CLEAR**PLAN**

CPT Driving Path Macro
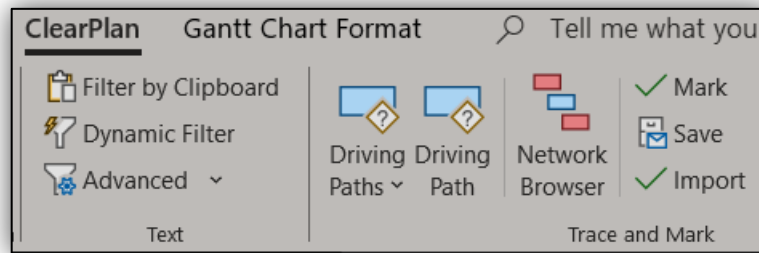
VERSION 3.1.0

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Overview

The ClearPlan Driving Path(s) tool can be used to display the Primary or Primary, Secondary, Tertiary, Quaternary, and Quinary Driving Paths (top 5) to a user selected task/milestone. This utility can also be used to display the Primary, Secondary, Tertiary, Quaternary, and Quinary Critical Paths if the user selects the project completion task/milestone.

Using the Driving Path Tool

There are two variants of the Driving Path tool included with the ClearPlan Toolbar (CPT).
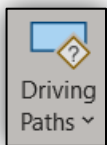

The "Driving Paths" button will identify the Primary, Secondary, Tertiary, Quaternary, and Quinary driving paths to the actively selected task/milestone at the time of execution.

The "Driving Path" button will only identify the Primary driving path to the actively selected task/milestone. This is useful for quickly checking the driving path only and can will have a shorter runtime when compared to the "Driving Paths" variant due to the reduced number of recursions required to complete the analysis.

Setup and Execution

The Driving Paths tool requires two custom fields.
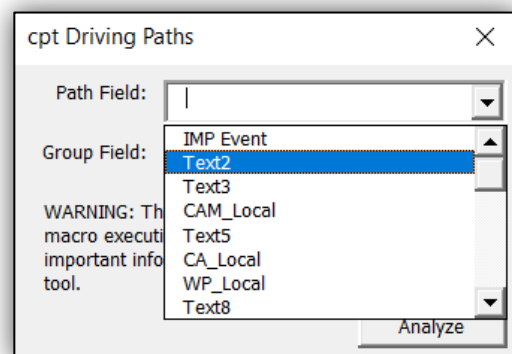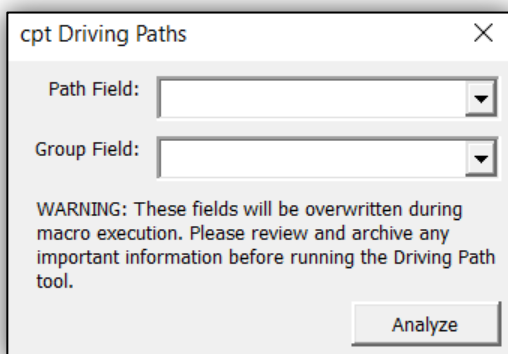
The "Path Field" can be any local custom Text field. This field stores a comma delimited list the driving paths for which a task or milestone is in network. For example, if Task A is on both the primary and secondary driving paths, the "Path Field" would contain "1,2".

The "Group Field" can be any local custom Number or Text field. This field stores the lowest path number for which a task or milestone is in network. This field is used to group driving paths for the "*ClearPlan Driving Path View" that is automatically created at the end of the analysis.

