

Oracle
**Construction Intelligence Cloud Advisor
Scheduling Insights Reference Guide**

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Oracle Construction Intelligence Cloud Advisor Scheduling Insights Reference Guide

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Getting Started

Welcome to Construction Intelligence Cloud Advisor!

Construction Intelligence Cloud Advisor (CIC Advisor) is a smart project advisor that helps improve project productivity and risk management by using predictive intelligence and recommendations. CIC Advisor harnesses the power of data science, predictive analytics, and artificial intelligence on project data to improve process visibility, detect anomalies, make recommendations, raise early warnings, and provide actionable insights for your organization.

CIC Advisor can be used by:

- ▶ Senior executives to view what projects are on track or have issues to improve project performance, increase margins, and reduce risk
- ▶ Portfolio and project managers involved in project planning to view activities that have the potential to cause delays, increase cost, or are at risk
- ▶ Process owners interested in improving the project planning process for your organization

Equipped with self-learning capabilities and mechanisms to learn from your feedback, CIC Advisor provides more powerful predictions over time.

This *Reference Guide* provides detailed information on the Scheduling insights available in CIC Advisor for projects managed and tracked in P6 EPPM or Oracle Primavera Cloud.

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About Your Login Credentials

New customers receive an initial email from no-reply@oracle.com to activate their Oracle Cloud account. The link has an expiration date mentioned at the bottom of the email. Make sure to activate your account before the link expires.

You will receive a separate welcome email from no-reply@primavera.oraclecloud.com that includes the URL to access CIC Advisor.

All other email communications coming from your CIC Advisor environment will be sent from no-reply@primavera.oraclecloud.com.

Tips

- ▶ If you do not receive either email, check the spam or junk folder in your email account, or reach out to your customer success manager or CIC administrator.

- ▶ In case you miss the activation window to activate your CIC Advisor account, reach out to your customer success manager or CIC administrator.
- ▶ Add no-reply@oracle.com and no-reply@primavera.oraclecloud.com to your address book or list of approved contacts.

Accessing CIC Advisor

To sign in to CIC Advisor:

- 1) In a browser, enter:
`https://host/<tenantid>/analytics`
where,
<tenantid>: Your cloud account set up for CIC Advisor

Notes:

- Ensure you have been granted appropriate access by the administrator.
 - For a list of supported browsers, see the *Client System Requirements* document.
-

- 2) In the **User Name** field, enter your user name.
- 3) In the **Password** field, enter your case-sensitive password.
- 4) Select **Sign In**.

Reset Your Password

You can reset your password for CIC Advisor at any time.

To reset your password:

- 1) Navigate to the **Oracle Cloud Account Sign In** page.
- 2) Select the **Need help Signing in? Click here** link.
- 3) On the **Forgot your password** page, enter your username, and then select **Next**.
- 4) Review the on-screen message, and select **Submit**.
- 5) Select the **Password Reset** button in the email you receive.
- 6) On the **Reset Your Password** page, complete the **New Password** and **Confirm New Password** fields.

Note: The **Confirm New Password** field will not be active until your new password meets the specified criteria.

- 7) Select **Submit**.

- 8) Select **Click here** to continue to navigate back to the **Oracle Cloud Account Sign In** page, and log in with your new password.

Note: To allow time for system processing, it is recommended that you wait a few minutes before logging in with your new password.

How does CIC Advisor Predict Outcomes?

CIC Advisor uses several data points to create an initial model. These include, but are not limited to:

- ▶ Current state of project
- ▶ Historical performance data of similar projects over time
- ▶ Historical performance data of resources and activities

Prediction models are built by using the following key processes:

- ▶ Data collection and transformation
- ▶ Data preparation
- ▶ Model Selection and Training
- ▶ Model Evaluation and Tuning
- ▶ Prediction

Data collection is one of the most significant steps in the model building process. The quality and the quantity of the data collected in this step determines the accuracy and robustness of the prediction models.

Also, depending on the current state of the project, data distribution and data elements are factors that are considered in developing prediction models. For example, the data distribution of planned projects that are yet to commence will be different from those projects in progress. Therefore, CIC Advisor uses separate prediction models for planned projects and in-progress projects.

For planned projects, CIC Advisor uses:

- ▶ Various planned metrics such as planned duration, planned labor units, and planned cost
- ▶ Schedule assessment metrics such as activities with negative lags, large durations, long lags, and negative floats

For projects in progress, CIC Advisor uses:

- ▶ Various planned and actual metrics which describes how the current project has progressed so far. For example, estimated durations, cost and labor units, remaining duration, and actual duration
- ▶ Schedule assessment metrics such as activities with negative lags, large durations, long lags, and negative floats
- ▶ Predicted and actual delays of predecessor activities
- ▶ Predicted delays of successor activities

Once the above data points are collected, they are formatted and passed through a random forest regression and classification model and an initial prediction model is developed to forecast outcomes of current projects to predict the delay likelihood. This initial model is then trained with your specific data to ensure the predictions are tailored to your organization. CIC Advisor predictions become more powerful and accurate over time through its self-learning capabilities and user feedback.

Using Filters in CIC Advisor

When several projects are active in an organization, there might be a need to hone in on specific projects based on delay likelihood, delay amount, etc. CIC Advisor applies the filters you prescribe to display only those projects that satisfy the specified criteria. You can apply these filters on your current view to quickly change the set of data you are working with.

Note: The filters applied are valid only for the duration of your current session of CIC Advisor.

The **Filters** pane is available in the:

- ▶ **Project Listings Page** (on page 15)
- ▶ **Schedule Assessment Page** (on page 30)
- ▶ **Activities Page** (on page 41)

Depending on the page, the filters vary on each page.

Applying Filters in the Current View

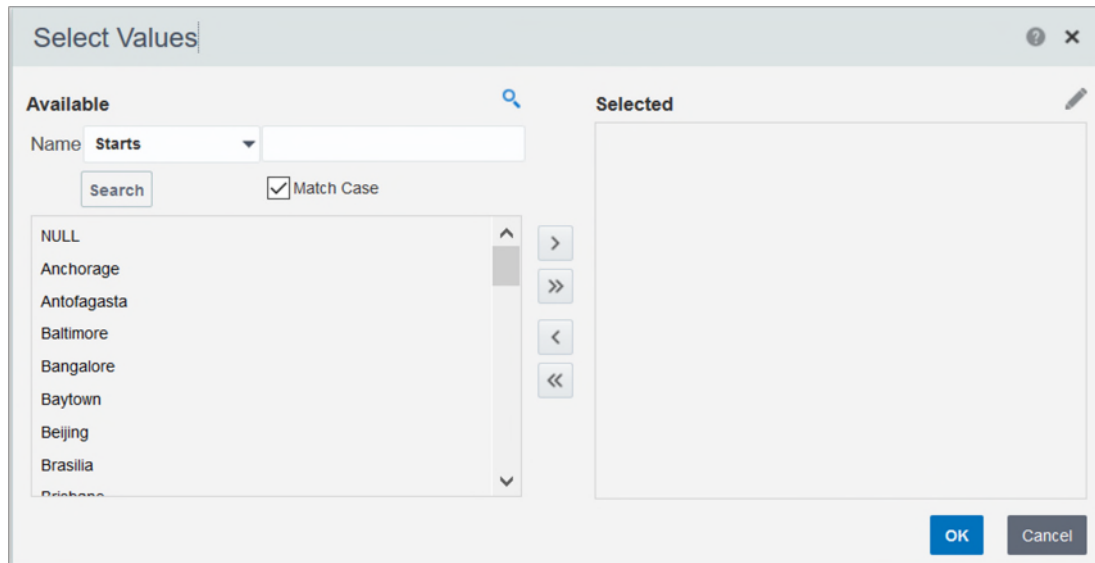
To apply filters in your current view:

- 1) If available in the **Filter** pane, use any of the following methods to specify values:
 - ▶ Enter a value in a text box
 - ▶ Enter a range of values by specifying a lower limit and an upper limit
 - ▶ Scroll and select one or more values from a list
 - ▶ Search and locate values using the **Select Values** dialog box. For more details on how to search and locate a setting value, see
 - **Searching for Filter Values with Partial Information** (on page 9)
 - **Searching for a Range of Values** (on page 10)

Note: The filters applied are valid only for the duration of your current session of CIC Advisor.

Searching for Filter Values with Partial Information

To search and locate filter values with only partial information, you can use the **Search** option. The **Search** option is available when values can be selected from a list of values.









To search for a filter value in the **Filters** pane:

1) From a filter's list of values, select **Search...**

For example, on the **Project Listings** page, select **Search...** from the **Project Filter** list.

2) In the **Select Values** dialog box:

- a. Select  **Search** to lookup filter values.
- b. In the **Name** field, enter a partial value that *starts, ends, contains, or is like (pattern match)*.
- c. Select the **Match Case** check box to opt for a case-sensitive search.
- d. Select the **Search** button to view values in the **Available** section.
 - a. Use any of the following actions to select values:
 - Select  **Move** to move a specific value from the **Available** section to the **Selected** section.
 - Select  **Move All** to move *all* the values from the **Available** section to the **Selected** section.
 - Select  **Remove** to remove a specific value from the **Selected** section to the **Available** section.
 - Select  **Remove All** to remove *all* the values from the **Selected** section to the **Available** section.
 - Select  **Edit** to modify values in the **Selected** section.
 - Select the **OK** button to confirm the values selected for a threshold setting.

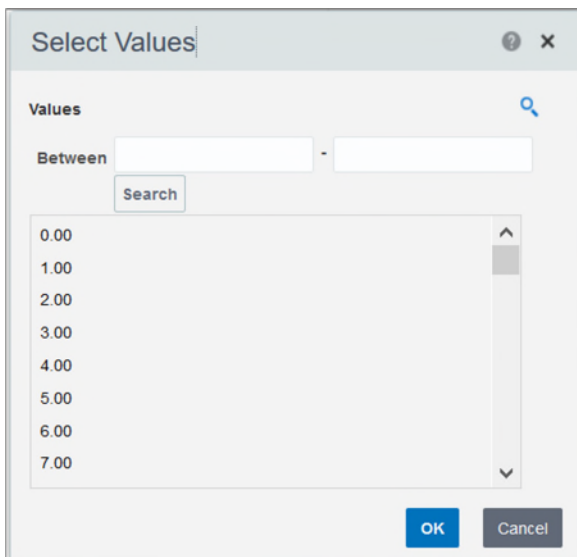
- Select the **Cancel** button to exit the **Selected Values** dialog box without selecting the threshold setting values.

3) After selecting values, select the **Apply** button to display projects that meet the criteria.

Note: The filters applied are valid only for the duration of your current session of Construction Intelligence Cloud Advisor. .

Searching for a Range of Values

To search and locate values of a threshold setting with only partial information, you can use the **Search** option. The **Search** option is available when a range of values can be specified for a filter. For example, use the search option for the **Planned Duration** filter to select a lower limit value between 75 and 125.



To search for a value in the **Filters** pane:

1) From a filter's list of values, select **Search....**

For example, on the **Activities Delay Detail** page, select **Search...** from the **Planned Duration Between** list filter.

2) In the **Select Values** dialog box:

a. Select **Search** to lookup threshold setting values .

b. From the **Values** list, select a value, and then select the **OK** button.

Otherwise, select the **Cancel** button to exit the dialog box without selecting a threshold setting value.

3) In the **Filters** pane, select the **Apply** button to display projects that meet the criteria of specified threshold settings values.

Clearing Filters in the Current View

To clear all values set in the **Filters** pane, use any of the following methods:

- ▶ Select **Clear All** in the **Filters** pane
- ▶ Reset the relevant settings as needed
- ▶ Sign out of CIC Advisor

About Consent Notices

Consent notices alert you to the need to protect personal information (PI). You and your organization might be collecting, processing, storing, and transmitting PI while using Construction Intelligence Cloud Advisor. When you accept a consent notice in a source application such as P6 EPPM, your consent covers the collection, processing, storing, and transmission of PI data, and means of retrieving data including but not limited to project export, downloaded tables, reports, documents, web services, and API. If you refuse consent in the source application you might not be able to access some areas of Analytics.

You may be asked to provide consent to show that you understand the need to treat PI as secure data. You may also be asked to provide consent for your organization to collect, process, store and transmit your PI. If you refuse consent you will be denied access to the source application and Analytics.

You can withdraw your consent at any time within a source application.

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About Personal Information

Personal information (PI) is any piece of data which can be used on its own or with other information to identify, contact, or locate an individual in context. The information is not limited to a person's name, address and contact details. For example, a person's IP address, phone IMEI number, gender, and location at a particular time could all be personal information. Depending on local data protection laws, organizations may be responsible for ensuring the privacy of PI wherever it is stored, including in back-ups, locally stored downloads, and data stored in development environments.

Caution: Personal information (PI) may be at risk of exposure. Depending on local data protection laws organizations may be responsible for mitigating any risk of exposure.

Cookies Usage in Construction Intelligence Cloud Advisor

When using CIC Advisor, the server may generate cookies and send them to the user's browser. The user's machine stores the cookies, either temporarily by the browser, or permanently until they expire or are removed manually.

Oracle might use cookies for authentication, session management, remembering application behavior preferences and performance characteristics, and to provide documentation support.

Also, Oracle might use cookies to remember your login details, collect statistics to optimize site functionality, and deliver marketing based on your interests.

CIC Advisor Scheduling Insights

This chapter describes CIC Advisor insights if your organization uses Oracle Primavera P6 Enterprise Project Portfolio Management (P6 EPPM) or Oracle Primavera Cloud to prioritize, plan, manage, and execute projects, programs, and portfolios for design and constructions projects.

In This Section

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Project Listings Page

How to Get Here

Sign in to Construction Intelligence Cloud Advisor.



Purpose

The **Project Listings** page of CIC Advisor displays the health of all projects whose data has been analyzed to predict the possibility of project delay. Project data from your enterprise application is used to give a health assessment of each project using Key Performance Indicators (KPIs) to predict delay.

This page includes:

Section Number	Section Title
1	Filters Pane (on page 16)
2	Key Performance Indicators (KPIs) for Predicting Project Delay (on page 16)

Filters Pane

Use the **Filters** pane on the **Project Listings** page to select a subset of ongoing projects in your current view of CIC Advisor.

The screenshot shows a 'Filter' pane with the following controls:

- Project name:** --Select Value--
- Project group:** --Select Value--
- Project location:** --Select Value--
- Schedule status:** In Progress,Not
- Delay likelihood:** Between 0 - 100

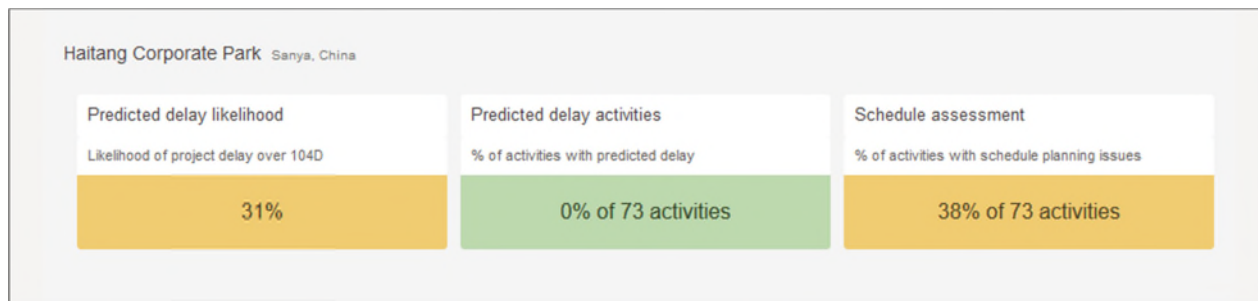
The following filters display:

Use any of the following filters to select a project in CIC Advisor to evaluate the quality and effectiveness of a project schedule:

- ▶ **Project name:** Select a specific project in CIC Advisor.
- ▶ **Project type:** Select a specific type of project in CIC Advisor
- ▶ **Project group:** Select projects that are associated with benchmarking groups available in CIC Advisor. For example, select the benchmarking group, *Commerical Building Projects*.
- ▶ **Project Location:** Select projects based on their location. For example, select all projects based in Amsterdam, Netherlands.
- ▶ **Schedule Status:** The current status of the project. Choices include: *Completed*, *In Progress*, and *Not Started*.
- ▶ **Delay Likelihood:** Select projects whose likelihood of delay is within a specific range. For example, select projects that are predicted to be delayed between 75% and 100%.

The search results display based on the values selected in the above filters.

Key Performance Indicators (KPIs) for Predicting Project Delay



The following key performance indicators (KPIs) provide an overall health assessment of a project to predict delay:

- ▶ **Predicted delay likelihood:** Indicates how likely it is that a project will be delayed upto 20% of its planned duration. For example, the likelihood of delay of the **Haitang Corporate Park** project over 104 days is 31%.
- ▶ **Predicted delay activities:** Reflects the percentage of activities that are contributing to a project delay. For example, no delays are predicted in the **Haitang Corporate Park** at 0%.

- ▶ **Schedule assessment:** Identifies the percentage of activities in the project schedule that do not conform to schedule parameters set by your organization. For example, the 38% of 73 activities do not conform as per in the **Schedule Assessment** evaluated for the **Haitang Corporate Park** project.

Using the information from all the KPIs, the following insight can be drawn for the **Haitang Corporate Park** project: This project has a 31% chance of being delayed over 104 days with no activities responsible for the delay. Moreover, the underlying project schedule has 38% activities with some planning issues.

Select any KPI to review details of a specific project.

Note: CIC Advisor is delivered with predetermined thresholds that determine the color of each KPI or metric. These threshold settings are specified in the administration application of Construction Intelligence Cloud Advisor which can also be modified according to the needs of your organization. To change the value or range of thresholds for **Delay Likelihood**, **Delay Activity Count**, or **Schedule assessment**, contact your Construction Intelligence Cloud Advisor administrator.

