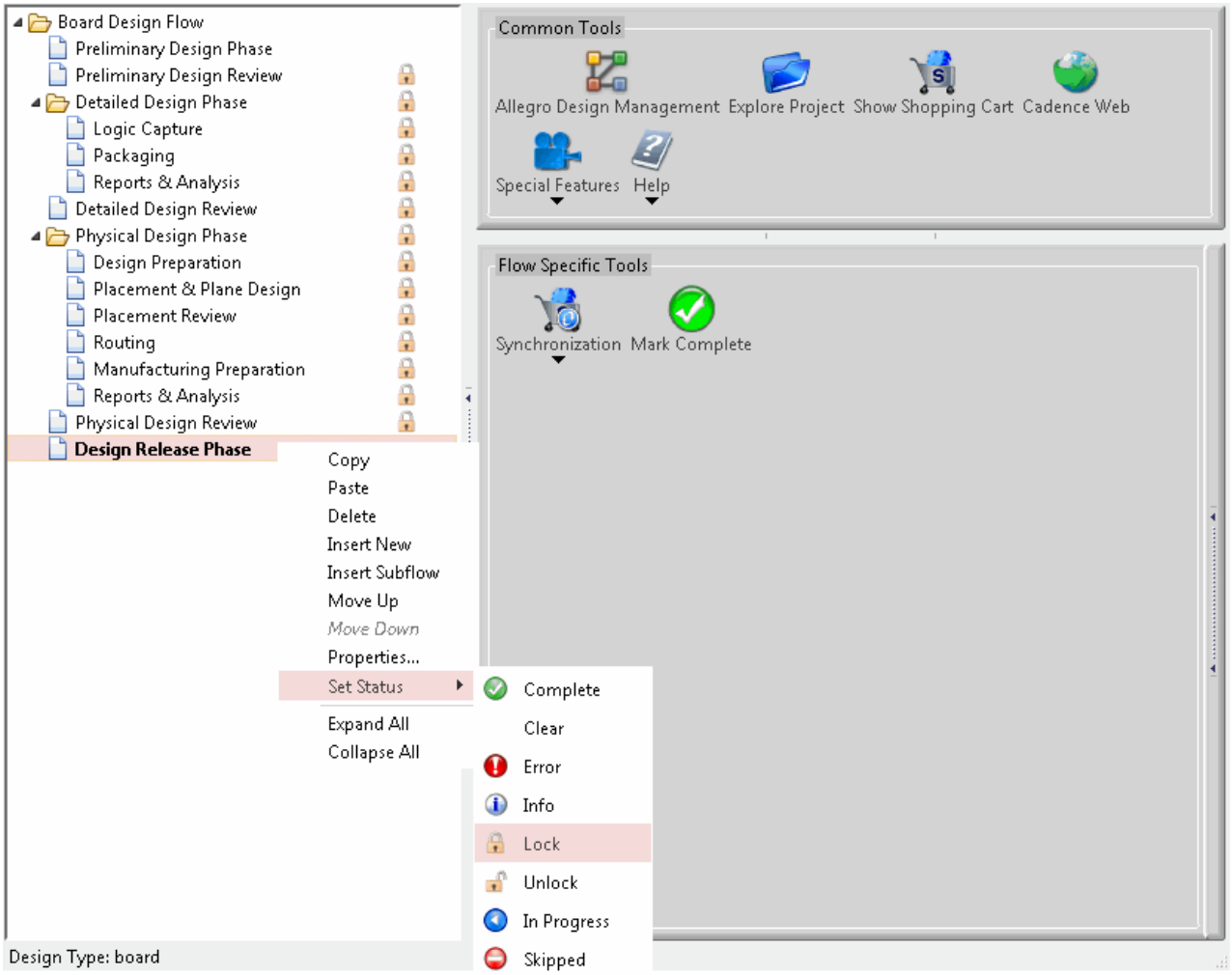
In a design project, to be able to limit control or access to a flow step based on the progress of the design flow, you need to activate the Lock feature. As an administrator you need to perform the following steps to use this feature:

1. Activate the following entries in the `flowmanager.properties` file and save it:

   ```
   flowstepstates.complete_in_specific_tb = true

   flowstepstates.auto_inprogress = true

   flowstepstates.auto_advance = true
   ```