Reviewing the Analysis

After completing the analysis, the "*ClearPlan Driving Path View" is automatically applied to the active file.
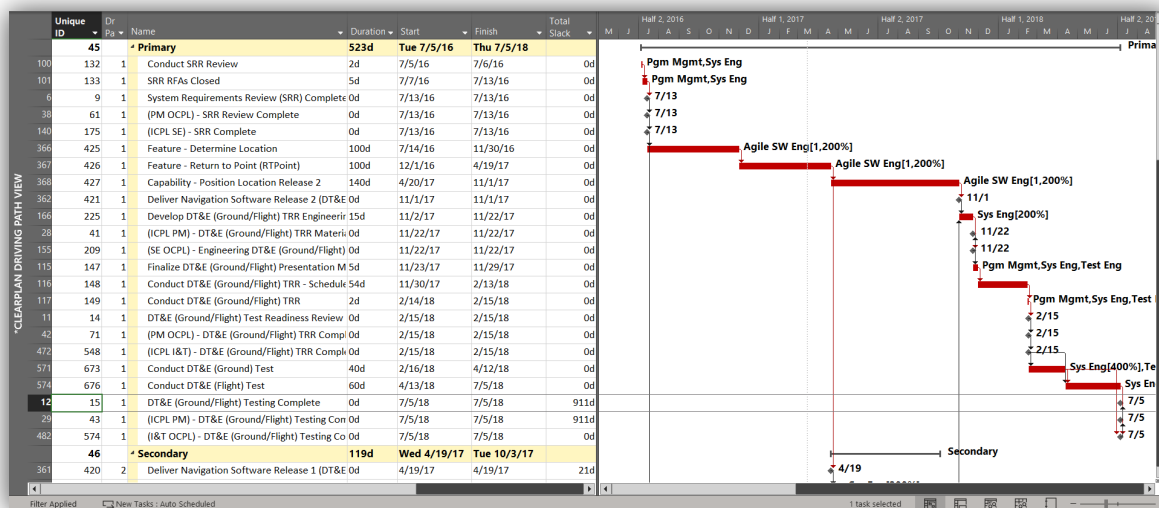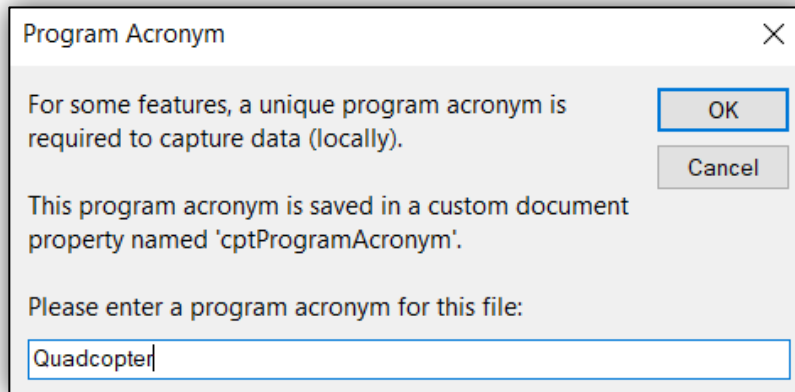
This view uses the "*ClearPlan Driving Path Table" to show a subset of relevant fields while allowing network path visibility in the Gantt chart. The view includes color coded task bars for Primary, Secondary, Tertiary, Quaternary, and Quinary activities. The view includes a "*ClearPlan Driving Path Group" to group by the user selected "Group Field" and a "*ClearPlan Driving Path Filter" to show only the tasks and milestones on the Primary, Secondary, Tertiary, Quaternary, and Quinary driving paths.

Exporting to PowerPoint
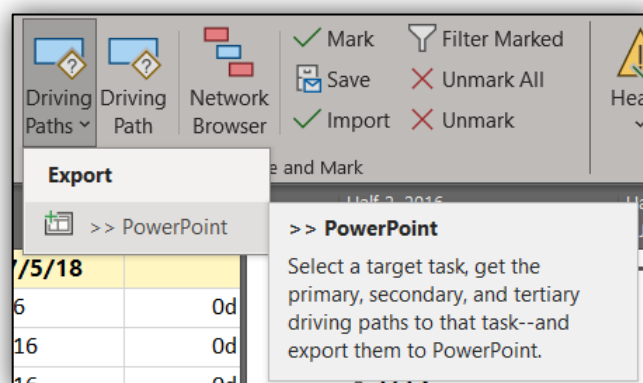
The "Driving Paths" button includes an Export feature that will automatically copy the resulting Primary, Secondary, Tertiary, Quaternary, and Quinary paths into a new PowerPoint presentation.