Project Schedule Module Overview

The Project Schedule module analyzes your current project schedule and predicts the following:

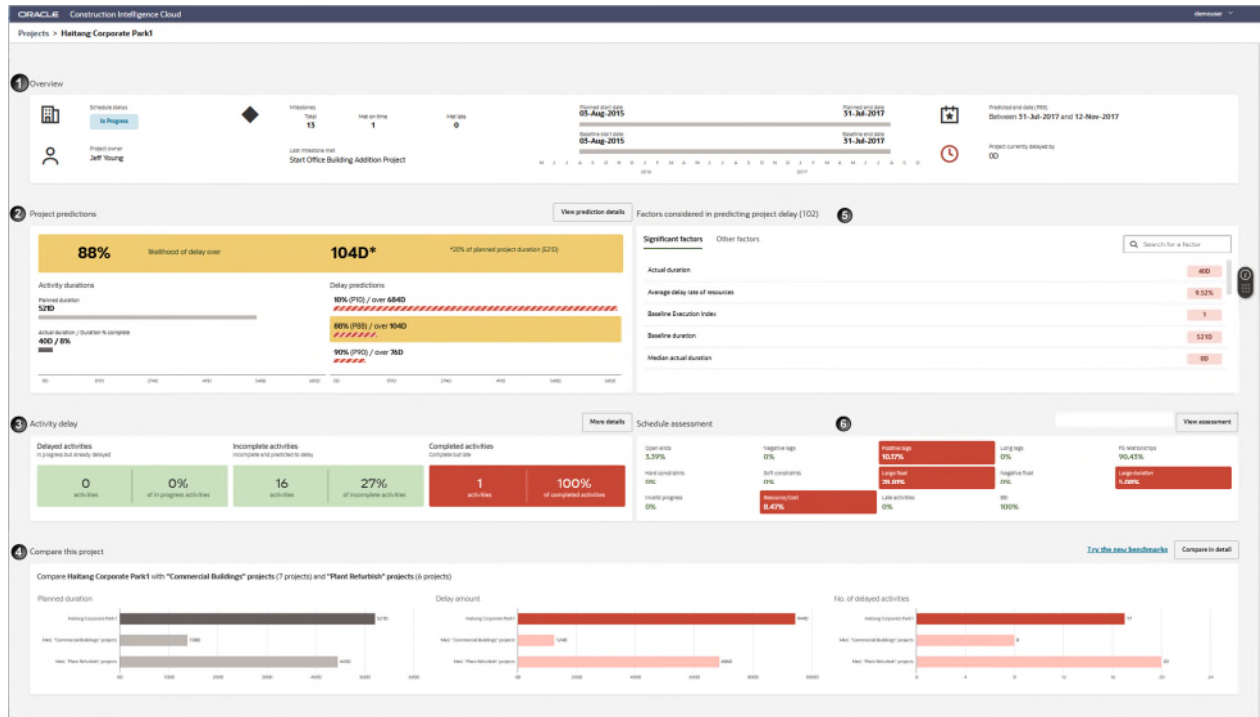
- ▶ Probability of completing the project as planned
- ▶ Extent of delay predicted in terms of days and percents
- ▶ Identify potential sources of delay on your projects and take proactive action to ensure the project is completed on time and within budget.
- ▶ Evaluate your project schedule against standard industry best practices like DCMA to ensure that it is built right and of high quality to maximize the chance of successful project delivery.
- ▶ Improve the quality of predictions by using your historical project data to train the built-in machine learning models and selecting inputs to the model that reflect your way of running projects.

Schedule Intelligence Page

How to Get Here

- 1) Sign in to CIC Advisor.

2) On the **Project Listings** page, select the **Predicted delay likelihood** KPI of a project.



How to Use this Page

The **Schedule Intelligence** page gives you an overview of the schedule health of a particular project. You can use this page to understand the likelihood of delay on the project, the factors contributing to the delay, the health of underlying project schedule and how the project is faring compared to the benchmark project groups you chose.

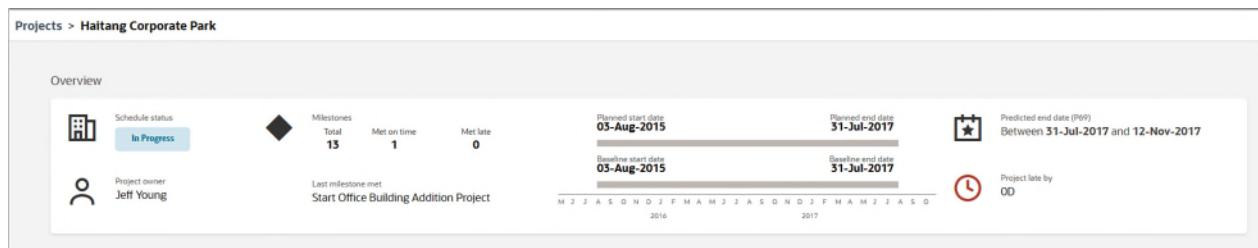
In the above example, the project schedule of the **Haitang Corporate Park** project has been analyzed and displayed on this page.

The **Schedule Intelligence** page consists of the following sections which display information about a project. Refer to the subsequent topics for more details on each section:

Section Number	Section Title
1	Overview Section (on page 19)
2	Project Predictions Section (on page 20)
3	Activity Delay Section (on page 21)
4	Compare this Project Section (on page 22)
5	Factors Considered in Predicting Project Delay Section (on page 22)
6	Schedule Assessment Section (on page 23)

Note: CIC Advisor is delivered with predefined thresholds that determine the color of each KPI or metric. These threshold settings are specified in the CIC Advisor Administration application which can also be modified according to the needs of your organization. To change the value or range of a threshold in sections 2, 3, 4, and 6 listed above, contact your CIC Advisor administrator.

Overview Section

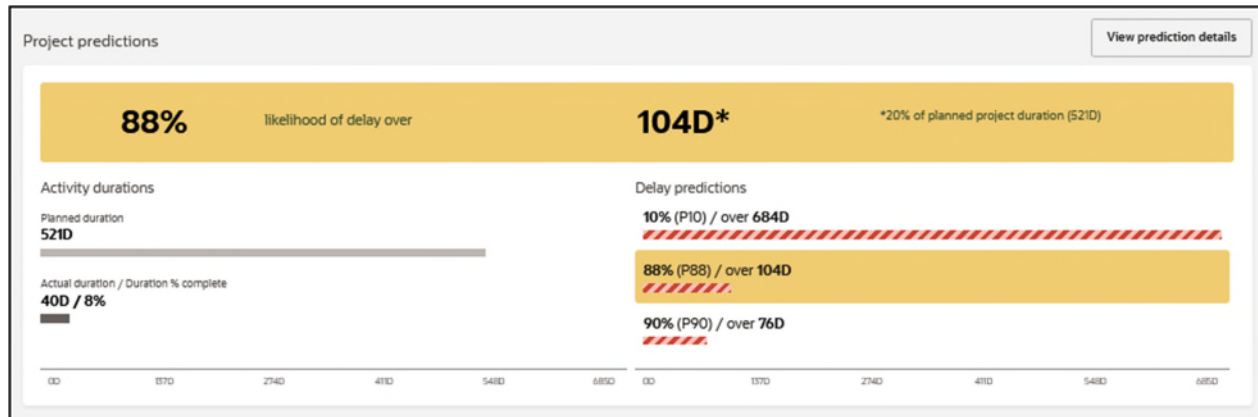


The **Overview** section of the **Schedule Intelligence** page provides a synopsis of the current state of the project and the predicted project end date based on the project's current schedule in P6.

The following information is displayed:

- ▶ **Schedule Status:** The current status of your project.
If the project is 95% and above completed, the status displays as *Completed*.
If the percent completion is 0, then the status is displays, *Not Started*.
For all the other cases, the status displays *In Progress*.
- ▶ **Milestones:** A milestone represents a significant project event of zero duration. Displays a count of the total milestones in the project, the number of milestones met, and delayed milestones in the project.
- ▶ **Planned start date:** The date the project is scheduled to start as per the current project schedule.
- ▶ **Predicted end date:** The date the project is planned to finish as per the current project schedule.
- ▶ **Baseline start date:** The actual scheduled start date of an activity in the approved schedule baseline.
- ▶ **Baseline end date:** The finish date of a schedule activity in the approved schedule baseline.
- ▶ **Predicted end date:** The potential end date of the project as predicted by CIC Advisor.
- ▶ **Project owner:** The individual responsible for the successful implementation of the project, in partnership with the sponsor.
- ▶ **Last milestone met:** The most recent milestone met by the project.
- ▶ **Project late by:** The actual delay of the project in terms of days. number of days by which the project was completed late from the planned end date.

Project Predictions Section



The **Project predictions** section of the **Schedule Intelligence** page predicts the probability of delay and the extent of delay compared to the planned project duration.

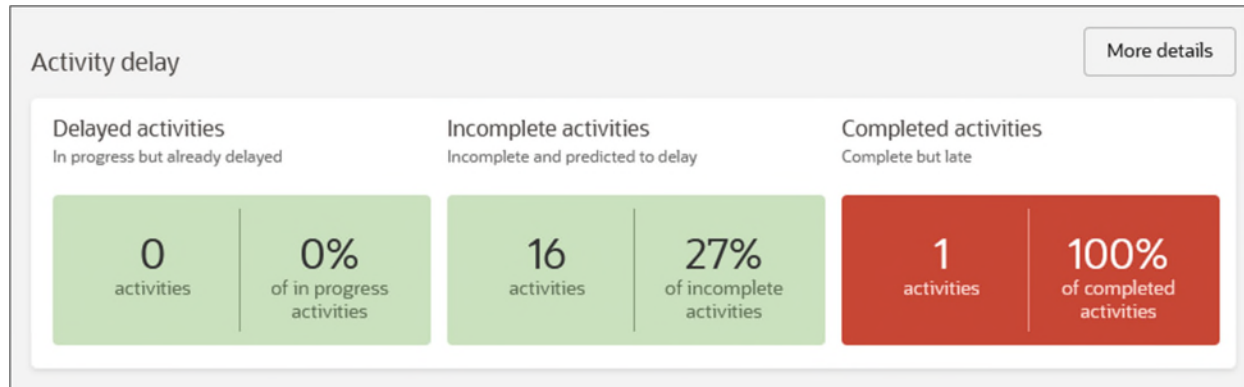
The following information is displayed:

- ▶ **Likelihood of delay:** The Likelihood of delay predicted by the project delay models of the project being delayed by 20% of its planned duration. For example, the **Haitang Corporate Park** project has a 69% chance of delay for 104 days.
- ▶ **Planned duration:** The length of the project determined by the current project schedule. In the above example, the **Planned duration** is 521 days.
- ▶ **Actual to date / % complete:** It is calculated as $100 \times (\text{Sum (Activity Actual Duration)} / \text{Sum (Activity at Complete Duration)})$.
- ▶ **Delay predictions:** The likelihood of the project getting delayed with varying probabilities. This includes:
 - ▶ **Predicted duration (10% Probability):** The predicted length of the project with a 10% probability of delay. The **Predicted duration** of the Haitang Corporate Park project with a 10% probability of delay is 522 days that includes a delay of 2 days.
 - ▶ **Predicted duration (60% Probability):** The predicted length of the project with a 69% probability of delay. The **Predicted duration** of the Haitang Corporate Park project with a 69% probability of delay is 625 days which includes a delay of 104 days.
 - ▶ **Predicted duration (90% Probability):** The predicted length of the project with a 90% probability of delay. The **Predicted duration** of the Haitang Corporate Park project with a 90% probability of delay is 759 days which includes a delay of 238 days.

Note: If there is no delay (zero), then the planned duration is identical to the predicted duration of the project.

Click **View prediction details** to access the **Delay Predictions Page** (on page 24).

Activity Delay Section



The **Activity delay** section provides a total count and percentages of delayed activities, incomplete activities and completed activities.

In the above example, the Haitang Corporate Park project has no delayed activities, 16 incomplete activities which represent 27% of the total activities, and 1 activity that was completed late.

The Delayed activities and Completed activities are determined by calculating the actual delay, whereas the Incomplete activities are determined calculating the predicted delay of these activities.

The delay is calculated as follows:

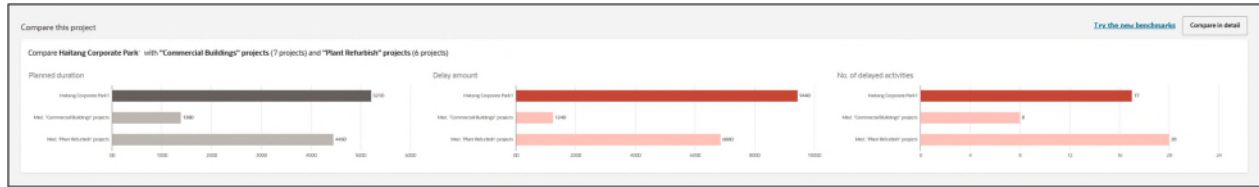
- ▶ For not started activities, the delay amount is calculated as:
 - ▶ (Finish -BL Project Finish) if baseline exists
 - ▶ (Finish -Planned Project Finish) if baseline does not exist
- ▶ For in-progress activities, the delay amount is calculated as:
 - ▶ (Finish -BL Project Finish) if baseline exists
 - ▶ (Finish -Planned Project Finish) If baseline does not exist, then
- ▶ For completed activities, the delay amount is calculated as:
 - ▶ (Finish -BL Project Finish) if baseline exists
 - ▶ (Finish -Planned Project Finish) if baseline doesn't exist

where the Project Finish is determined as follows:

- ▶ For not started activities, it is the planned finish date
- ▶ For in-progress activities, it is the remaining early finish date
- ▶ For completed activities, it is the actual finish date

Click **More details** to view more detailed information on the **Activities Page** (on page 41)

Compare this Project Section



The **Compare this project** section allows you to compare the performance of your current project with one or more benchmark groups. The benchmark groups include projects from your organization that are either completed or 70 - 80% complete. In the above example, the **Haitang Corporate Park** project has been compared with projects in the **Commerical buildings Projects** and **Plant Refurbish Projects**.

Bar graphs for the following metrics are displayed:

- ▶ Planned duration
- ▶ Delay amount
- ▶ No. of delayed activities

For detailed comparison with other metrics:

- ▶ Click **Compare in Detail** to explore the performance of your projects against the benchmarked projects on the **Benchmarking Page** (on page 65).
- ▶ Click **Try the new benchmarks** to explore your project's performance on the **New Benchmarking page** (see "**Benchmarking Page - New!**" on page 68).

Note: The benchmark groups are defined by your administrator in the Construction Intelligence Cloud Advisor Administration application.

Factors Considered in Predicting Project Delay Section



The **Factors considered in predicting project delay** section of the **Schedule Intelligence** page displays significant factors and other factors causing project delay. Use this information to take preemptive action. Based on the machine learning model's training, CIC Advisor identifies certain factors which are statistically significant in predicting the potential delays in your project schedule. You can fine-tune the values of these factors to minimize their impact on potential delays.

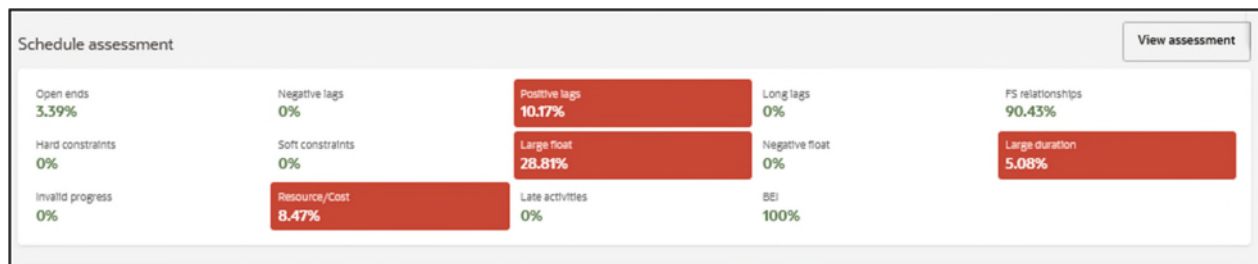
Perform any of the following actions:

- ▶ Select any of the following tabs:
 - ▶ **Significant factors** that are considered statistically significantly in contributing to potential delays
 - ▶ **Other factors** are those that are not critical or have a negligible impact on project delay.
- ▶ Click **View factor details** to review details of identified factors and explore actions you can take to minimize their impact on potential delay on the **Key Factor Recommendations page** (see "**Key Factor Recommendations**" on page 26).
- ▶ Click on a specific factor for a detailed view of all activities in the project on the **Activities Page** (on page 41).

Notes:

- When new features are added into a prediction model, the delay factors will change based on the importance attributed towards a feature.
- The threshold settings for any of the delay factors can be changed in the CIC Advisor Administration application. Contact your CIC Advisor administrator to change a threshold setting.

Schedule Assessment Section



The **Schedule assessment** section of the **Schedule Intelligence** page helps you assess if the underlying schedule has been planned right. These metrics are built based on the the 14 point industry best-practices, DCMA health check. Metrics that do not comply with the thresholds set by your organization in the administration application CIC Advisor display in red.

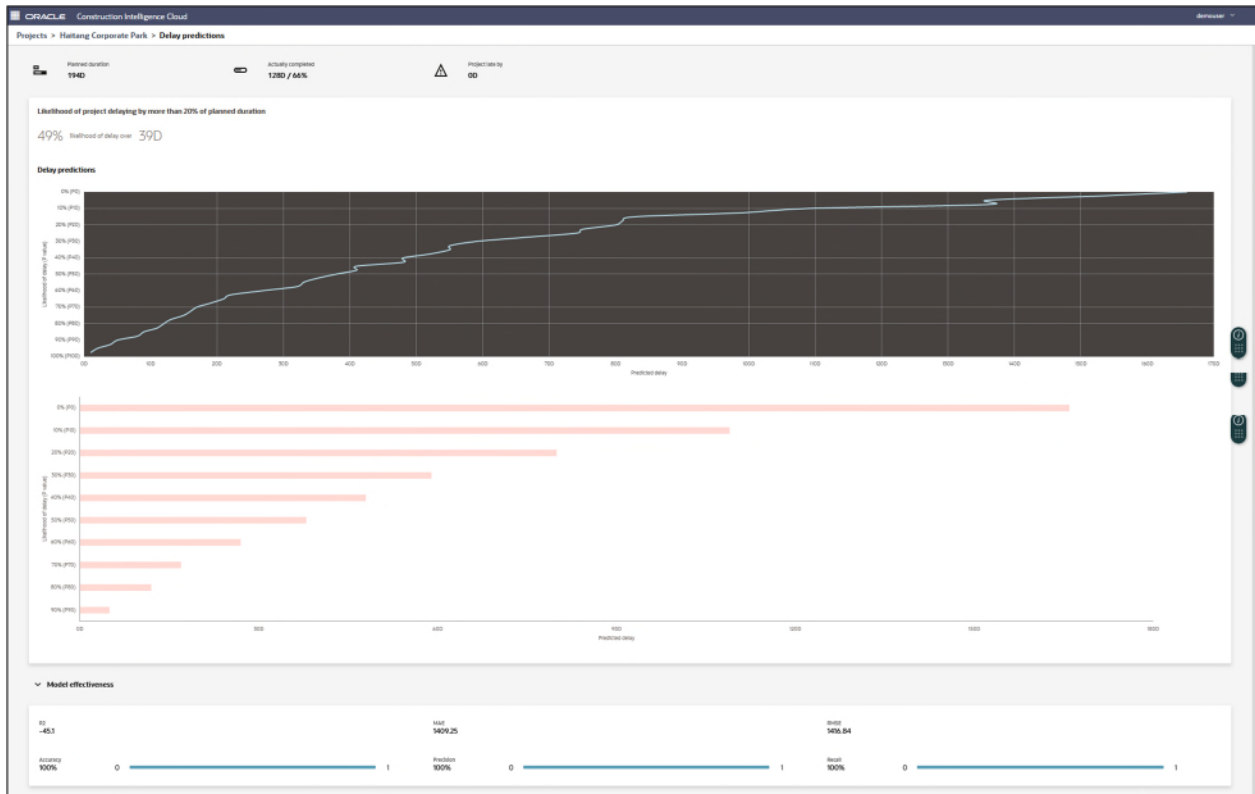
Select the non-compliant metric, such as **Resource/Cost** in the above example, to further investigate the associated activities on the **Schedule Assessment Page** (on page 30).