2. Launch Flow Manager.
3. Open a design project.

4. Set the status as *Lock* for all the flow steps except the first one.



5. Open the `atdm.ini` file from *`<Allegro EDM_project_directory>`*`\`*`<design_project>`*`\atdmdir`.

6. Copy the `flowlocks` section from this file and paste in the `atdm.ini` file available at *`<adw_conf_root>`*`\`*`<company>`*`\`*`<site>`*`\cdssetup\pcbdw\workspaces\<workspace_name>_ws\15.5\archindep\<design_workspace_name>\common\1.0\atdmdir`

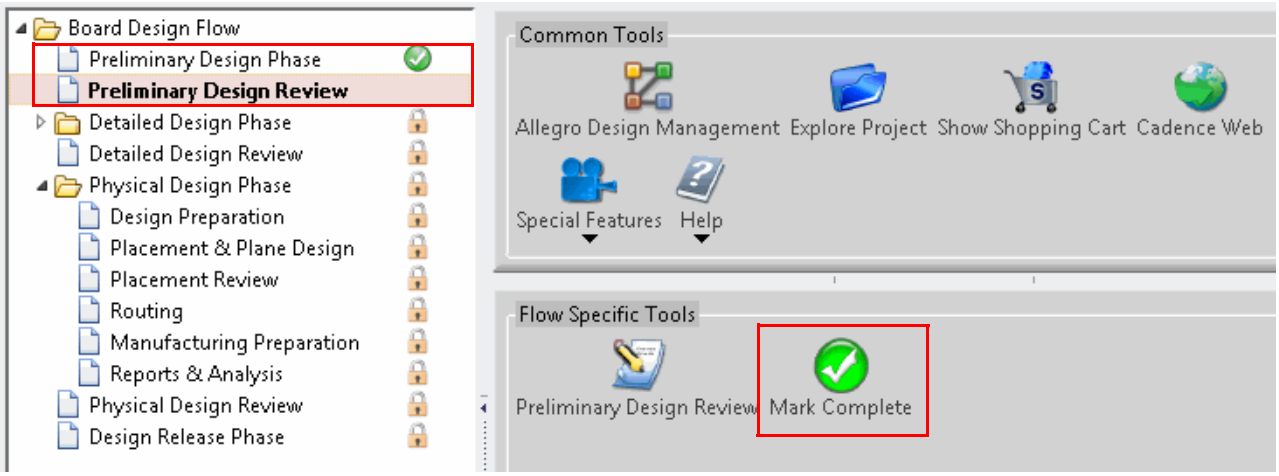
7. Save the `atdm.ini` file of the design workspace template.

   Now, each new design project will inherit the Lock status as defined in the `atdm.ini` file at the workspace level.

Using Lock Status Feature

1. Complete the flow step that is unlocked.
2. Click the *Mark Complete* icon in the Flow Specific Tools pane.

   Alternatively, if you have added a checklist corresponding to this step, completing the checklist will automatically change the status of the flow step to Complete.
3. The status of the flow step is set to complete and the following step gets unlocked.



Saving Profile Information

By default, the profile information for a Flow Manager session is saved at the following location:

<user_profile_directory>\.adw_firefox_profile

If you need to save this profile information at any other location, then specify the new location using an environment variable, ADW_FLOWMGR_PROFILE_DIR in the *<startworkbench>* file.

Comparing Flow Files

You may need to customize the out-of-the-box flows to meet your business needs. With a new release or an ISR, new buttons or flow steps are added to the existing flows. Unless you can analyze and compare your customized flow file against the newly released Cadence-provided flow files, you may not see the new button or flow steps.

As you deploy new features (some of which may be optional), you need entries in the flowmanager.properties file to enable them. Because the contents of the flowmanager.properties may have been changed with an ISR or new release, ensure that you update this file in your installation. New or updated features for Flow Manager (checklists and stage status) might not be available if this file is not the latest.

Here is one way to compare two flows, say flow1.rdf with flow2.rdf. To compare the two files, do the following:

1. Open the first flow file, which is flow1.rdf in our example.
2. Choose *Admin - Export Flow to XML*.
3. Specify the XML file to create. For example, flow1.xml.
4. Open the second flow file, for example flow2.rdf
5. Choose *Admin - Export Flow to XML*.
6. Specify the XML file to create. For example, flow2.xml.
7. Compare the two XML files, with any file comparison utility, such as windiff or winmerge.