After clicking the "Export" button, the user is required to provide a "Program Acronym". This acronym is used in the resulting PowerPoint filename and is also used for several other CPT features. Once the "Program Acronym" has been set, the user will not be prompted again for the same project.


After the driving path analysis is complete, a PowerPoint presentation is populated and presented to the user. Minimal formatting is provided to allow maximum compatibility with most corporate slide templates.
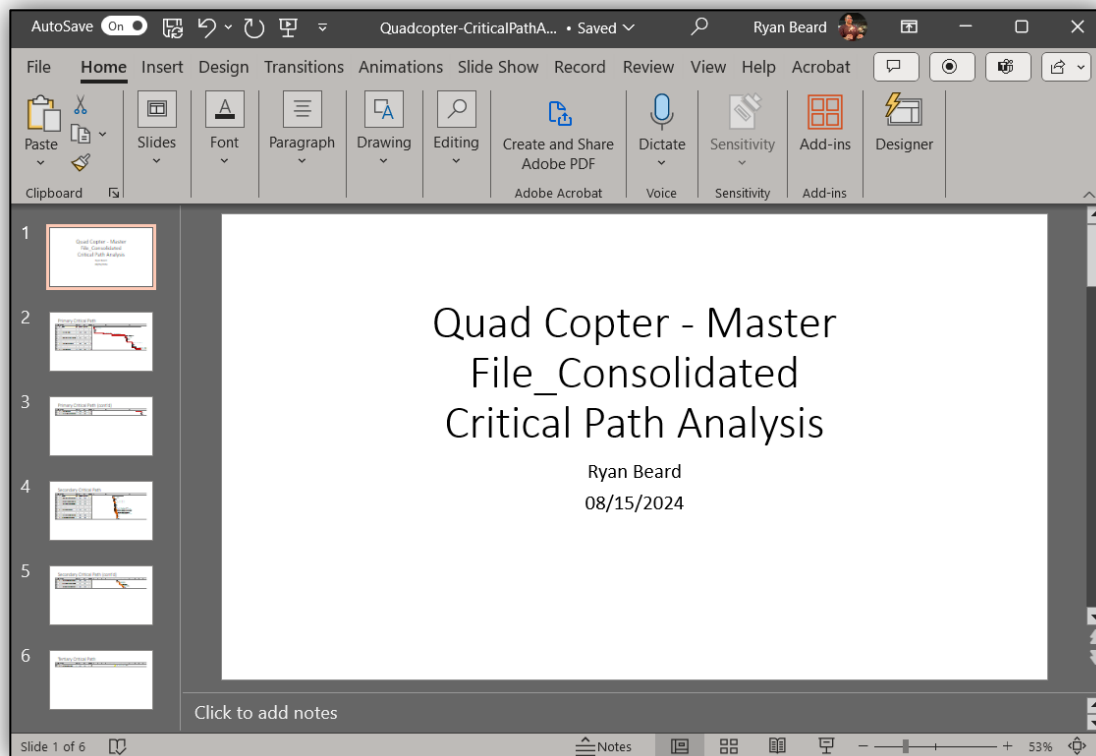
Technical Details