Note: Use the filters in the **Filters** pane to see how different parameters affect the schedule in the current page view. To apply these parameters as thresholds for all projects, contact your CIC Advisor administrator to make these changes in the CIC Advisor Administration application. To modify or change the thresholds, navigate to the **Schedule Assessment Page** (on page 30).

Delay Predictions Page

How to Get Here

- 1) Sign in to CIC Advisor.
- 2) On the **Project Listings** page, select the **Predicted delay likelihood** KPI of a project.
- 3) On the **Schedule Intelligence** page, click **View prediction details** in the **Project predictions** section.



The following information is provided from the **Schedule Intelligence Page** (on page 17) to summarize the project's current status:

- ▶ **Planned duration:** The length of the project determined by the current project schedule. In the above example, the Planned duration is 194 days.
- ▶ **Actually completed:** The percentage of all completed activities in the project in terms of days and percentage.
- ▶ **Project late by:** The number of days the project is delayed. If the planned end date is greater than the baseline end date, then the delay is calculated as (Planned end date - Baseline end date). Otherwise it is not delayed (zero days).
- ▶ **Likelihood of project delaying by more than 20% of planned duration:** The probability of the project schedule exceeding 20% of the planned duration.
In the above example, the probability of the project schedule exceeding 39 days (20% of the planned duration) is 49%.

Delay Prediction Line Graph

The **Delay Prediction Line Graph** charts the predicted delay of the project against the corresponding probability of delay. The x-axis displays the predicted delay in number of days. The y-axis displays the likelihood of delay or the probability of delay as a percentage. In the above chart, the Haitang Corporate Park project is predicted to be delayed for more than 51 days with 50% probability.

Tip: Hover your cursor over a data point in the graph to view specific details.

Delay Prediction Bar Graph

The **Delay Prediction Bar Graph** predicts project delay and contrasts it with the planned duration calculated by your project schedule. The predicted and planned estimates are displayed for varying levels of probability. The x-axis displays the predicted delay quantified in terms of days. The y-axis displays the likelihood of delay or the probability of delay as a percentage.

In the above bar chart, the Haitang Corporate Park project is predicted to be delayed for more than 51 days with 50% probability.

Tip: Hover the cursor over a specific bar in the graph to view specific details.

Model effectiveness

The **Model effectiveness** section provides a few training metrics for robustness and accuracy of the machine learning (ML) model that is being used to predict the Key factors information for the project. These include:

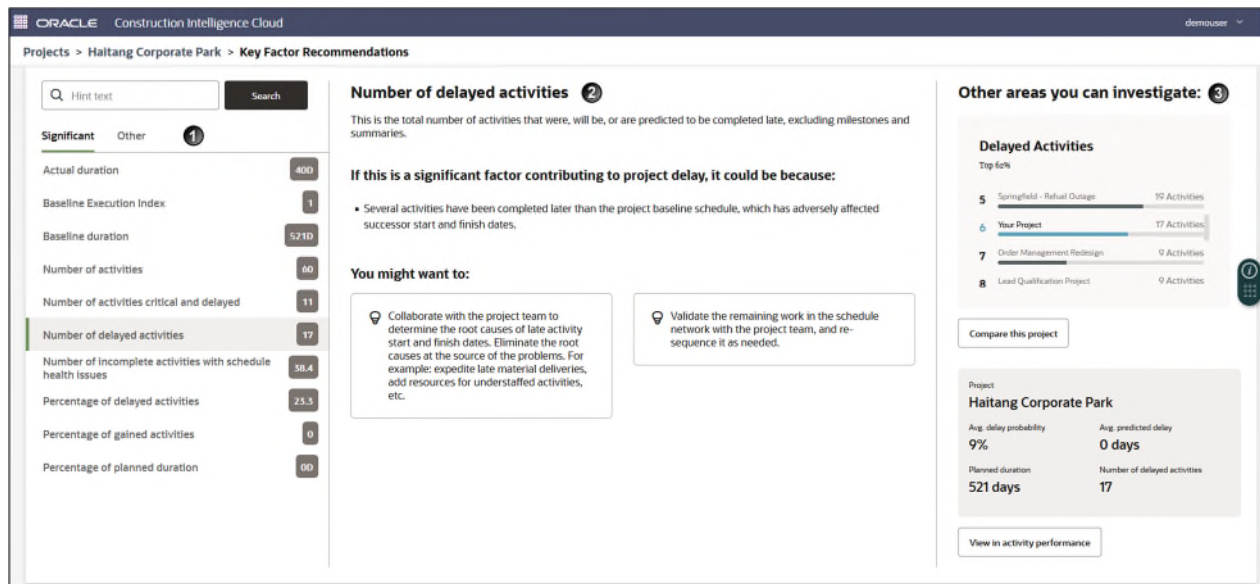
- ▶ **R2:** It measures the proximity of the data points to the fitted regression line. The higher the R2 score, the better. It is calculated as: $\text{Explained Variation} / \text{Total Variation}$.
- ▶ **MAE:** The Mean Absolute Error (MAE) measures the average magnitude of the error in the set of predictions without considering the direction. The lower the score, the better.
- ▶ **RMSE:** The Root Mean Square Error (RMSE) measures the average magnitude of the error. It's the square root of the average of the squared difference between predictions and actual observations. The lower the score, the better.
- ▶ **Accuracy:** The ratio of correct predictions to the total number of predictions.
- ▶ **Precision:** The frequency of being correct with a positive prediction, and how many are actually delayed out of all the risks that are predicted to be delayed.

- ▶ **Recall:** The ability of a model to find all the positive results actually in the data. It Of all the activities that are actually delayed, how many the model correctly identified.

Key Factor Recommendations

How to Get Here

- 1) Sign in to CIC Advisor.
- 2) On the **Project Listings** page, select the **Predicted delay likelihood** KPI of a project.
- 3) On the **Schedule Intelligence** page, click **View factor details** in the **Factors considered in predicting project delay** section.



Use the **Key Factor Recommendations** page to review the main factors and their underlying activities contributing towards a predicted project delay based on your current project schedule.

The following sections are included:

Section Number	Section Title
1	<i>Significant Factors and Other Factors</i> (on page 27)
2	<i>Reasons and Recommendations for a Factor</i> (on page 28)
3	<i>Other Areas You Can Investigate</i> (on page 29)

Significant Factors and Other Factors

Projects > Haitang Corporate Park > Key Factor Recommendations

Q Hint text Search

Significant Other

Actual duration	40D
Baseline Execution Index	1
Baseline duration	521D
Number of activities	60
Number of activities critical and delayed	11
Number of delayed activities	17
Number of incomplete activities with schedule health issues	38.4
Percentage of delayed activities	23.3
Percentage of gained activities	0
Percentage of planned duration	0D

Every project is usually influenced by a conglomeration of factors that contribute towards a project delay. Machine learning models analyze and classify these factors into two categories: Significant factors and Other factors. To have a deeper understanding about the factors influencing your project, select any of the following tabs:

▶ **Significant**

Displays a list of factors that are contributing significantly to a prediction in project delay

▶ **Other**

Displays a list of factors with a low impact or no impact with regard to a project delay

You can also use the **Search** bar to locate and focus on a specific factor identified for your project.

Reasons and Recommendations for a Factor


Number of delayed activities


This is the total number of activities that were, will be, or are predicted to be completed late, excluding milestones and summaries.

If this is a significant factor contributing to project delay, it could be because:

- Several activities have been completed later than the project baseline schedule, which has adversely affected successor start and finish dates.

You might want to:

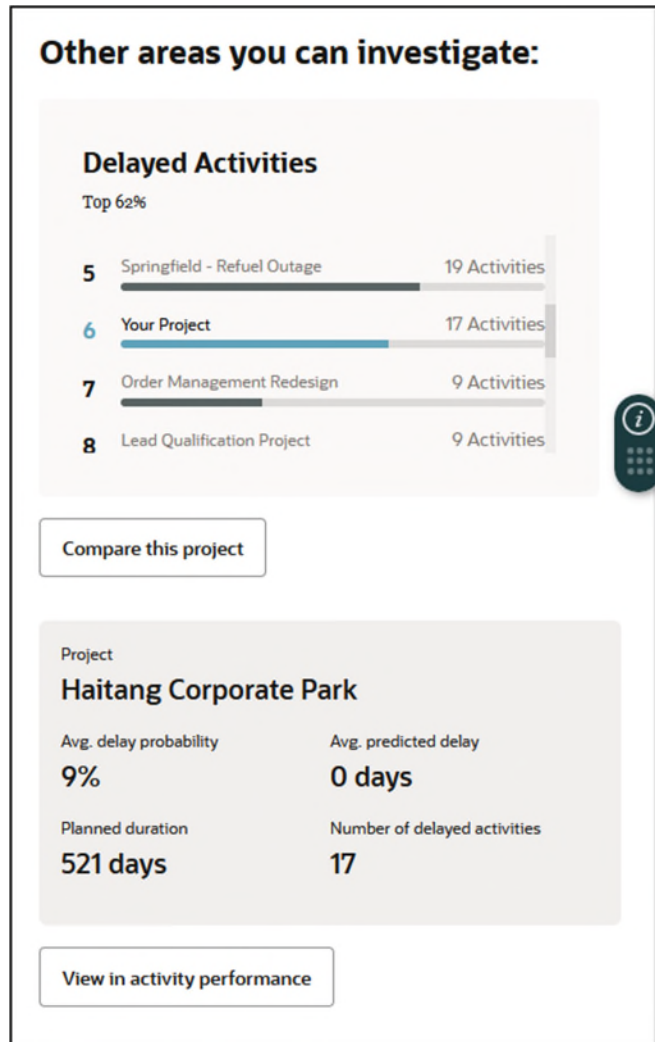
 Collaborate with the project team to determine the root causes of late activity start and finish dates. Eliminate the root causes at the source of the problems. For example: expedite late material deliveries, add resources for understaffed activities, etc.

 Validate the remaining work in the schedule network with the project team, and re-sequence it as needed.

This section of the Key Factor Recommendations page provides:

- ▶ A short description of a selected key factor.
- ▶ The scenario that resulted in the identification of this factor as either a significant or other factor for your project.
- ▶ One or more recommendations suggested to remedy the occurrence of this factor.

Other Areas You Can Investigate



The **Other areas you can investigate** section provides visibility into the potential delays in the project schedule, and its impact on underlying activities. The **Delayed Activities** area, compare your project's activities with those

To further analyze your project, you can

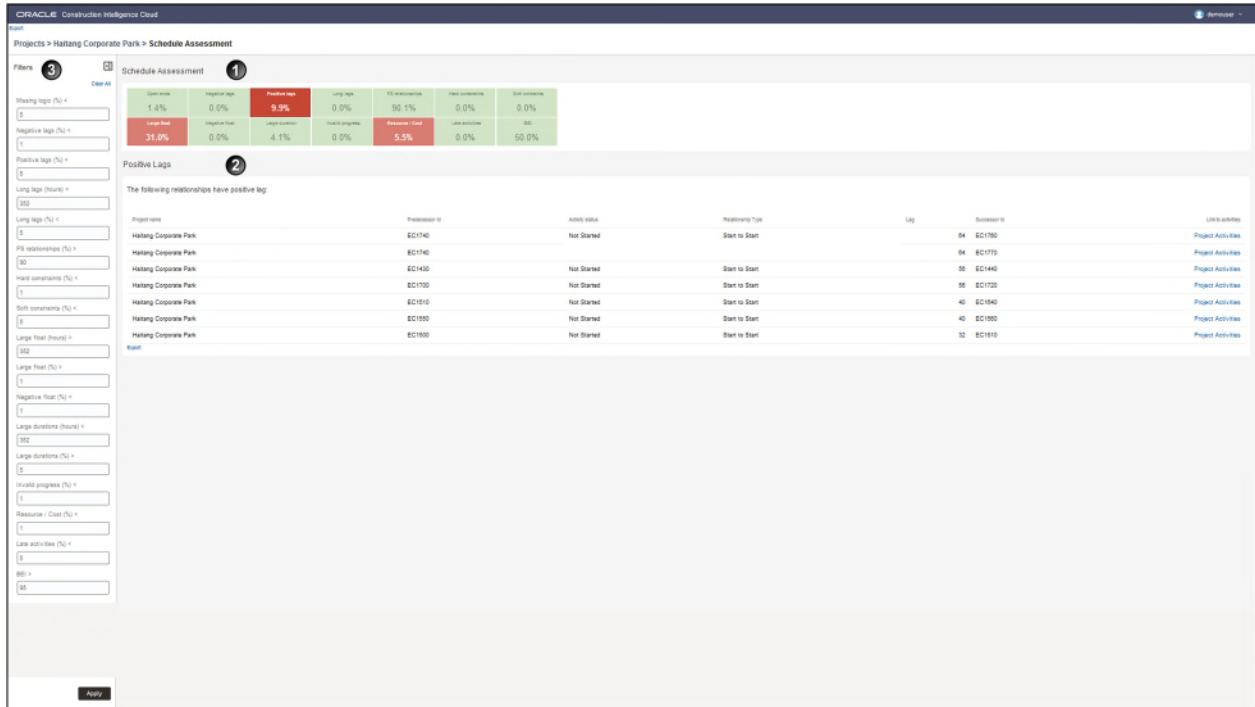
- ▶ Click **Compare this project** to compare your project with the benchmark groups on the **Benchmarking page** (see "**Benchmarking Page - New!**" on page 68).
- ▶ Click **View in activity performance** to view a list of the activities predicted to be delayed in your project on the **Activities Page** (on page 41).

Schedule Assessment Page

How to Get Here

- 1) Sign in to CIC Advisor.
- 2) On the **Project Listings** page, select the **Schedule Assessment** KPI of a project.
- 3) In the **Schedule Assessment** section, select a metric to view a list of activities that are contributing towards the selected metric.

In the following example, **Lags** has been selected in the **Schedule Assessment** section.



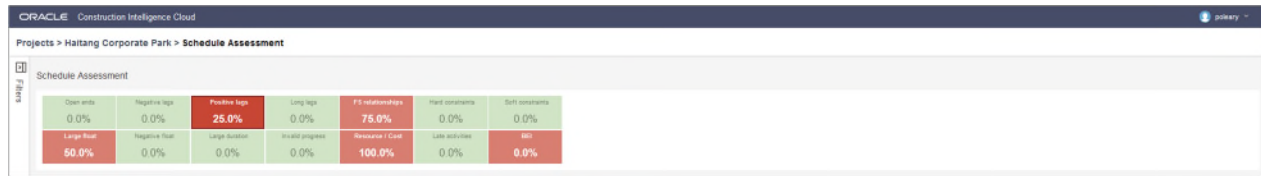
How to Use this Page

The **Schedule Assessment** page allows you to drill down to the specific activities that have contributed towards a predicted value of a metric. In the above example, clicking on the **Lags** metric displays the activities that are responsible for the predicted metric value.

This page includes the following sections:

Section Number	Section Title
1	Schedule Assessment Section (on page 31).
2	Activity Details for Selected Metric Section (on page 31)
3	Filters Pane (on page 33)

Schedule Assessment Section



In the **Schedule Assessment** section, the following information displays in each tile:

- ▶ the percentage of activities that are contribute towards each metric. For example, 12.5% of all activities contribute towards the metric, activities with open ends.
- ▶ the extent of deviation from the set threshold level of each metric. For example, +7.5% above threshold
- ▶ The tile color indicates the (green or amber) indicates the overall health status of the metric.

Each activity is displayed with a link that allows you to look up the activity in P6 EPPM and make changes.

In the above example, select the **Positive Lags** tile to view a list of activities that resulted in a positive lag of 25%.

Activity Details for Selected Metric Section

Lags

The following relationships have positive lag:

Project Name	Activity ID	Activity Status	Relationship Type	Lag	Successor Activity ID	Link to Activities
Haitang Corporate Park	EC1740	Not Started	Start to Start	64	EC1700	Project Activities
Haitang Corporate Park	EC1740	Not Started	Start to Start	64	EC1770	Project Activities
Haitang Corporate Park	EC1430	Not Started	Start to Start	56	EC1440	Project Activities
Haitang Corporate Park	EC1700	Not Started	Start to Start	56	EC1720	Project Activities
Haitang Corporate Park	EC1510	Not Started	Start to Start	40	EC1640	Project Activities
Haitang Corporate Park	EC1500	Not Started	Start to Start	40	EC1500	Project Activities
Haitang Corporate Park	EC1500	Not Started	Start to Start	32	EC1510	Project Activities

Depending on the metric you select in the **Schedule Assessment** section of the **Schedule Assessment** page, the following details may display:

Note: The activity details displayed for each metric can vary.

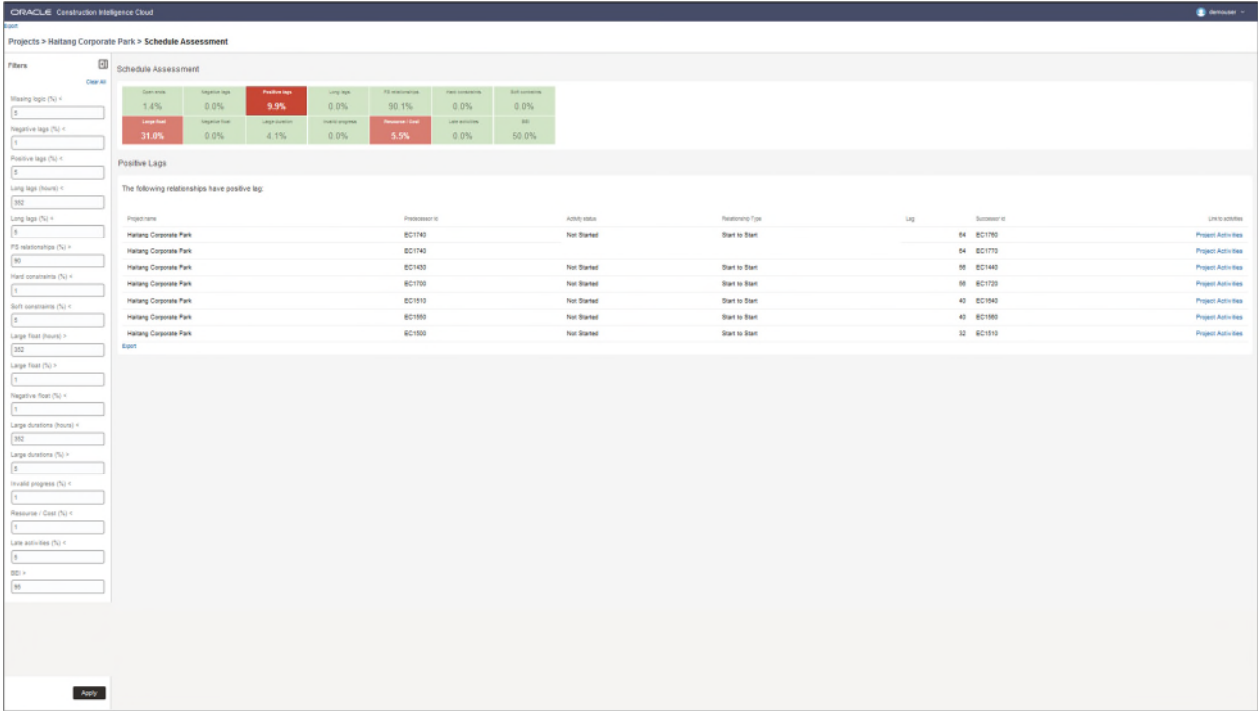
- ▶ **Activity ID:** A unique ID associated with an activity.
- ▶ **Actual Finish:** The date on which the activity was completed.
- ▶ **Activity Name:** The name of the activity. The activity name does not have to be unique.
- ▶ **Activity Status:** The current status of the activity.
- ▶ **Baseline Project Finish:** The planned project completion date when the project baseline was saved.
- ▶ **Data Date:** The progress point, or "as-of date", for activities in the project.