Important

There is currently no way to merge XML files and import them back into Allegro EDM. You need to merge them manually.

A

Flow Manager User Interface

Overview

This chapter details the following interface components of Allegro EDM Flow Manager.

- Dialog Box Help

Dialog Box Help

Allegro EDM Find Project Wizard

Interface Control	Lets you
Location field	Specify a path where you can search for Allegro EDM projects.
Browse	Browse for a path to search for Allegro EDM projects.
Next	Go to the next step in the Wizard.
Back	Go to the previous step in the Wizard.
Cancel	Closes the Find Project Wizard.

Command Edit Dialog Box

Field	Lets you
Title	Allows you to enter a label for your button. The label appears at the bottom of the button.
Admin Only	If you select this check box, your button will only be visible and accessible to flow administrators. Ordinary users will not be able to see or work with such buttons.
Image Name	Use the browse button to select a new image for your button. When the file browser opens, by default, it will list the images present in the following icon directory: *<ADW_CONF_ROOT>**<company>**<site>*\cdssetup\projmgr\flows\icons

Field	Lets you
Tooltip	Enter a helpful tool tip text for this button or menu option. When you hover mouse over the button, the tool tip will appear.
Enter cmd string	Specify the command string to be launched when this step is run.
Enter arg list	Specify any command line arguments to be passed.
Enter env list	Specify any environment variables that should be set prior to running this step. The syntax for this field is `<name>=<value>;<name>=<value>...`
Use Project File	Select this check box to pass `-proj <your_project>.cpm` to the command being launched. *Important* Many Cadence tools need to understand the context of the active project and should be launched using this setting to make sure they recognize the active project.
Use MPS	Select this check box to specify that the command accepts the `-mpssession` and `-mpshost` arguments in its command line. When you select this option, these arguments are passed to the command when it is launched. This is used when this command is enabled for Cadence Message Passing System (MPS). This means that the command is capable of communicating with other Cadence tools using MPS.
Use Product Suite	Select this check box to specify that the command accepts the `-product` argument in its command line. If this value is true, the `-product <suite-name>` argument is passed to the command with the currently selected product in Flow Manager.

Copy Project Dialog Box

Interface Control	Lets you
Select a project to copy	Lets you select an existing project to copy.
Next	Go to the next step in the Wizard.
Back	Go to the previous step in the Wizard.
Cancel	Closes the Wizard.

Delete Project

Interface Control	Lets you
Project Location Name Check Box	Allows you to select project(s) for deletion. The list shows all the Allegro EDM projects that you have access to.
Delete	Deletes a selected project.
Closes	Closes the dialog box.

Select Project Dialog Box

Interface Control	Lets you
Select	Selects an existing project to open from the list.
Remove From List	Deletes a selected project.
Find Projects	Launch the Allegro EDM Find Project Wizard.
Cancel	Closes the dialog box.

B

Customizing Project Workspace Creation GUI

After you have run the `createflow` command to create a new project workspace, you may want to modify the fields in the *Get Project Information* screen in the Allegro EDM Project Wizard. The flow administrator can modify this screen.

The `init_<flow_name>.english` workspace file at the `<adw_conf_root>\<company>\<site>\cdssetup\pcbdw\workspaces\<flow_name>_ws\15.5\archindep\di_files\lang` location sets up the fields in the *Get Project Information* screen. For each field, you can set up the possible values. Once the value is set up, the data you enter is verified.

Each field that you see in this screen comes from an entry in the `init_<flow_name>.english` file. This entry is `*Di.aliases` and is defined as:

```
*Di.aliases: mps db_sid db_port db_server db_login db_password
contract project reuse_module diagnumber diagrev di_ppl di_author
di_testlist di_testvalue di_manager anchor projectdir di_pageborder
di_ptf_mode di_ptf_hd di_user_lang
```

Entries in this list represents fields on the *Get Project Information* screen. These entries are defined using the following syntax:

```
*Di.<gadget_id>_<field_type>: <value>
```

For detailed information on how to customize the `init_<flow_name>.english` file, contact Cadence Support or Services.

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