The True Float Algorithm

ClearPlan designed and implemented a custom "True Float" algorithm. Unlike the Total Slack and Float values available in MS Project, "True Float" calculates the dependency float for every predecessor of the user selected task/milestone. This allows predecessors tasks / milestones to be ranked identifying the primary driver, secondary driver, etc.
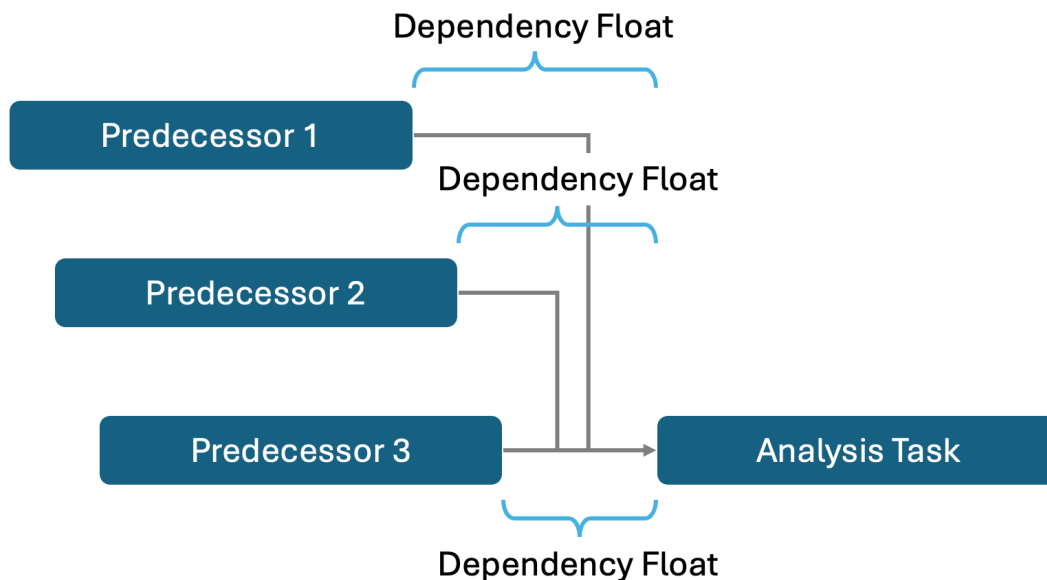
In recursive fashion, each task/milestone in the network has its predecessor task collection evaluated to find the driving activities. Only incomplete predecessors are evaluated, and only relationships that are not tied to actual dates are evaluated (FS and SS links to Actual Start dates or FF and SF links to Actual Finish dates are skipped). A dependency / true float is calculated in minutes between each predecessor and its succeeding task. Lag time, dependency type, and Task vs Project Calendar, and the use of "edays", or other elapsed duration values, are all taken into consideration during this calculation.