- ▶ **Current Scheduled Finish:** The date on which the activity is to be completed in the current project schedule.
- ▶ **Finish:** The date on which the activity is scheduled to be completed.
- ▶ **Lag:** A permitted modification to the Start-to-Start, Start-to-Finish, Finish-to Start, Finish-to-Finish logical relationships is called lag. Lag values can be positive numbers (a delay, slower, deceleration of progress) or negative numbers (lead time, faster, acceleration of progress).
- ▶ **Link to Activities:** Select this link to directly access the activity in P6 EPPM and make changes as necessary.
- ▶ **Predecessor ID:** The ID of the previous activity that was completed before the current activity.
- ▶ **Primary Constraint:** The position of the constraint type for the selected activity.
- ▶ **Primary Constraint Date:** The constraint date for the activity, if the activity has a constraint. The activity's constraint type determines whether this is a start date or finish date. Activity constraints are used by the project scheduler.
- ▶ **Project Name:** The name of the project whose schedule is being analyzed.
- ▶ **Relationship Type:** The relationship associated with the activity. It can be a Finish-to-Start (FS), Start to Finish (SF), Start to Start (SS), or Finish to Finish (FF) relationship.
- ▶ **Remaining Duration:** The total working time from the activity remaining start date to the remaining finish date. The remaining working time is calculated using the activity's calendar. Before the activity is started, the remaining duration is the same as the planned duration. After the activity is completed the remaining duration is zero.
- ▶ **Secondary Constraint:** The position of the constraint type for the selected activity. This field is only available if a primary constraint has been selected.
- ▶ **Secondary Constraint Date:** The date for the activity's secondary constraint, if the activity has a secondary constraint. The activity's constraint type determines whether this is a start date or finish date. This field is only available if a primary constraint has been selected.
- ▶ **Start:** The start date and time of the activity.
- ▶ **Successor Activity ID:** The ID of the next activity that will begin upon completion of the current activity.
- ▶ **Total Float:** The amount of time the activity can be delayed before delaying the project finish date. A float of zero hours indicates that the activity cannot be delayed at all and a negative float indicates that the project is already behind schedule. It is calculated as Late Start minus Early Start or as Late Finish minus Early Finish.

Select the **Export** link to export data into the following file formats: PDF, Excel 2007+, Powerpoint 2007+, web Archive (.mht) Data (CSV format, Tab delimited Format, or XML format). Upon successful completion, the following confirmation message displays: *The Export process is complete.*

In the above example, the **Lags** tile was selected in the **Assessment Criteria** section to display the activities contributing to the delay.

Filters Pane



In the sidebar, use the **Filters** pane to adjust the values of any of the metrics to see how they affect the **Assessment Criteria** of the project in the current view. In the above example, changing the value of the **Lags** filter in the **Filters** pane to 10% will then display the metric within its threshold value. The **Lags** tile will now appear green.

Select the **Export** link to download the activity details for the selected metric table as a PDF, Excel, PowerPoint, Web Archive, or CSV formats. For example, the Positive Lags table in the above example.

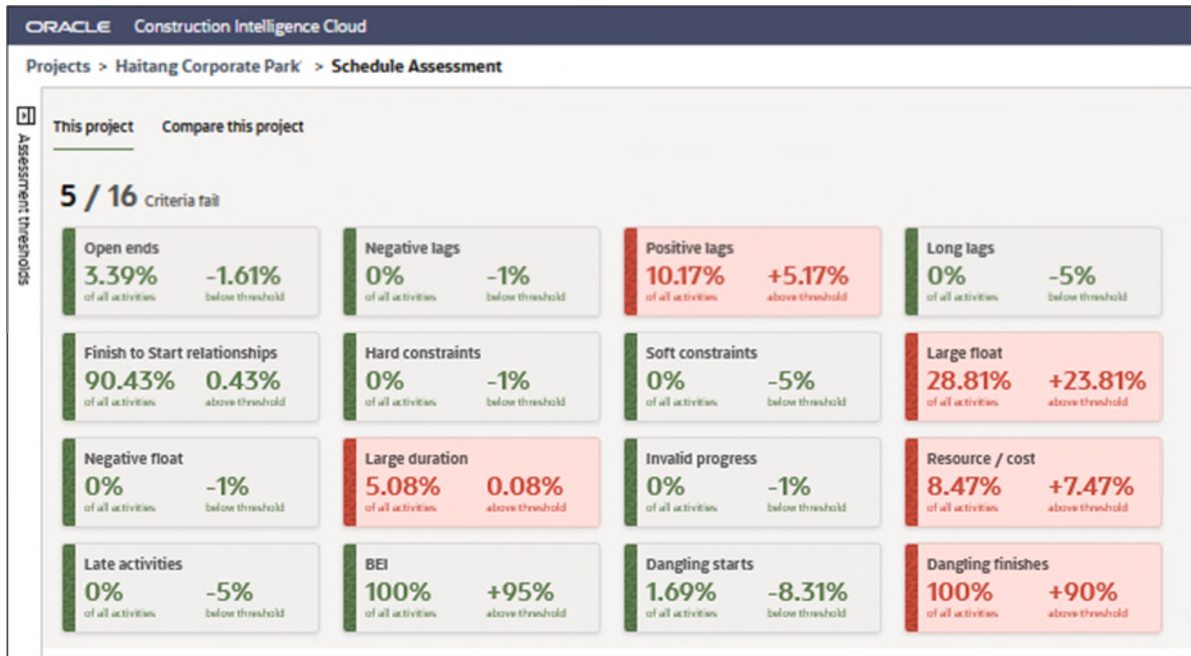
Note: Applying the threshold settings in the Filters pane will not apply the settings to project. To apply any new threshold settings permanently, contact your CIC Advisor administrator.

Schedule Assessment Page-New!

How to Get Here

- 1) Sign in to CIC Advisor.
- 2) On the **Project Listings** page, select the **Predicted delay likelihood** KPI of a project.
- 3) On the **Schedule Intelligence** page, click **Try the new schedule assessment** in the **Schedule assessment** section.

Assessment Criteria for Your Project



In **This project** tab, the quality of your project schedule is assessed against 16 DCMA criteria. The criteria are sorted in the descending order to display those criteria with the greatest deviation from their respective threshold values.

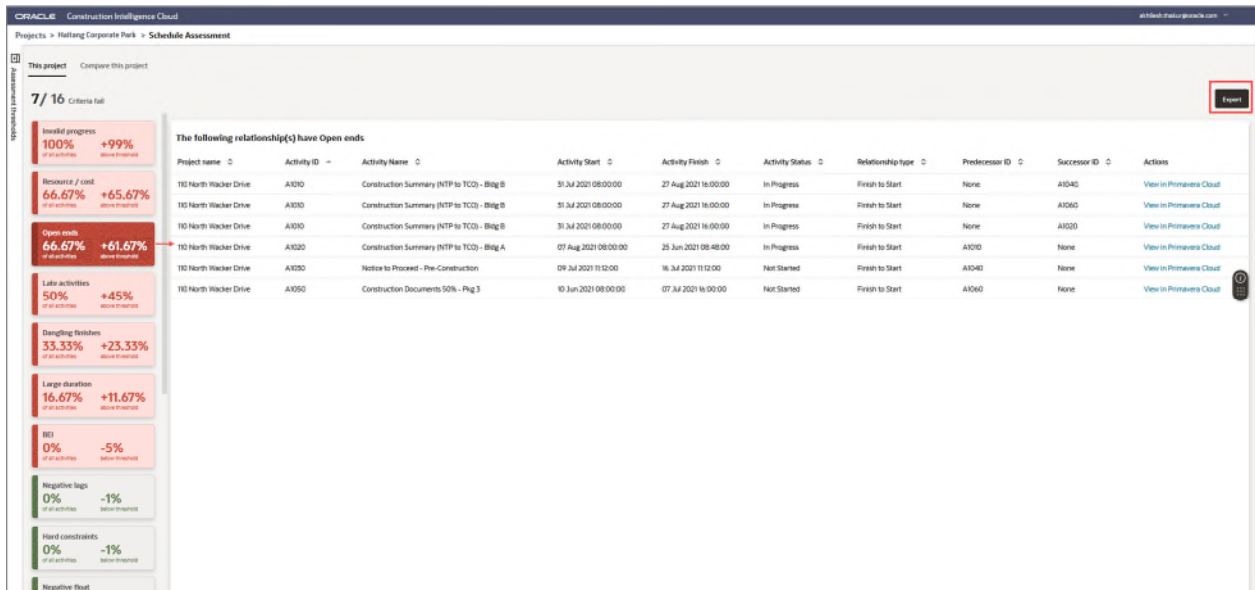
The following information displays for each criteria:

- ▶ the percentage of activities that contribute towards each criteria. For example, 10.17% of all activities contribute towards the **Positive Lags** metric.
- ▶ the extent of deviation from the set threshold level of each criteria. For example, +5.17% above the threshold of the **Positive Lags** metric.
- ▶ The tile color indicates compliance (green) or non-compliance (red) of each assessment criteria.

Note: You can change the threshold levels for the DCMA criteria in the filter panel and click **Apply** to review the impact on the projects being compared in this tab. To permanently modify the threshold values for a criteria, contact your CIC Administrator.

To further analyze your project schedule, you can perform any of the following actions:

- ▶ Click on a tile to generate a list of non-compliant activities that are contributing towards that specific assessment criteria
- ▶ Click **Export** to export the list of non-compliant activities to an Excel spreadsheet for offline processing.



Depending on the assessment criteria you select, the following details may display:

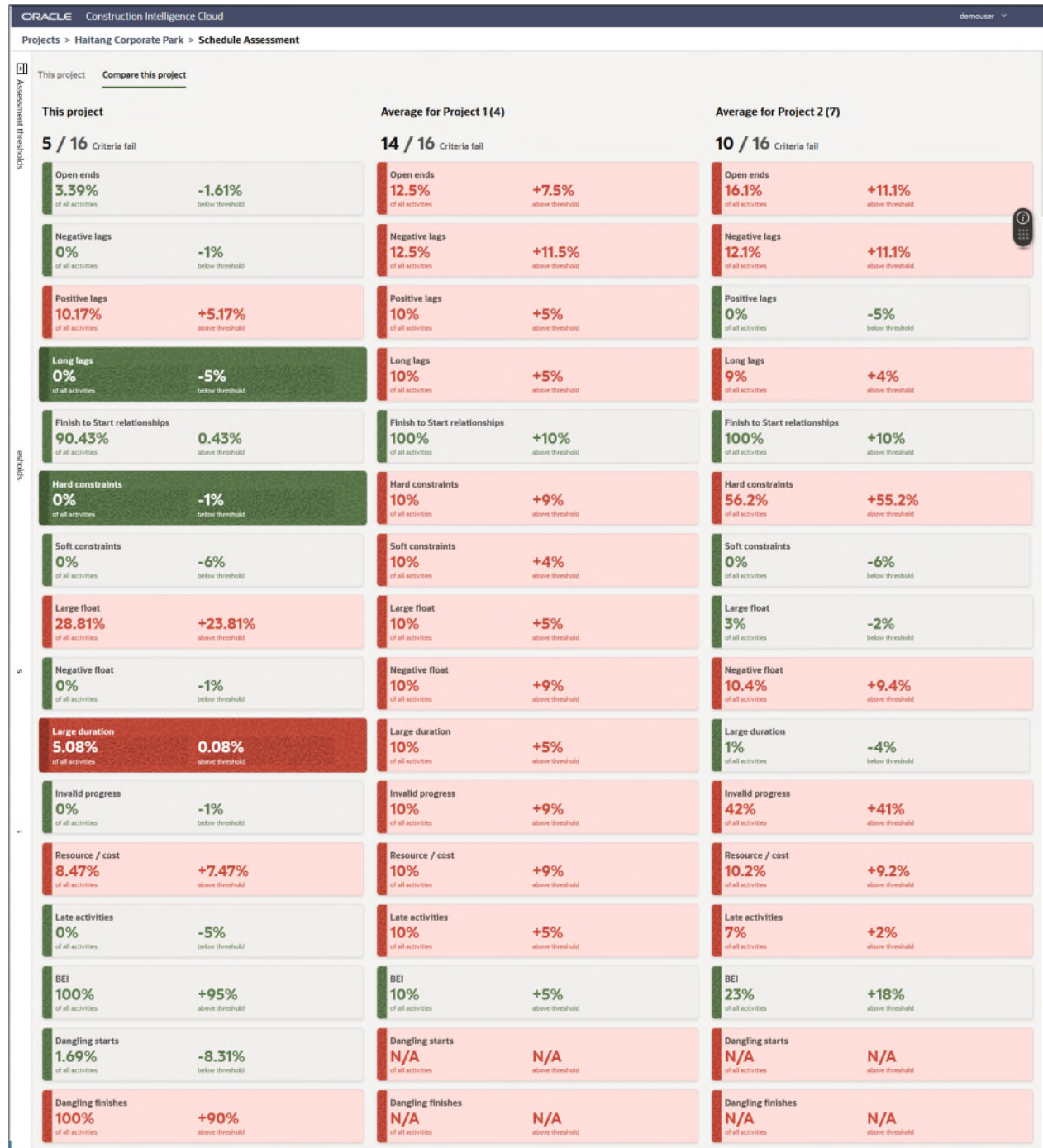
Note: The activity details displayed for each metric can vary.

- ▶ **Activity ID:** A unique ID associated with an activity.
- ▶ **Activity Name:** The name of the activity. The activity name does not have to be unique.
- ▶ **Activity Start:** The start date and time of the activity.
- ▶ **Actual Finish:** The date and time when the activity was completed.
- ▶ **Activity Status:** The current status of the activity.
- ▶ **Baseline Project Finish:** The planned project completion date when the project baseline was saved.
- ▶ **Data Date:** The progress point, or "as-of date", for activities in the project.
- ▶ **Current Scheduled Finish:** The date on which the activity is to be completed in the current project schedule.
- ▶ **Finish:** The date on which the activity is scheduled to be completed.
- ▶ **Lag:** A permitted modification to the Start-to-Start, Start-to-Finish, Finish-to Start, Finish-to-Finish logical relationships is called lag. Lag values can be positive numbers (a delay, slower, deceleration of progress) or negative numbers (lead time, faster, acceleration of progress).
- ▶ **Link to Activities:** Select this link to directly access the activity in P6 EPPM and make changes as necessary.
- ▶ **Predecessor ID:** The ID of the previous activity that was completed before the current activity.
- ▶ **Primary Constraint:** The position of the constraint type for the selected activity.

- ▶ **Primary Constraint Date:** The constraint date for the activity, if the activity has a constraint. The activity's constraint type determines whether this is a start date or finish date. Activity constraints are used by the project scheduler.
- ▶ **Project Name:** The name of the project whose schedule is being analyzed.
- ▶ **Relationship Type:** The relationship associated with the activity. It can be a Finish-to-Start (FS), Start to Finish (SF), Start to Start (SS), or Finish to Finish (FF) relationship.
- ▶ **Remaining Duration:** The total working time from the activity remaining start date to the remaining finish date. The remaining working time is calculated using the activity's calendar. Before the activity is started, the remaining duration is the same as the planned duration. After the activity is completed the remaining duration is zero.
- ▶ **Secondary Constraint:** The position of the constraint type for the selected activity. This field is only available if a primary constraint has been selected.
- ▶ **Secondary Constraint Date:** The date for the activity's secondary constraint, if the activity has a secondary constraint. The activity's constraint type determines whether this is a start date or finish date. This field is only available if a primary constraint has been selected.
- ▶ **Successor Activity ID:** The ID of the next activity that will begin upon completion of the current activity.
- ▶ **Total Float:** The amount of time the activity can be delayed before delaying the project finish date. A float of zero hours indicates that the activity cannot be delayed at all and a negative float indicates that the project is already behind schedule. It is calculated as Late Start minus Early Start or as Late Finish minus Early Finish.
- ▶ **Actions:** Depending on where your project data resides, click the link to view the activity in P6 EPPM or Primavera Cloud.

Select the **Export** link to export data into the following file formats: PDF, Excel 2007+, Powerpoint 2007+, web Archive (.mht) Data (CSV format, Tab delimited Format, or XML format). Upon successful completion, the following confirmation message displays: *The Export process is complete.*

Comparing Your Project Metrics



In the **Compare this project** tab, you can compare the quality of your project schedule with those of the benchmark clusters.

For example, the **Large float** for your project (1st column) is 28.81% when compared to the large float of all projects in the second benchmark group (3rd column) which is 2% below it's threshold value of 5%.

Note: You can change the threshold levels for any DCMA metrics in the filter panel and click **Apply** to review the impact on the projects being compared in this tab. To permanently modify the threshold values for a metric, contact your CIC Administrator.

Schedule Assessment Thresholds Pane



The following metrics are displayed:

- ▶ **Baseline Execution Index (BEI):** This metric determines how many activities are behind or ahead of schedule against the baseline.
- ▶ **Dangling starts:** A start date for an activity that is not tied to another activity. It implies that the activity can start indefinitely earlier without impacting any preceding activities.
- ▶ **Dangling finishes:** A finish date for an activity that is not tied to another activity. It implies that the activity can finish indefinitely later without impacting any successive activities.
- ▶ **Finish to Start relationships:** This metric identifies incomplete tasks containing each relationship type. Since Finish-to-Start (FS) relationship is the most logical, it should account for at least 90% of the relationship types being used. The check counts uses the number of Start-to-Start (SS), Finish-to-Finish (FF) and Start-to-Finish (SF) relationship types to work out the % of Finish-to-Start (FS) relationship types.

It is calculated as: % of FS Relationship Types = (number of logic links with FS Relationships / number of logic links) x 100

- ▶ **Hard constraints:** This metric counts the number of hard constraints used in the incomplete tasks. Hard constraints may prevent the schedule from being logic-driven and should be used sparingly. The number of tasks with hard constraints shouldn't exceed 5%.

It is calculated as: Hard Constraint % = (Total number of incomplete tasks with hard constraints / Total number of incomplete tasks) x 100

- ▶ **Invalid progress:** This metric looks at incomplete tasks that have no actual dates in the future beyond the status date and no forecast dates in the past before the status date. There should not be any invalid dates in the schedule.
- ▶ **Large duration:** This metric looks at incomplete tasks that have a baseline duration greater than 44 working days and a baseline start date within the detail planning period or rolling wave. This helps to determine whether you can break a task into two or more tasks or leave it as a single task. The number of tasks with the higher duration should not exceed 5%.

It is calculated as: High Duration % = (Total # of incomplete tasks with high duration / Total # of incomplete tasks) x 100

- ▶ **Large float:** This metric counts incomplete tasks with a total float greater than 44 working days. This may indicate missing predecessors / successors.