The primary driving path is always the first to be evaluated, followed by the secondary, and lastly the tertiary. A dependency / true float value of 0 is always considered to be part of the currently evaluated path (Primary, Secondary, or Tertiary). If no 0 value is found in the predecessor's collection, the currently evaluated activity must be constrained in some fashion: either directly through an applied soft/hard constraint or actual start date, or indirectly due to a calendar conflict. This activity is considered to be the chronological starting point of the network.
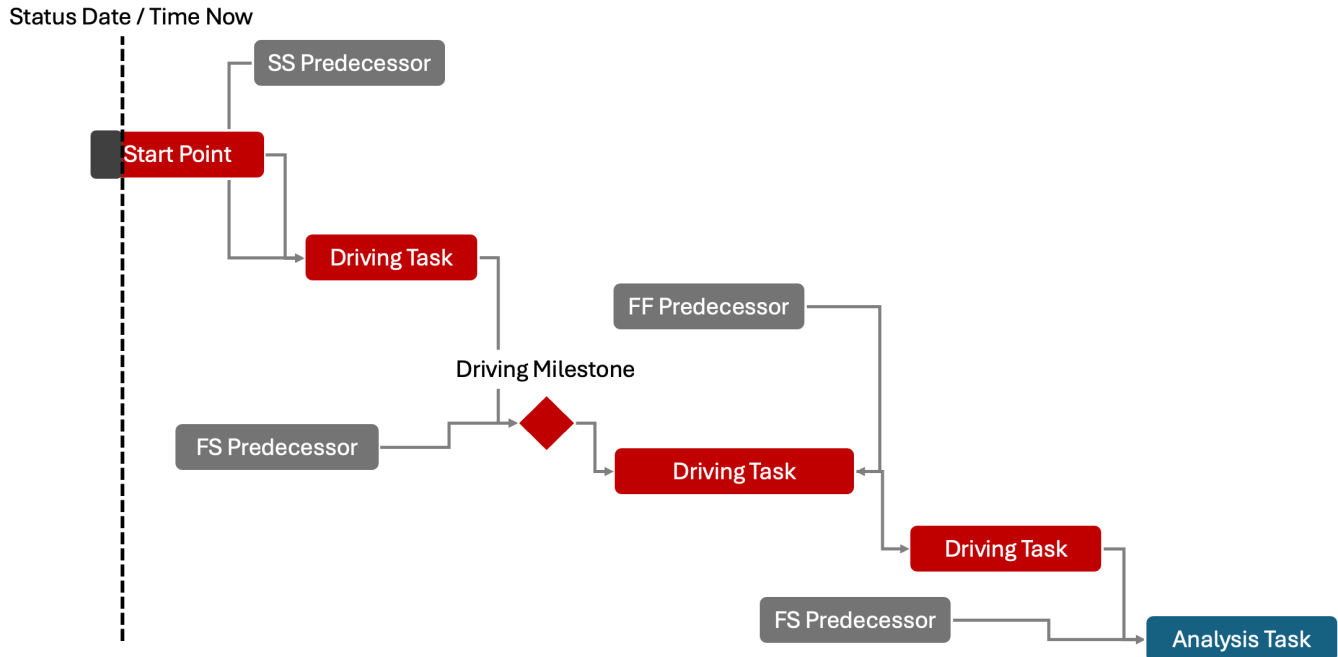
Once the path starting point has been found, each of the previous evaluated predecessor-successor pairs is ranked in ascending order by dependency / true float value. The predecessor with the least dependency / true float is the terminal point of the next driving path and the recursive evaluation repeats again until the starting point of the tertiary network has been found.

File Modifications

During the analysis, there are several edits made to the active project file. These are all 'passive' modifications with respect to the schedule network – there are no changes to any task names, durations, resource values, dependencies, or any other field that would alter the PMB or forward/backward pass calculations.

Fields

The user selected "Path Field" and "Group Field" are renamed to "CP Driving Paths" and "CP Driving Path Group ID", respectively.

In addition, the following look-up table is applied to the "Group Field".

Value	Description
1	Primary
2	Secondary
3	Tertiary
4	Quaternary
5	Quinary
0	Noncritical

Both the "Path Field" and "Group Field" are wiped completely at the start of the Driving Path analysis and then re-populated during the analysis.

Views, Tables, Filters, and Groups

A single "*ClearPlan Driving Path Table" is created during the Driving Path analysis and contains the following fields:

- Unique ID
- CP Driving Path Group ID
- Name
- Duration
- Start
- Finish
- Total Slack

A single "*ClearPlan Driving Path Filter" is created. The filter is configured to hide all summary tasks and to only show tasks / milestones where the "CP Driving Path Group ID" value is greater than 0.

A single "*ClearPlan Driving Path Group" is created to group tasks / milestones based on the value in the "CP Driving Path Group ID" field.

A single "*ClearPlan Driving Path View" is created during the Driving Path analysis. This view uses the "*ClearPlan Driving Path Table", "*ClearPlan Driving Path Filter", and "*ClearPlan Driving Path Group". The "*ClearPlan Driving Path View" is applied at the completion. The view also includes Red, Yellow, Orange, Green, and Blue Gantt bar colors applied to the activities on the Primary, Secondary, Tertiary, Quaternary, and Quinary driving paths (respectively).