It is calculated as: High Float % = (Total # of incomplete tasks with high float / Total # of incomplete tasks) x 100.

- ▶ **Late activities:** This metric identifies tasks that have finished late compared to the baseline. It helps to identify how well the schedule is meeting the baseline plan and is a good check to gauge whether the project will finish on time.

It is calculated as: Missed % = (# of tasks with actual/forecast finish date past baseline date / # of tasks with baseline finish dates on or before status date) x 100.

- ▶ **Long Lags:** Relationships with a lag duration greater than 352 hours.
- ▶ **Negative float:** This metric counts incomplete tasks with total float less than 0 working days. These tasks should have an explanation and corrective action plan.

It is calculated as: Negative Float % = (Total # of incomplete tasks with negative float / Total # of incomplete tasks) x 100.

- ▶ **Negative lags:** This metric identifies incomplete tasks that have logic links with leads (negative lag) in predecessor relationships. Ideally, there should not be any leads as they distort total float.

It is calculated as: $\text{Leads \%} = (\text{number of logic links with leads} / \text{number of logic links}) \times 100$

- ▶ **Open ends:** The number of tasks without predecessors and/or successors. It should not exceed 5% of the total activities.

It is calculated as: $(\text{number of tasks with missing logic} / \text{number of incomplete tasks}) \times 100$

- ▶ **Positive lags:** The number of activities with a lag as a predecessor should not be more than 5% of the total activities.
- ▶ **Resource / Cost:** This metric reports on all tasks that have a duration greater than zero and have currency or hours assigned. Some projects may not have resources loaded directly into the schedule. If they are loaded into the schedule, then this metric uses the following formula to identify missing resources:

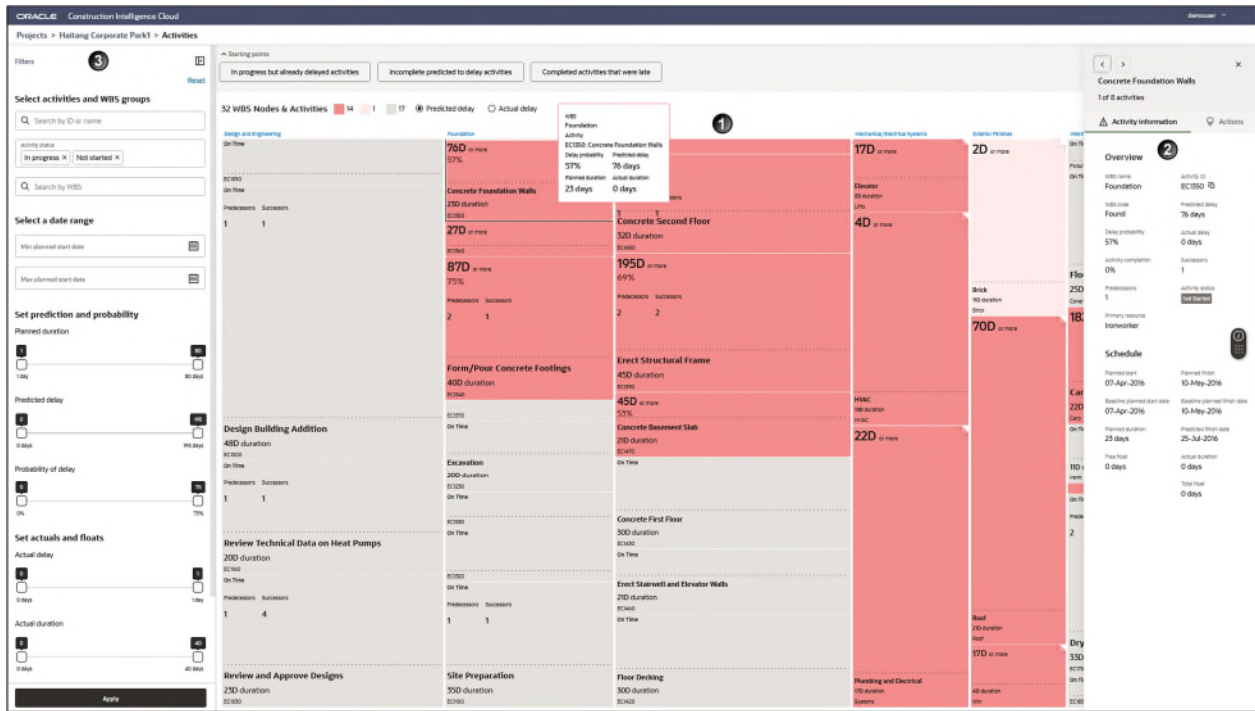
$\text{Missing Resource \%} = (\text{Total \# of incomplete tasks with missing resource} / \text{Total \# of incomplete tasks}) \times 100.$

- ▶ **Soft constraints:** Constraints that do not prevent activities being moved. It should be less than 5%.

Activities Page

How to Get Here

- 1) Sign in to CIC Advisor.
- 2) Select any of the following links to access the **Activities** page:
 - On the **Project Listings** page, select the **Predicted delay activities** KPI of a project.
 - or
 - On the **Schedule Intelligence** page:
 - ▶ Click **More details** in the **Activity delay** section or
 - ▶ Select a factor in the **Factors considered in predicting project delay** section




How to Use this Page

The **Activities** page displays details of activities for a project selected on the **Project Listings** page. Use this page to discover delayed activities, identify the impact of the delayed activities on the successor activities, etc.

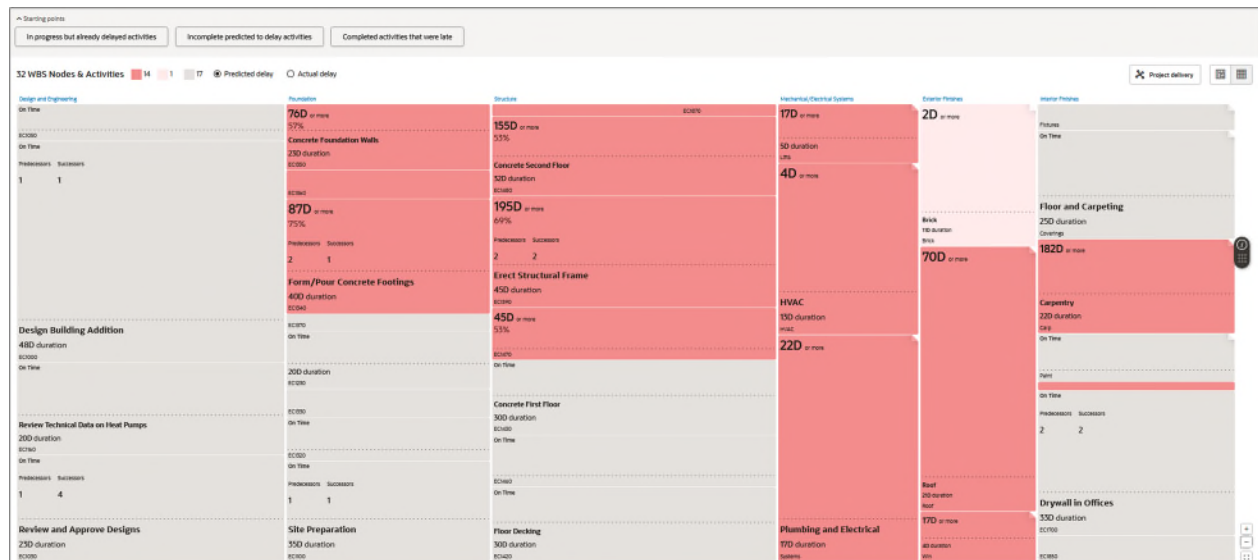
This page includes the following sections:

Section Number	Section Title
1	Activities in this Project Section (on page 43)
2	Activity Information (on page 46)
3	Filters Pane (on page 49)

To view details of each activity in a table format, click  **Activity List**. For more information, see the **Activity Details Table** (on page 44).

Click **Project Delivery** to access the **Project Delivery Network Page** (on page 50).

Activities in this Project Section




The **Activities in this Project** section of the **Activities** page displays an activity heat map of your project. Use this page to determine:

- ▶ how any activity on the project fits into the overall schedule and assess the impact of the probable delay associated with that activity
- ▶ which activities are causing a delay in the project schedule

For example, an activity with a large duration and delay may not have as much of an impact as an activity on the *critical path* with a smaller duration and delay.

To view more information from the activity heat map, select any of the following actions:

- ▶ hover over a rectangle to view the activity details. For example, hover over Activity ID **EC1310** to view the **Activity Name**, *Fabricate and Deliver Flooring*.
- ▶ Click on a rectangle to view activity details.
- ▶ Click **Project delivery** to view the project schedule as a network of activities and resources on the **Project Delivery Network Page** (on page 50).
- ▶ Click  **Activity List** to view the heat map information in a tabular format in the **Activity Details Table** (on page 44).

Note: A heat map is a data visualization technique that represents hierarchical data in a tree-like structure. The heat map provides an overview of all the various activities that are part of various WBSs in a project.

To focus on specific subset of activities in the heat map, click on the any of the following buttons:

- ▶ **In progress, but already delayed activities**
- ▶ **Incomplete predicted to delay activities**
- ▶ **Completed activities that were late**

Interpreting the Heat Map

The heat map shows all activities in a project. Each rectangle in the heat map is characterized by two attributes: Dimension and Color.

- ▶ Each column represents a WBS of the project, and each rectangle within the column represents an activity of the WBS.
- ▶ The dimensions of the rectangle reflects the planned duration of the activity. The larger the rectangle, the longer the planned duration of that activity.

For example, the planned duration of *Fabricate and Deliver Flooring* activity is 212 days compared to the planned duration of 300 days for the *Fabricate and Deliver Heat Pump and Controls* activity (Activity ID **EC1290**).

- ▶ The color of each rectangle indicates the extent of predicted delay. The darker the color, the larger the extent of gain or delay.

Red represents an activity that is predicted to be delayed.

Activities that are predicted to complete on time or ahead of time are not color-coded.


For example, the predicted delay of the *Install Ceiling Grid* activity (Activity ID EC1740) is 15 days and colored orange compared to the predicted delay of 39 days for the *Concrete Second Floor* activity (Activity ID EC1480) which is colored red. However, the predicted delay for Activity IDs *Concrete Foundation Walls* activity (Activity ID EC1350) and *Concrete Basement Slab* activity (Activity ID EC1470) is 62 days and 47 days respectively. Therefore both activities are colored red with the same intensity.

Therefore a large rectangle with a dark color indicates the activity contributed significantly towards the planned duration and predicted delay of the project as shown for the *Install Ceiling Grid* activity (Activity ID EC1740) in Carpentry.

Activity Details Table

The screenshot shows the Oracle Construction Intelligence Cloud interface. The main table displays activity details for 'Haltang Corporate Park'. The table includes columns for Activity ID, Activity Name, WBS ID, Delay Forecast, Predicted Delay, Actual Delay, Planned Start, Planned Duration, and Planned End. Activities with predicted delays are highlighted in red.

Activity ID	Activity Name	WBS ID	Delay Forecast	Predicted Delay	Actual Delay	Planned Start	Planned Duration	Planned End
EC090	Erect Structural Frame	Structure	49%	105 days	0 days	01-Jun-2016	45 days	14-Feb-2017
EC1740	Install Ceiling Grid	Carpentry	53%	15 days	0 days	04-May-2017	32 days	15-Dec-2017
EC1480	Concrete Second Floor	Structure	53%	39 days	0 days	26-Oct-2016	32 days	12-May-2017
EC1340	Form/Pour Concrete Footings	Foundation	75%	37 days	0 days	11-Feb-2016	40 days	03-Jul-2016
EC1350	Concrete Foundation Walls	Foundation	57%	62 days	0 days	07-Apr-2016	23 days	25-Jul-2016
EC1000	Insulation and Built-up Roofing	Roof	53%	16 days	0 days	29-Dec-2016	21 days	07-Apr-2017
EC1470	Concrete Basement Slab	Structure	53%	47 days	0 days	26-Oct-2016	21 days	06-Jun-2017
EC1870	Pre-Ab Structural Frame Components	Structure	54%	32 days	0 days	16-May-2016	5 days	24-Jun-2016
EC1360	Form and Pour Slab	Foundation	38%	21 days	0 days	10-May-2016	10 days	20-Jun-2016
EC1010	Rough-in Plumbing/Piping	Plumbing and Electrical	47%	22 days	0 days	11-Nov-2016	3 days	06-Dec-2016
EC1820	Touch-up and Clean-up	Interior Finishes	39%	18 days	0 days	07-Jul-2017	2 days	07-Aug-2017
EC1020	Install Elevator Shafts and Equipment	Elevator	52%	17 days	0 days	24-Nov-2016	3 days	15-Dec-2016
EC1060	Install Door and Window Frames	Doors and Windows	52%	17 days	0 days	15-Dec-2016	3 days	06-Jan-2017
EC1880	Startup and Test HVAC	HVAC	39%	4 days	0 days	16-Mar-2017	2 days	24-Mar-2017
EC1830	Test and Balance HVAC Equipment	HVAC	39%	3 days	0 days	19-Jul-2017	2 days	24-Jul-2017
EC1050	Brick Exterior Walls	Brick	46%	2 days	0 days	08-Dec-2016	15 days	31-Dec-2016
EC1000	Design/Building Addition	Design and Engineering	0%	3 days	0 days	03-Aug-2015	48 days	07-Oct-2015
EC1030	Review and Approve Designs	Design and Engineering	7%	0 days	0 days	05-Oct-2015	23 days	05-Nov-2015
EC1050	Assemble Technical Data for Heat Pump	Design and Engineering	7%	0 days	0 days	05-Nov-2015	8 days	16-Nov-2015

An alternative to the heat map view is the tabular view for reviewing activity details. To view a list of activities, click  **Activity List** on the **Activities** page (shown above). Additionally, you can also group the list of activities by *WBS*, and by *Actual Delay* or *Predicted Delay*.

To focus on specific subset of activities in the table, click on the any of the following buttons:

- ▶ **In progress, but already delayed activities**
- ▶ **Incomplete predicted to delay activities**
- ▶ **Completed activities that were late**

In the **WBS Nodes & Activities** field, select or deselect the relevant check box to include or exclude those activities and nodes from the heat map and the Activities table. It displays the total number of WBS nodes and activities, and classifies the nodes into the following color-coded categories using their delay metric value:

- ▶ Activities and nodes with a high delay impact of being greater than 70 indicated in red
- ▶ Activities and nodes with medium delay impact of being between 30 and 70 indicated in pink
- ▶ Activities and nodes with low delay impact of less than 30 indicated by grey
- ▶ Activities and nodes completed on time is a equal to 0

The delay impact value for each node is calculated as (selected delay type / planned duration) x 100.

The following information is displayed for each activity:

- ▶ **ID:** A unique identifier for each activity.
- ▶ **Activity:** The name of the activity.
- ▶ **WBS:** The Work Breakdown Structure associated with the activity.
- ▶ **Delay likelihood:** The probability of the activity being delayed.
- ▶ **Predicted delay:** The expected delay in completing the activity.
- ▶ **Actual delay:** The difference between the planned start date or planned finish date and the corresponding actual start date or actual finish date of an activity.
- ▶ **Planned start:** The date on which the activity is expected to start. A delayed start or an early start is indicated in parenthesis. For example a 10 day delay is indicated as (+10), and an early start of 5 days is indicated as (-5) days.
- ▶ **Planned duration:** The expected amount of time required to complete an activity.
- ▶ **Predicted finish:** The date on which the activity is expected to complete. A delay or early finish is indicated in parenthesis. For example a 10 day delay is indicated as (+10), and an early finish of 5 days is indicated as (-5) days.

Use this information to identify delayed activities. All predicted information have been generated using models in CIC Advisor.

Activity Information

The **Activity Information** tab of the **Activity Details** pane provides detailed information about each activity in a WBS. To access the pane, select an activity in a WBS (rectangle) on the heatmap to view its related activities.

The screenshot shows a modal window titled "Concrete Foundation Walls" with "1 of 8 Activities". It has two tabs: "Activity Information" (selected) and "Actions". The "Activity Information" tab is divided into two sections: "Overview" and "Schedule".

Overview	
WBS Name	Activity ID
Foundation	EC1350
WBS Code	Predicted Delay
24643	76 days
Delay Probability	Actual Delay
57%	0 days
Activity Completion	Successors
0%	0
Predecessors	Activity Status
1	Not Started
Primary Resource	
Ironworker	

Schedule	
Planned Start	Planned Finish
07-Apr-2016	10-May-2016
Baseline Planned Start Date	Baseline Planned Finish Date
07-Apr-2016	10-May-2016
Planned Duration	Predicted Finish Date
23 days	25-Jul-2016
Free Float	Actual Duration
0 days	0 days
	Total Float
	0 days

It includes the following sections:

Overview Section: Provides a synopsis of the current state of each activity.

- ▶ **WBS Name:** The name of the WBS element
- ▶ **Activity ID:** The unique identifier of the activity.
- ▶ **WBS Code:** The unique identifier of the WBS for the associated activity.
- ▶ **Predicted Delay:** The number of days that an activity will be delayed, predicted by CIC Advisor.
- ▶ **Delay Probability:** The likelihood of the activity being delayed.
- ▶ **Actual Delay:** The number of days the activity will actually be delayed.

- ▶ **Activity Completion:** The percent of the activity that has been completed.
- ▶ **Successors:** The number of activities required to start or finish after an activity in the activity relationship has started or finished, depending on the relationship type.
- ▶ **Predecessors:** The number of activities required to start or finish before an activity in the activity relationship starts or finishes, depending on the relationship type.
- ▶ **Activity Status:** The current condition of the activity.
- ▶ **Primary Resource:** The person primarily responsible for performing or overseeing work related to a specific activity or assignment.

Schedule Section: Provides project schedule information related to each activity.

- ▶ **Planned Start:** The date the activity is scheduled to start.
- ▶ **Planned Finish:** The date the activity is scheduled to finish if the activity has not started.
- ▶ **Baseline Planned Start Date:** The planned start date for the activity as is set in the current baseline.
- ▶ **Baseline Planned Finish Date:** The planned finish date for the activity as is set in the current baseline.
- ▶ **Planned Duration:** The total working time from the project planned start date to the planned finish date.
- ▶ **Predicted Finish Date:** The date that an activity will be completed, predicted by CIC Advisor.
- ▶ **Free Float:** The amount of time the activity can be delayed before delaying the start date of any successor activity.
- ▶ **Actual Duration:** The total working time from the activity Actual Start date to the Actual Finish date for completed activities, or the total working time from the Actual Start date to the data date for in-progress activities. The actual working time is computed using the activity's calendar.
- ▶ **Total Float:** The amount of time the activity can be delayed before risking a delay to the project finish date.

Actions for an Activity

The **Actions** tab of the **Activity Details** pane provides links to further investigate or review a specific activity.



Select any of the following links:

- ▶ **View activity details:** Select this link to view the causes for an activity delay on the Individual Activity Detail Page.
 - ▶ **View activity in P6:** Select this link to access the activity in P6 EPPM
- or
- ▶ **View activity in Primavera Cloud:** Select this link to access the activity in Oracle Primavera Cloud
 - ▶ **View activity within project delivery network:** Select this link to view how this activity is connected to all with other activities in the project on the **Project Delivery Network Page** (on page 50).
 - ▶ **Discover similar activities:** Select this link to view similar activities in other projects on the **Activity Discovery Page** (on page 62).

Filters Pane

In the sidebar, use the **Filters** pane to adjust the values of any of the following filters to see a list of delayed activities that meet the filter criteria for a project. For example, you can choose to see *All* activities with a status *Not Started*.



Enter or select values for any of the following filters to identify activities based on:

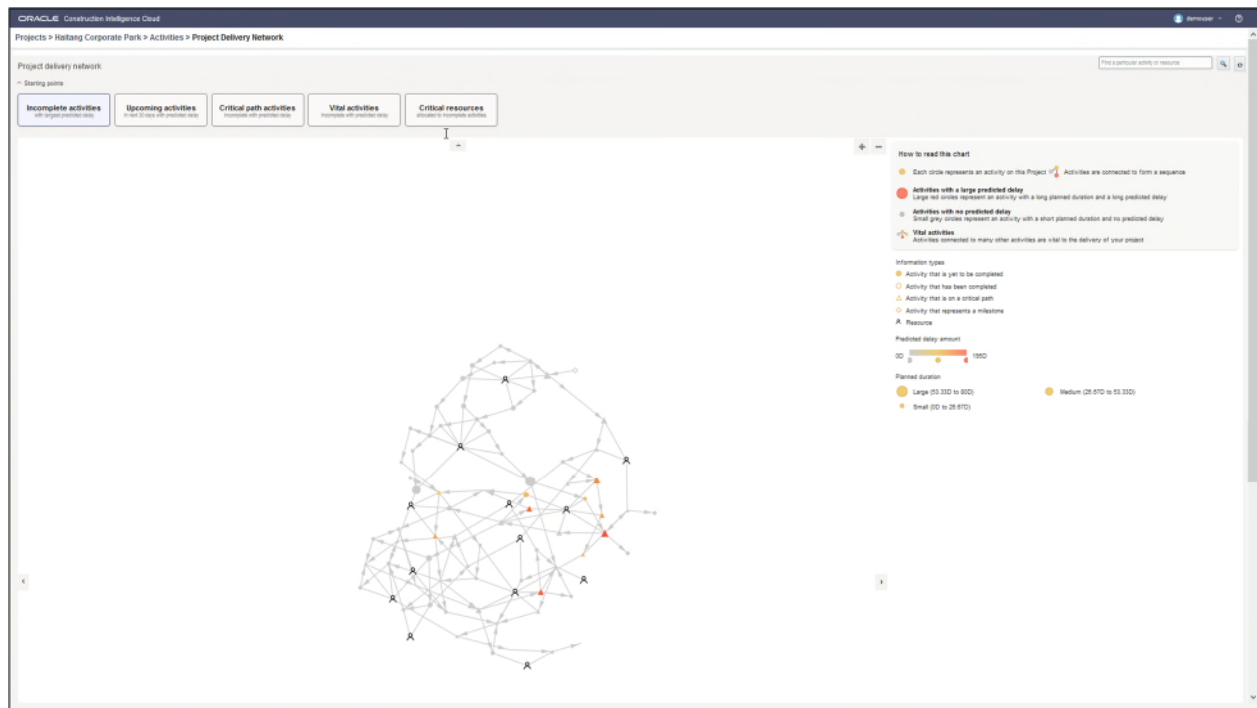
- ▶ **Select activities and WBS groups:** The name of the activity. Displays *All* by default.
- ▶ **Activity status:** The current status of the activity. Choices include: *In Progress*, *Not Started*, and *Completed*.
- ▶ 🔍 **Search by WBS:** Enter one or more WBS to locate associated activities.
- ▶ **Select a date range:** Enter or click <calendar icon> to specify a range of start dates for activities.
- ▶ In the **Set prediction and probability** section, use the slider to specify a range of values for the following metrics:
 - ▶ Planned duration
 - ▶ Predicted delay
 - ▶ Probability of delay
- ▶ In the **Set actuals and floats** for the following metrics:
 - ▶ Actual delay
 - ▶ Actual duration

Click **Apply** to view the list of activities that meet the filter criteria.

Project Delivery Network Page

How to Get Here

- 1) Sign in to CIC Advisor.
- 2) Select any of the following links to access the **Activities** page:
 - ▶ On the **Project Listings** page, select the **Predicted delay activities** KPI of a project.
 - ▶ On the **Schedule Intelligence** page, click **More details** in the **Activity delay** section.
- 3) On the **Activities** page, click **Project Delivery**.



How to Use this Page

The **Project Delivery Network** page provides a visual of the project schedule you created as a network of activities, resources, and milestones in your construction project. Each node represents an activity (●) or resource (⊿). The size of an activity node represents the planned duration (large, medium, or small). The color intensity of an activity indicates the extent of predicted delay for that activity where:



- ▶ Grey indicates no delay
- ▶ Amber indicates medium predicted delay
- ▶ Red indicates a large predicted delay

Use the network diagram to

- ▶ understand how a project delay or delivery on time impacts the risk on predecessor or successor activities
- ▶ identify critical path activities (△) and resources in your project
- ▶ identify how many activities have been completed (○)
- ▶ identify how many activities have not been completed (●)
- ▶ identify activities with a large predicted delay, no predicted delay, and vital activities (⊕)
- ▶ identify activity milestones (◇) in your project

To focus on a specific aspect of your project plan, select any of the following tabs:

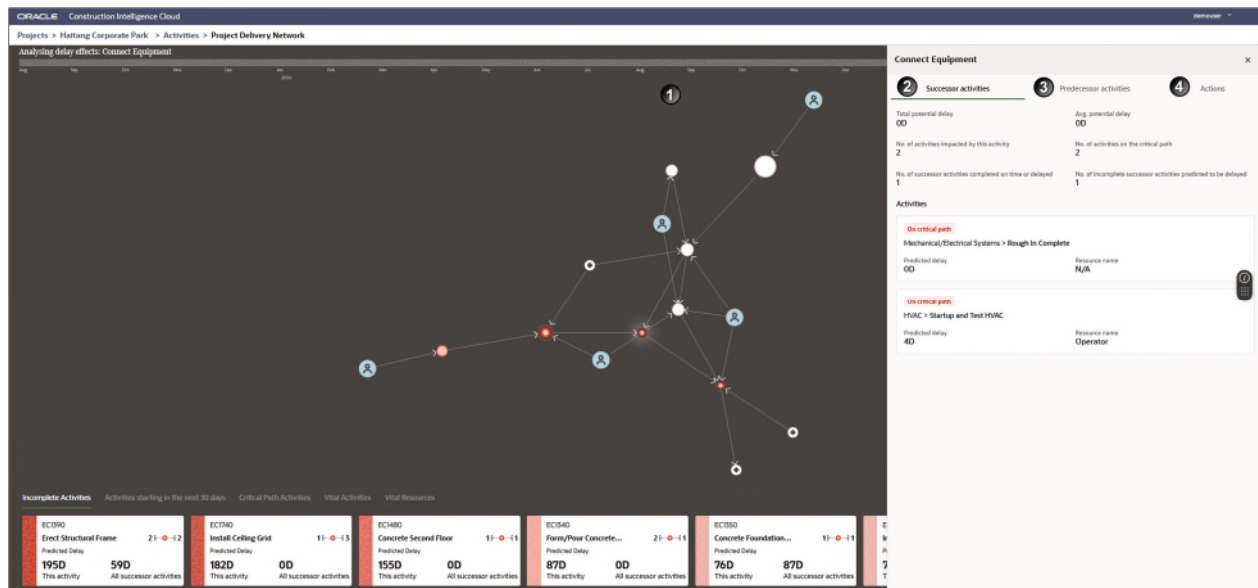
- ▶ **Incomplete Activities:** View incomplete activities in your project with predicted delay evaluated for each activity.

- ▶ **Activities starting in the next 30 days:** View the successor activities that are due to begin in the next 30 days with the predicted delay evaluated for each activity.
- ▶ **Critical Path Activities:** View only the resources and activities included in the critical path of the project.
- ▶ **Vital Activities:** View only those activities that impact several other activities with the predicted delay evaluated for each activity.
- ▶ **Vital Resources:** View only those resources that are associated with activities and milestones that are crucial for completing the project. with the predicted delay.
- ▶ Click **Refresh**  to view the default project delivery network diagram generated for your project
- ▶ To locate a specific activity or resource, enter the name of an activity or resource in the search bar and then select **Search** .
- ▶ Hover your cursor over a specific activity or node to view details.
- ▶ Click on an activity node to view details of its predecessor and successor activities
- ▶ Click on a resource node to view the activities assigned to the resource.

Activity Network Page

How to Get Here

- 1) Sign in to Construction Intelligence Cloud Advisor.
- 2) Select any of the following links to access the **Activities** page:
 - ▶ On the **Project Listings** page, select the **Predicted delay activities** KPI of a project or
 - ▶ On the **Schedule Intelligence** page, click **More details** in the **Activity delay** section.
- 3) On the **Activities** page, drill-down through the WBSs and select an activity on the heat map.
- 4) Select the **Actions** tab and click **View activity within project delivery network**.



How to Use this Page

The **Activity Network** page provides a visual of the project schedule you created as a network of activities, resources, and milestones in your construction project. Each node represents an activity (○) or **Resource** (⊗). The size of an activity node represents the planned duration (large, medium, or small). The color intensity of an activity indicates the extent of predicted delay for that activity where:

- ▶ Grey indicates no delay (delay metric value = 0)
- ▶ Amber indicates medium predicted delay ($30 \leq \text{delay metric} \leq 70$)
- ▶ Red indicates a large predicted delay (delay metric value > 70)

Use the network diagram to

- ▶ understand how a project delay or delivery on time impacts the risk on predecessor or successor activities
- ▶ identify critical path activities (⊙) and resources in your project
- ▶ identify how many activities have been completed (☑)
- ▶ identify how many activities have not been completed (○)
- ▶ identify activities with a large predicted delay, no predicted delay, and vital activities
- ▶ identify activity milestones (⦿) in your project

Click on a specific node (activity) in the network diagram to view the **Successor activities**, **Predecessor activities**, and the **Actions** tab associated with that activity as show above.

To focus on a specific aspect of your project plan, select any of the following tabs:

- ▶ **Incomplete Activities:** View incomplete activities in your project with predicted delay evaluated for each activity.

- ▶ **Activities starting in the next 30 days:** View the successor activities that are due to begin in the next 30 days with the predicted delay evaluated for each activity.
- ▶ **Critical Path Activities:** View only the resources and activities included in the critical path of the project.
- ▶ **Vital Activities:** View only those activities that impact several other activities with the predicted delay evaluated for each activity.
- ▶ **Vital Resources:** View only those resources who are critical for several activities.

This page includes the following sections:

Section Number	Section Title
1	Project Network Diagram (described above)
2	Successor activities tab (see " Successor Activities " on page 55)
3	Predecessors activities tab (see " Predecessor Activities " on page 56)
4	Actions tab (on page 57)

Successor Activities

Connect Equipment ✕

Successor activities	Predecessor activities	Actions
Total potential delay 0D	Avg. potential delay 0D	
No. of activities impacted by this activity 2	No. of activities on the critical path 2	
No. of successor activities completed on time or delayed 1	No. of incomplete successor activities predicted to be delayed 1	

Activities

On critical path


Mechanical/Electrical Systems > Rough In Complete

Predicted delay 0D	Resource name N/A
------------------------------	-----------------------------

On critical path

HVAC > Startup and Test HVAC

Predicted delay 4D	Resource name Operator
------------------------------	----------------------------------



The following information is displayed for successor activities when a node is selected on the activity network diagram:

- ▶ **Total potential delay:** The total potential delay for successor activities.
- ▶ **Avg. potential delay:** The average potential delay of successor activities.
- ▶ **No. of activities impacted by this activity:** The number of activities influenced by the activity node selected on the activity network diagram.
- ▶ **No. of activities on the critical path:** The total number of successor activities on the critical path of your project. Additional information about each critical path activity listed in the **Activities** section.
- ▶ **No of activities completed on time or delayed:** The number of successor activities that will be completed on time or delayed.
- ▶ **No. of incomplete successor activities predicted to be delayed:** The number of successor activities that are predicted to be delayed based on the selected activity node on the activity network diagram.

Predecessor Activities

Connect Equipment
✕

Successor activities	Predecessor activities	Actions
Total potential delay 22D	Avg. potential delay 4D	
No. of activities that impact this activity 6	No. of activities on the critical path 2	
No. of predecessor activities completed on time or delayed 1	No. of incomplete predecessor activities predicted to be delayed 1	

Activities

Not on critical path

HVAC > Fabricate and Deliver Heat Pump and Controls

Predicted delay 0D	Resource name Project Controls
------------------------------	--

Not on critical path

HVAC > Insulate Ducts

Predicted delay 0D	Resource name HVAC
------------------------------	------------------------------

Not on critical path

HVAC > Set Heat Pump

Predicted delay 0D	Resource name Operator
------------------------------	----------------------------------

Not on critical path

Plumbing and Electrical > Rough-In Plumbing/Piping

Predicted delay 22D	Resource name Plumber
-------------------------------	---------------------------------

On critical path

Plumbing and Electrical > Install Wiring and Cable

Predicted delay 0D	Resource name Electrician
------------------------------	-------------------------------------

On critical path

Exterior Finishes > Building Enclosed

Predicted delay 0D	Resource name N/A
------------------------------	-----------------------------

The following information is displayed for predecessor activities when a node is selected on the activity network diagram:

- ▶ **Total potential delay:** The total potential delay caused by predecessor activities.
- ▶ **Avg. potential delay:** The average potential delay of predecessor activities.
- ▶ **No. of activities that impact this activity:** The number of activities that influence the activity node selected on the activity network diagram.
- ▶ **No. of activities on the critical path:** The total number of predecessor activities on the critical path of your project. Additional information about each critical path activity listed in the **Activities** section.
- ▶ **No of predecessor activities completed on time or delayed:** The total number of predecessor activities that have been completed on time or delayed.
- ▶ **No. of incomplete predecessor activities predicted to be delayed:** The total number of predecessor activities that are predicted to be delayed based on the selected activity node on the activity network diagram.

Actions Tab

The **Actions** tab of the **Activity Network** page provides links to further investigate or review a specific activity.



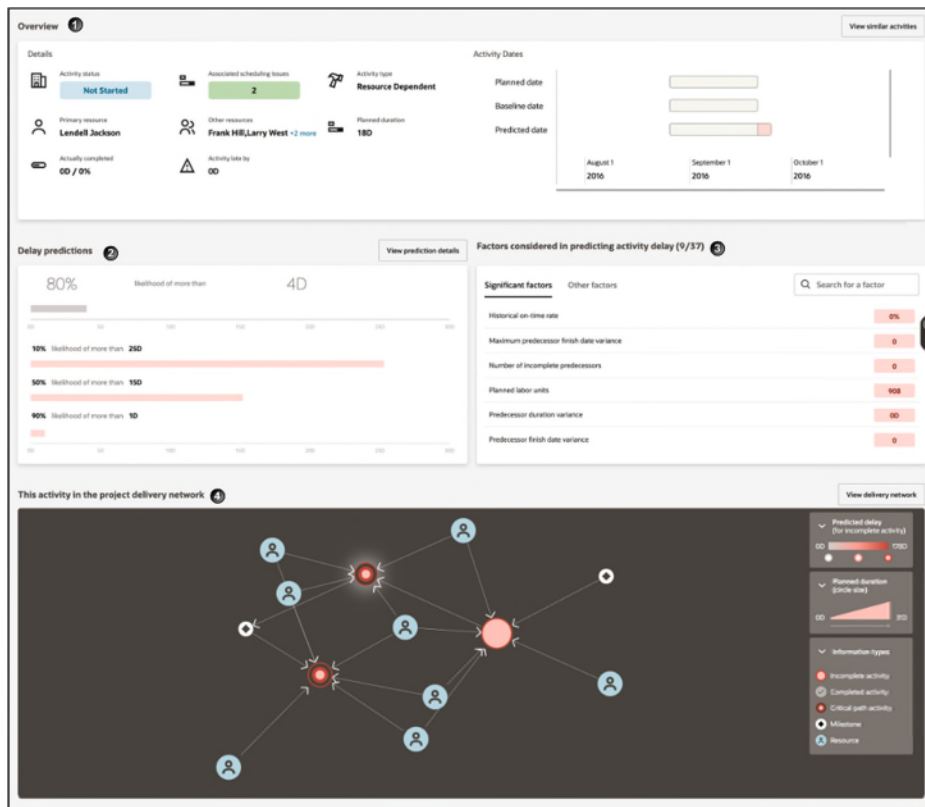
Select any of the following links:

- ▶ **View activity details:** Select this link to view the causes for an activity delay on the Individual Activity Detail Page.
- ▶ **View activity in P6:** Select this link to access the activity in P6 EPPM
or
View activity in Primavera Cloud: Select this link to access the activity in Primavera Cloud
- ▶ **Discover similar activities:** Select this link to view similar activities in other projects on the *Activity Discovery Page* (on page 62).

Activity Details Page

How to Get Here

- 1) Sign in to CIC Advisor.
- 2) On the **Project Listings** page, select the **Predicted delay activities** KPI for a project.
- 3) On the **Activities** page, select a specific tile for an activity or WBS on the heat map.
- 4) In the side panel, select the **Actions** tab, and then click **View activity details**.



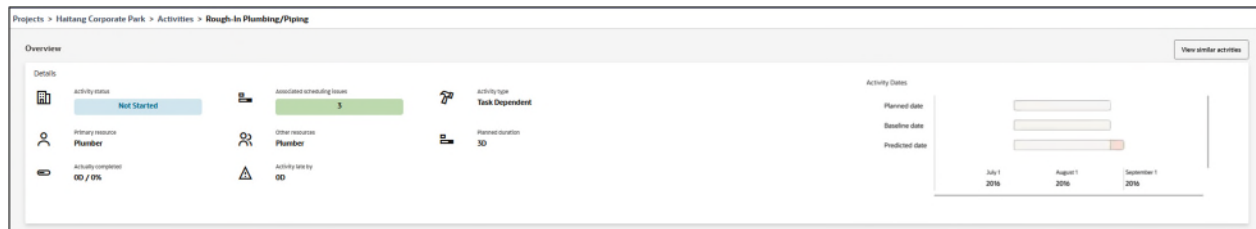
How to Use this Page

The **Activity Details** page provides details of activity current schedule information, its delay likelihood, the factors affecting its potential delay, and the impact of other activities if this activity gets delayed.

This page contains the following sections:

Section Number	Section Title
1	Overview Section (on page 59)
2	Delay Predictions Section (on page 60)
3	Factors Considered in Predicting Activity Delay Section (on page 60)
4	This Activity in the Project Network Diagram Section (on page 61)

Overview Section



The **Overview** section displays details of the selected activity:

- ▶ **Activity status:** The current status of the activity. Choices include: *In progress*, *Not started*, or *Completed*.
- ▶ **Associated scheduling issues:** The number of scheduling issues this activity is associated with as per the Scheduling Assessment section.
- ▶ **Activity type:** The classification of the activity. An activity can be classified as *resource dependent*, *task dependent* etc.
- ▶ **Primary resource:** The name of the primary resource associated with the activity.
- ▶ **Other resources:** All other resources associated with the activity.
- ▶ **Planned duration:** The length of the activity as determined by the current project schedule. In the above example, the Planned duration of the activity is 41 days.
- ▶ **Actually completed:** The percentage of the activity currently completed, expressed in days and percents.
- ▶ **Activity late by:** The number of days by which the activity is currently delayed. If the planned end date is greater than the baseline end date, then the delay is calculated as (Planned end date - Baseline end date). Otherwise it is not delayed (zero days).

The **Activity Dates** section displays a bar chart to display the difference between your project's **Planned date**, **Baseline date**, and the **Predicted date** by CIC Advisor.

Click **View similar activities** to view similar activities in other projects on the **Activity Discovery Page** (on page 62).

Delay Predictions Section



The **Delay predictions** section displays displays the likelihood of the activity being delayed by 20% of its planned duration. Additionally, it also shows the potential delays at 10%, 50%, and 90% likelihood.

For example, there is a 10% likelihood of the activity being delayed by more than 144 days, whereas there is a 90% likelihood that the activity will be delayed by 1 day.

Select **View prediction details** to access the **Delay Predictions Page** (on page 24).

Factors Considered in Predicting Activity Delay Section

The figure is a table titled "Factors considered in predicting activity delay (9/37)". It has two tabs: "Significant factors" (selected) and "Other factors". A search bar is located at the top right. The table lists six factors and their corresponding values, which are displayed in red boxes.

Factor	Value
Historical on-time rate	0%
Maximum predecessor finish date variance	0
Number of incomplete predecessors	0
Planned labor units	908
Predecessor duration variance	00
Predecessor finish date variance	0

The **Factors considered in predicting activity delay** section displays the factors influencing the specific activity, select any of the following tabs:

▶ **Significant**

Displays a list of factors that are contributing significantly to a prediction in activity delay

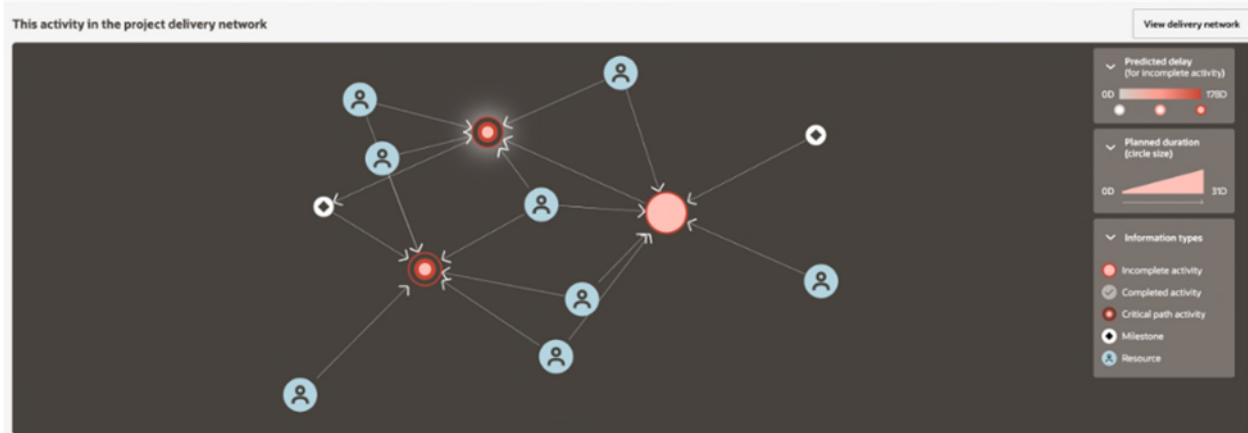
▶ **Other**

Displays a list of factors with a low impact or no impact with regard to activity delay

Notes:

- When new features are added into a prediction model, the delay factors will change based on the importance attributed towards a feature.
- The threshold settings for any of the delay factors can be changed in the CIC Advisor Administration application. Contact your administrator to change a threshold setting.

This Activity in the Project Network Diagram Section



This Activity in the Project Network Diagram displays a network of activities and resources that are directly impacted by this activity. Each node represents an activity (○) or **Resource** (⊗). The size of an activity node represents the planned duration (large, medium, or small). The color intensity of an activity indicates the extent of predicted delay for that activity where:

- ▶ Grey indicates no delay (delay metric value = 0)
- ▶ Amber indicates medium predicted delay ($30 \leq \text{delay metric} \leq 70$)
- ▶ Red indicates a large predicted delay (delay metric value > 70)

Click on a specific node (activity) in the network diagram to view the **Successor activities**, **Predecessor activities**, and the **Actions** tab associated with that activity

Activity Discovery Page

How to Get Here

- 1) Sign in to Construction Intelligence Cloud Advisor.
- 2) On the **Project Listings** page, select the **Predicted delay likelihood** KPI of a project.
- 3) On the **Schedule Intelligence** page, click **More details** in the **Activity Delay** section.
- 4) On the **Activities** page, select a specific rectangle or WBS on the heat map.
- 5) In the side panel, select the **Actions** tab and then click **Discover similar activities**.



How to Use this Page

The **Activity Discovery** page allows you to evaluate the performance of a specific activity in your project in comparison to similar activities identified from past projects. Use this page to evaluate the following questions:

- ▶ Is the duration allocated for this activity sufficient in the project schedule?
- ▶ How much time was allocated for similar activities in past projects?
- ▶ What was the average extent of delay for similar activities in past projects?

This page contains the following sections:

Section Number	Section Title
1	Activity Delay Section (on page 63)
2	Filters Pane (on page 64)

Activity Delay Section

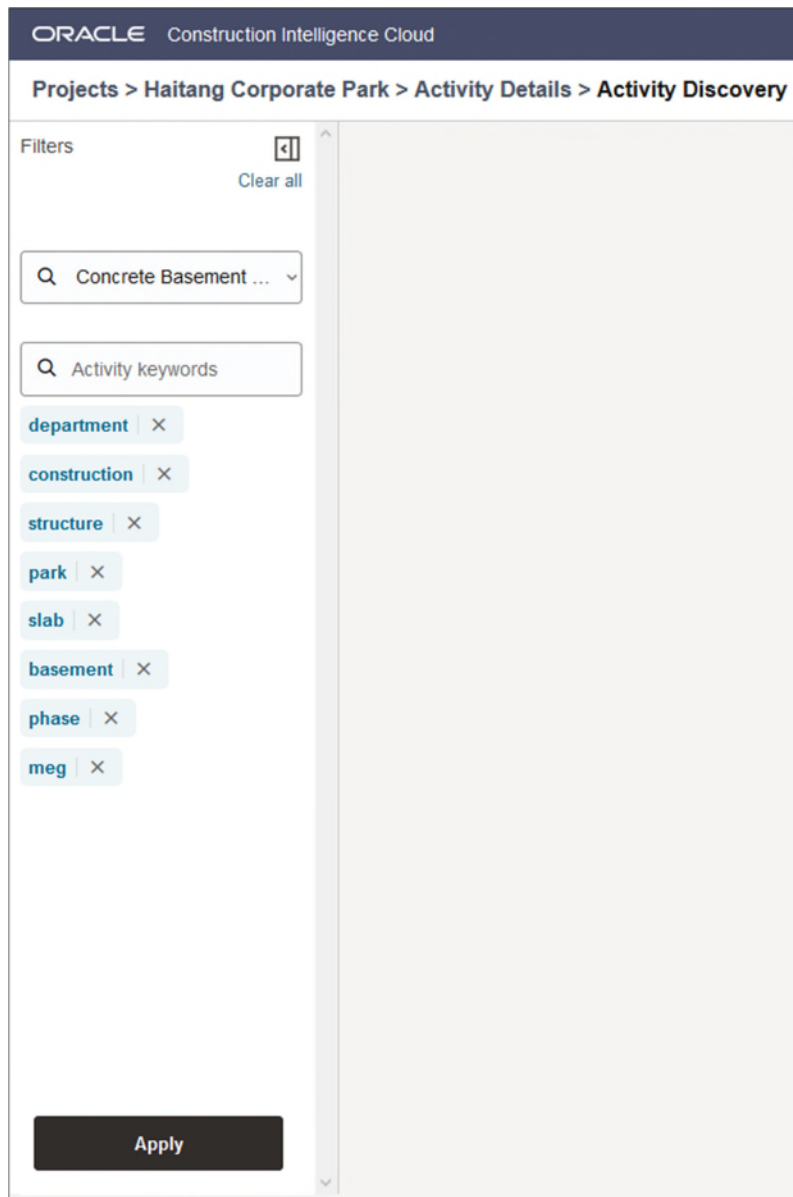


The **Activity Discovery** section displays two types of charts:

- ▶ A summary graph specific to the metric selected in the **Compare** list. The summary graph compares the metric specified for your project with the metrics of similar activities from past projects. For example, in the **Activity Delay Summary** graph above, the metric for your project is indicated by the red marker which seems to be an outlier when compared to the metrics of similar projects in the past is indicated by the blue box. The median value for this metric from all past projects is indicated by the black marker.
- ▶ A **Bubble chart** that compares the activity in your project with similar activities identified based on the filter criteria specified in the **Filters** pane, and the metric selected in the **Compare** list. Each circle indicates an activity.

Filters Pane

Use the **Filters** pane to discover similar activities from past projects.



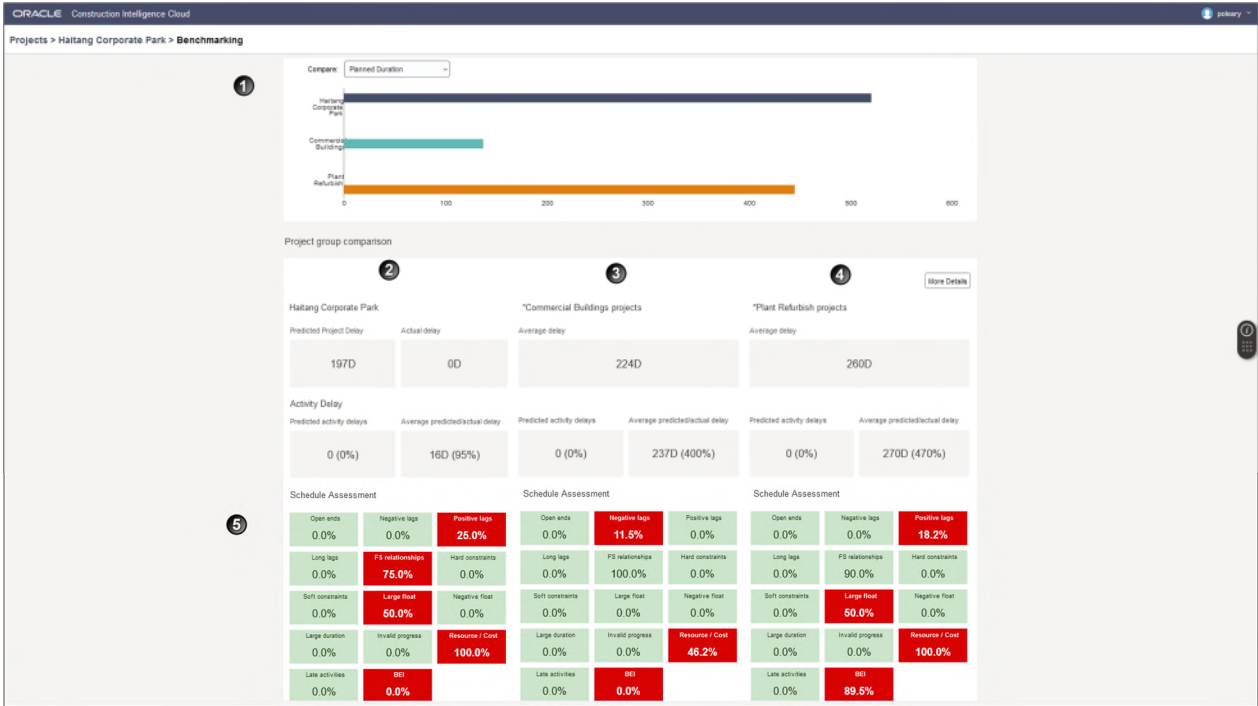
In the **Filters** pane:

- 1) Select an activity from the drop-down list. For example, *Concrete Basement*.
- 2) (Optional) In the **Activity Keyword** search bar, enter new keywords to improve the search capability of CIC Advisor to identify similar activities from past projects.
You can also search on an existing keyword.
- 3) Click **Apply** to view and compare similar activities from past projects.

Benchmarking Page

How to Get Here

- 1) Sign in to CIC Advisor.
- 2) On the **Project Listings** page, select the **Predicted delay likelihood** KPI of a project.
- 3) On the **Schedule Intelligence** page, click **Compare in detail** in the **Compare this project** section.



How to Use this Page

The **Benchmarking** page allows you to compare your ongoing projects against projects that have been completed or are 80- 90% complete to:

- ▶ learn from past delays, gains and schedule issues on projects and apply those learnings to the current project
- ▶ enhance estimation capabilities

The horizontal bar chart displays compares the ongoing project with two benchmarked groups or completed projects. In the above bar chart, the **Haitang Corporate Park** project is compared with the benchmark groups, *Commercial Buildings* and *Plant Refurbish*.

Compare your project with the benchmark groups for any of the following metrics: *Planned Duration, Planned Labor Units, Planned Total Cost, Planned Labor Cost, Planned Material Cost, Planned Nonlabor Cost, Planned Nonlabor Units, Planned Total Units, Total Float, and # of Delayed Activities*.

- ▶ The first column displays the metrics of your project. For example, the **Haitang Corporate Park** project.
- ▶ The middle and the last columns display the corresponding metrics for each benchmarked group. For example, *Commercial Buildings* and *Plant Refurbish*.

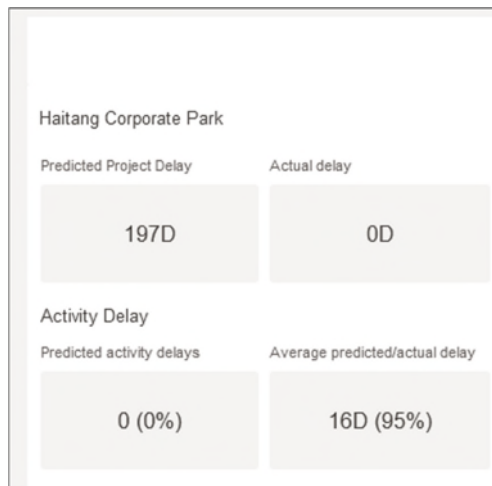
Note: The groups being compared are setup in the CIC Advisor Administration application, and can be modified according to the needs of your organization. To change a group or modify the selection of projects in each group, contact your CIC Advisor administrator.

This page includes the following sections:

Section Number	Section Title
1	Benchmark Comparison Graph Section described above
2	Current Project KPIs Section (on page 66)
3 and 4	Benchmark Group KPIs Section (on page 67)
5	Schedule Assessment Section (on page 68) of your project and benchmark groups respectively

Click **More Details** to access the **Benchmarking Details Page** (on page 74).

Current Project KPIs Section



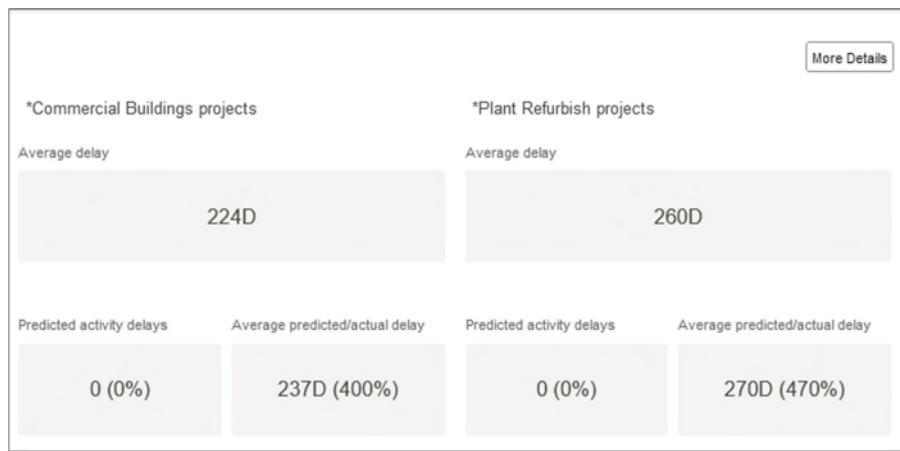
The **Project KPIs** column of the **Benchmarking** page displays the following metrics of your project which can be compared with the corresponding metrics of each benchmark group:

- ▶ **Predicted Project Delay:** The extent of delay predicted for the current project in terms of days.
- ▶ **Actual Delay:** The actual delay calculated for the current project in terms of days.
- ▶ **Predicted activity delays:** The number of activities predicted to be delayed for your project in terms of days and percentages.
- ▶ **Average predicted / actual delay:** The median delay calculated for project activities that are predicted to be delayed in terms of days and percentages.

Note: The median is a statistical measure that determines the mid point of a set of values when organized in an ascending or descending order.

In the above example, metrics for the **Haitang Corporate Park** project is displayed.

Benchmark Group KPIs Section



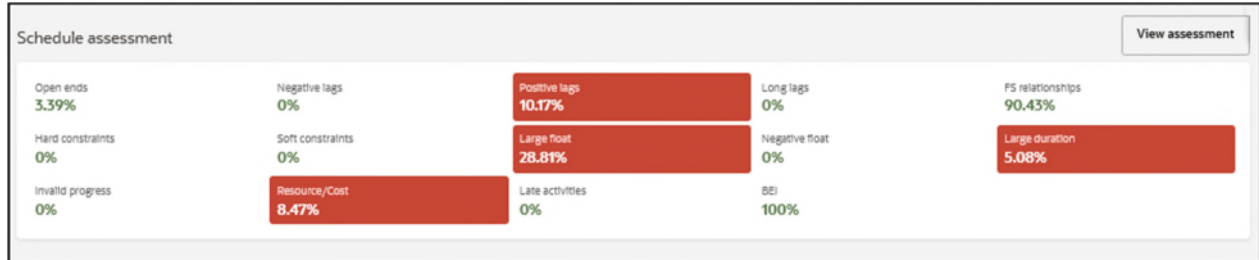
Each benchmark group comprises of projects that are 85 to 90% complete. The **Benchmark Group KPIs** column on the **Benchmarking** page displays the following metrics which can be compared with the corresponding metrics of your project:

- ▶ **Average Delay:** The average number of days that projects included in each benchmark group are delayed.
- ▶ **Predicted activities delays:** The number of activities predicted to be delayed in the projects selected in the benchmark group expressed in terms of days and percents.
- ▶ **Average predicted / actual delay:** The average number of days that activities are predicted to be delayed or actually delayed within each benchmark group, expressed in terms of days and percents.

Note: The median is a statistical measure that determines the mid point

of a set of values when organized in an ascending or descending order.

Schedule Assessment Section

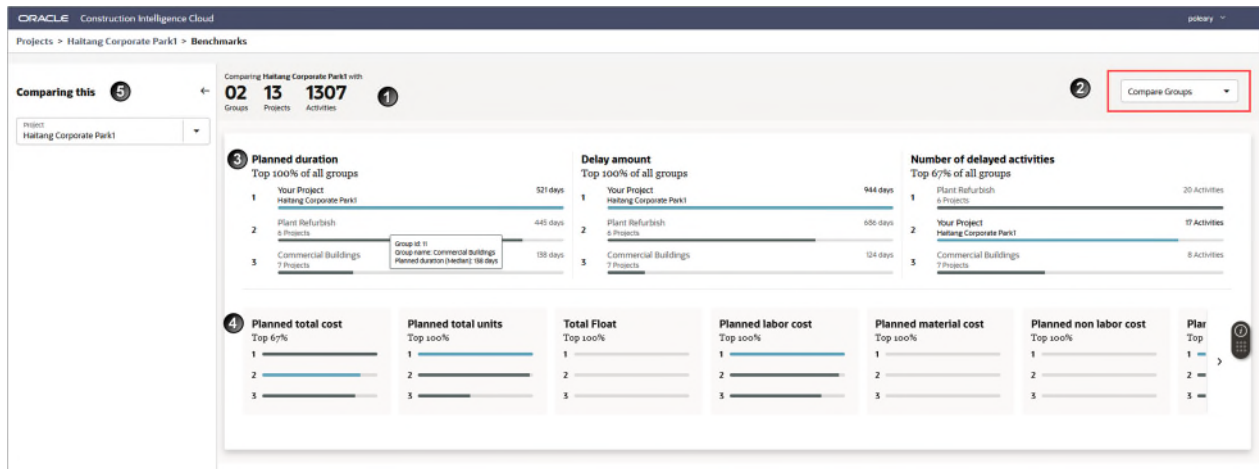


The **Schedule Assessment** section of the **Benchmarking** page displays the metrics for the selected project and each benchmark group for comparison. You can click on a metric to apply the learnings from these comparisons to the current schedule in P6.

Benchmarking Page - New!

How to Get Here

- 1) Sign in to CIC Advisor.
- 2) On the **Project Listings** page, select the **Predicted delay likelihood** KPI of a project.
- 3) On the **Schedule Intelligence** page, click **Try the new benchmarks** in the **Compare this project** section.



How to Use this Page

The **Benchmarking** page allows you to compare your ongoing projects against projects that have been completed or are 80- 90% complete to:

- ▶ learn from past delays, gains and schedule issues on projects and apply those learnings to the current project
- ▶ enhance estimation capabilities
- ▶ rank your current project in comparison to the projects in the benchmark groups
- ▶ compare your project's activities with the activities of the benchmark projects
- ▶ expand or collapse projects to adjust your level of granularity as needed

Note: The groups being compared are setup in the CIC Advisor Administration application, and can be modified according to the needs of your organization. To change a group or modify the selection of projects in each group, contact your CIC Advisor administrator.

This page includes the following sections:

Section Number	Description
1	<p>Provides a total count of the benchmark groups, projects and the activities with which your current project is being compared.</p> <p>In the above example, Haitang Project is compared with 2 benchmark groups, 13 projects and 1307 activities.</p>
2	<p>Compare Options: Select any of the following options to compare your project:</p> <ul style="list-style-type: none"> ▶ Compare Groups Compares your project with each benchmark group. In the above example, your project is compared with 2 groups. ▶ Compare Projects Compares your project and its activities with other projects or with the associated projects and activities in the benchmark groups. In the above example, your project is compared with 13 projects in the benchmark groups.
3	<p>Main Metrics Section</p> <p>Depending on your project's ranking in comparison with other projects or benchmark groups, compares your project on the following metrics:</p> <ul style="list-style-type: none"> ▶ Planned duration: The planned duration calculated by your project schedule. ▶ Delay amount: The extent of delay predicted for your project in terms of days. ▶ Number of delay activities: The number of activities that are contributing to a project delay. <p>Note: You can also interchange the above metrics with any of the secondary metrics (click and drag) based on your organization's needs.</p>

Section Number	Description
4	<p>Secondary Metrics Section</p> <p>Compare your project (displayed first in each tile) with the benchmark groups / projects on the following metrics:</p> <ul style="list-style-type: none"> ▶ Planned total cost: The planned cost for all expenses associated with the activity, project, or EPS. ▶ Planned total units: The planned number of units for all resources associated with the activity, project, or EPS. ▶ Total float: The amount of time the activity can be delayed before delaying the project finish date. A float of zero hours indicates that the activity cannot be delayed at all and a negative float indicates that the project is already behind schedule. It is calculated as Late Start minus Early Start or as Late Finish minus Early Finish. ▶ Planned labor cost: The planned costs for all labor resources assigned to the activity. ▶ Planned material cost: The planned cost for all material resources assigned to the activity, project, or EPS. ▶ Planned non labor cost: The planned costs for all non labor resources associated with the project or EPS. ▶ Planned labor units: The planned number of units for all labor resources assigned to the activity. ▶ Planned non labor units: The planned units for all non labor resources assigned to the activities in the project. <p>Note: You can also interchange the above metrics with any of the primary metrics (click and drag) based on your organization's needs.</p>
5	<p>Filters Section</p> <p>Select an alternative project and click Apply to compare it with the benchmark groups/projects. For more details, see <i>Filters Pane of the New Benchmarking Page</i> (on page 73).</p>

Click **More details** to access the ***Benchmarking Details Page*** (on page 74).

Project and Activity Comparison Table

The screenshot shows the Oracle Construction Intelligence Cloud interface. The main content area displays a comparison table for the 'Haitang Corporate Park' project. The table has the following columns: Project, Activity, Planned duration, Actual duration, Actual delay, Total float, and Actual total units. The data is as follows:

Project	Activity	Planned duration	Actual duration	Actual delay	Total float	Actual total units
Haitang Corporate Park	1 Activity	3 days	3 days	0 days	NA	24
	Site Preparation	3 days	3 days	0 days	NA	24
Custom Cluster 2 (3 Projects)	41 Activities	0 days	0 days	0 days		
GIS Interface Project	3 Activities	25 days	19 days	0 days		
Buckingham - Nuclear...	18 Activities	0 days	0 days	0 days		
Buckingham - Nuclear...	20 Activities	0 days	0 days	0 days		
Custom Cluster 1 (4 Projects)	90 Activities	1 day	0 days	0 days	NA	0

Select a metric in the primary or secondary tiles to compare metrics of your current project (displayed in blue). On the **Benchmarking** page, click on any of the metrics to do an activity level comparison of your projects with other projects or with the projects in the benchmark groups. The columns in the activity comparison table appear according to the metrics clicked on the **Benchmarking** page. These include:

- ▶ **Project:** The current project name or the benchmark group with the number of projects included in each group. For example, *NabooProjects, 6 projects*.
Expand or collapse a benchmark group to drill-down to view the included projects that you can access to, and the activities within each project.
- ▶ **Activity:** The total number of activities of each project.
For your current project, a maximum of three activities display for comparison.
For a benchmark group, it is the aggregate of all activities in the included projects.
- ▶ **Planned duration:** The total working time from the project planned start date to the planned finish date.
- ▶ **Actual duration:** The total working time from the activity Actual Start date to the Actual Finish date for completed activities, or the total working time from the Actual Start date to the data date for in-progress activities.
- ▶ **Actual delay:** The actual delay of a project is calculated as follows:
 - ▶ If a baseline exists:
 - For not started activities, Actual delay = Planned Finish Date - Baseline Project Finish
 - For in-progress activities, Actual delay = Remaining early finish date - Baseline Project Finish
 - For completed activities, Actual delay = Actual Finish Date - Baseline Project Finish
 - ▶ If a baseline does *not* exist:
 - For not started activities, Actual delay = Planned Finish Date - Planned Project Finish

For in-progress activities, Actual delay = Remaining early finish date - Planned Project Finish

For completed activities, Actual delay = Actual Finish Date - Planned Project Finish

- ▶ **Total float:** The amount of time the activity can be delayed before risking a delay to the project finish date.
- ▶ **Actual total units:** The sum of the actual non-overtime and overtime units associated with the activity

For each activity, click on the **Overflow Menu**  and select any of the following links:

- ▶ View activity details
- ▶ View activity in P6 or View activity in Oracle Primavera Cloud
- ▶ **View activity within project delivery network** (see "**Project Delivery Network Page**" on page 50)
- ▶ Discover similar activities

This link is enabled only for the activities in your current project. Using natural language processing (NLP) techniques, it displays only those benchmark activities that are similar to activity selected in your current project (as shown above).

Select any of the following buttons to perform the following actions:

- ▶ Click **Settings** to customize the columns displayed in the activity table as follows:
 - ▶ Use the slider to hide or display a column.
 - ▶ Click and drag a column vertically to reorder the column sequence in the table.
- ▶ Click **Export** and save the activities in an Excel spreadsheet file (.xls or .xlsx).

Note: The export file contains the complete list of activities that satisfy the filter criteria whereas only a maximum of 10 activities from your current project are displayed in the activity comparison table above.

Filters Pane of the New Benchmarking Page

ORACLE Construction Intelligence Cloud

Projects > Haitang Corporate Park > Benchmarks

Comparing this ←

Project
Springfield - Refuel Outage

Add Activities to compare

With this

Add projects to compare

Custom Cluster 1 (8 Projects) ×

Custom Cluster 2 (7 Projects) ×

Add activity keywords

Activity filters

Activity status

- In progress
- Not started
- Completed

Planned duration

0 81
0 days 81 days

Actual duration

0 144
0 days 144 days

Actual delay

0 1429
0 days 1429 days

Total float

NA

Planned total cost

NA

Planned total units

0 212
0 days 212 days

Apply

Use the **Filters** pane to focus on specific project and activity for comparison with the benchmark groups. compare your project and activities. You can also use the Filters pane to change your project for comparison with the benchmark groups.

To select or change your project:

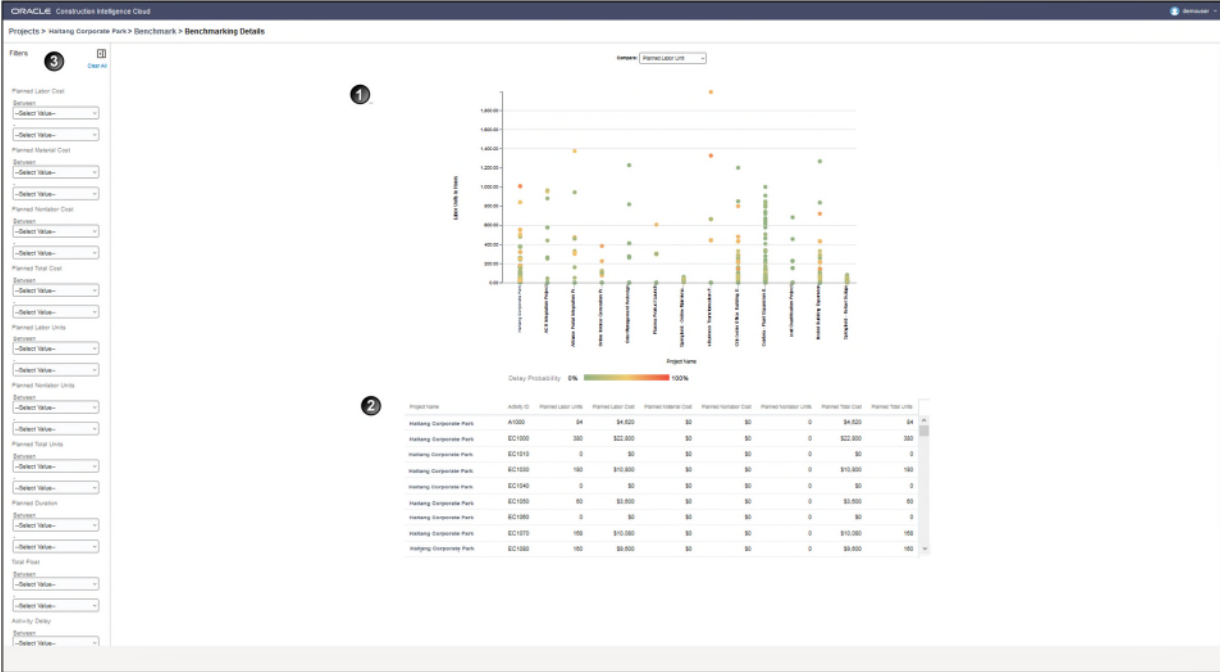
- 1) In the **Project** field, select the project you wish to compare with the benchmark groups.
- 2) (Optional) In the **Add Activities to compare** field, select the activity you wish to compare in your project.
For your current project, you can select a maximum of three activities simultaneously to compare.
- 3) In the **Add projects to compare** field, select the projects or benchmark groups you wish to compare.
- 4) In the **Add Activity keywords** field, enter a search term that you want to narrow your focus on activities.
- 5) Select any of the following Activity Statuses: *In progress*, *Not started*, and *Completed*.
- 6) Use the slider to specify a range of values for the following filters:
 - ▶ **Planned duration**
 - ▶ **Actual duration**
 - ▶ **Actual delay**
 - ▶ **Total float**
 - ▶ **Planned total cost**
 - ▶ **Planned total units**
- 7) Click **Apply** to see the total activity count (displayed below your project name) that meet your filter criteria.

Benchmarking Details Page

How to Get Here

- 1) Sign in to CIC Advisor.
- 2) On the **Project Listings** page, select the **Predicted delay likelihood** KPI of a project.
- 3) On the **Schedule Intelligence** page, select **More details** in the **Compare this project** section
or

On the **Benchmarking** page, select **More details** in the **Compare this Project** section.



How to Use this Page

The **Benchmarking Details** page allows you to compare your ongoing project with the projects that have been included in the benchmarked groups. In the above example, the **Haitang Corporate Park** project has been compared with two benchmark groups, NABOO and CORUSCANT.

This page includes the following sections:

Section Number	Section Title
1	Bubble Chart Section (on page 76)
2	Project Metrics Table (on page 77)
3	Filters Pane (on page 78)

Project Metrics Table

The **Project Metrics** table on the **Benchmarking Details** page displays the metric information for your ongoing project, and the benchmark groups. The information in the table can also be customized if you choose to apply any filters in the **Filters** pane.

Project Name	Activity ID	Planned Labor Units	Planned Labor Cost	Planned Material Cost	Planned Nonlabor Cost	Planned Nonlabor Units	Planned Total Cost	Planned Total Units
Haitang Corporate Park	A1000	84	\$4,620	\$0	\$0	0	\$4,620	84
Haitang Corporate Park	EC1000	380	\$22,800	\$0	\$0	0	\$22,800	380
Haitang Corporate Park	EC1010	0	\$0	\$0	\$0	0	\$0	0
Haitang Corporate Park	EC1030	180	\$10,800	\$0	\$0	0	\$10,800	180
Haitang Corporate Park	EC1040	0	\$0	\$0	\$0	0	\$0	0
Haitang Corporate Park	EC1050	60	\$3,600	\$0	\$0	0	\$3,600	60
Haitang Corporate Park	EC1060	0	\$0	\$0	\$0	0	\$0	0
Haitang Corporate Park	EC1070	168	\$10,080	\$0	\$0	0	\$10,080	168
Haitang Corporate Park	EC1080	160	\$9,600	\$0	\$0	0	\$9,600	160

The following information is displayed in the table:

- ▶ **Project Name:** The name of project.
- ▶ **Activity ID:** The unique identifier of the activity.
- ▶ **Planned Labor Units:** The planned number of units for all labor resources assigned to the activity.
- ▶ **Planned Labor Cost:** The planned costs for all labor resources assigned to the activity.
- ▶ **Planned Material Cost:** The planned cost for all material resources assigned to the activity, project, or EPS.
- ▶ **Planned Nonlabor Cost:** The planned costs for all non labor resources associated with the project or EPS.
- ▶ **Planned Nonlabor Units:** The planned units for all non labor resources assigned to the activities in the project.
- ▶ **Planned Total Cost:** The planned cost for all expenses associated with the activity, project, or EPS.
- ▶ **Planned Total Units:** The planned number of units for all resources associated with the activity, project, or EPS.

Filters Pane

In the sidebar, use the **Filters** pane to adjust the values of any of the following filters to customize the scatter plot graph and the tabulated information on the **Benchmarking Details** page.

ORACLE Construction Intelligence Cloud

Projects > Haitang Corporate Park > Benchmark > Benchmarking Details

Filters Clear All

Planned Labor Cost
Between
--Select Value--
--Select Value--

Planned Material Cost
Between
--Select Value--
--Select Value--

Planned Nonlabor Cost
Between
--Select Value--
--Select Value--

Planned Total Cost
Between
--Select Value--
--Select Value--

Planned Labor Units
Between
--Select Value--
--Select Value--

Planned Nonlabor Units
Between
--Select Value--
--Select Value--

Planned Total Units
Between
--Select Value--
--Select Value--

Planned Duration
Between
--Select Value--
--Select Value--

Total Float
Between
--Select Value--
--Select Value--

Activity Delay
Between
--Select Value--
--Select Value--

Apply

Enter or select a range of values for the following filters and then select **Apply**.

- ▶ Planned Labor Cost Between
- ▶ Planned Material Cost Between
- ▶ Planned Nonlabor Cost Between
- ▶ Planned Total Cost Between
- ▶ Planned Labor Units Between
- ▶ Planned Nonlabor Units Between
- ▶ Planned Total Units Between

Select **Clear All** to reset all the values in the **Filters** pane.

Access Other Smart Construction Platform Applications

The Oracle Construction and Engineering applications that are included in the Smart Construction Platform are accessible from the product banner to enable you to access your projects across all your applications with ease.

To access the **Smart Construction Application** panel, in the application banner, select  **Switch Applications**.

The content that displays in the panel depends on what other applications and projects you have access to.

- ▶ **Applications for Current Project:** Lists all the applications that have a link to the project that you currently have open and have access to.
- ▶ **Other Available Applications:** Lists all the other applications that you have access to.

If you don't have access to any other applications, you are presented with more information about the applications that you could be using.

To open the **Oracle Construction and Engineering Lobby**, select **View all Projects**.

FAQs

What is the Smart Construction Platform?

Watch this brief *Smart Construction Platform Overview video*.

(https://players.brightcove.net/2985902027001/default_default/index.html?videoId=6300994864001)

I have access to the same project in multiple products, but I don't see a link to that project in the application switcher?

A link for the project between the multiple applications must be created in the Construction and Engineering Lobby by a Lobby administrator.

Learn more in the *Construction and Engineering Lobby Help* (https://docs.oracle.com/cd/F23711_01/help/en/202246.htm).

Why do I see the same application listed in both my Applications for Current Project list and my Other Available Applications list?

You have access to the same application but in different instances of that application. For example, one instance may be hosted on a US data center and another may be hosted on an Australian data center.

I have access to other Oracle Construction and Engineering applications. Why don't I see them here?

Only applications included in the Smart Construction Platform are available through the Switch Applications panel.

To learn more about the Smart Construction Platform applications, visit us on **Oracle Help Center** (<https://docs.oracle.com/en/industries/construction-engineering/index.html>).