TEC - Logic Tracer

Trace predecessor logic from a Primavera P6 network of activities

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TEC Logic Tracer - Download

The "TEC-LogicTracer" can be downloaded from the web page https://www.tecsoftware.it/ under the "TEC.LOGIC.TRACER" hyperlink.

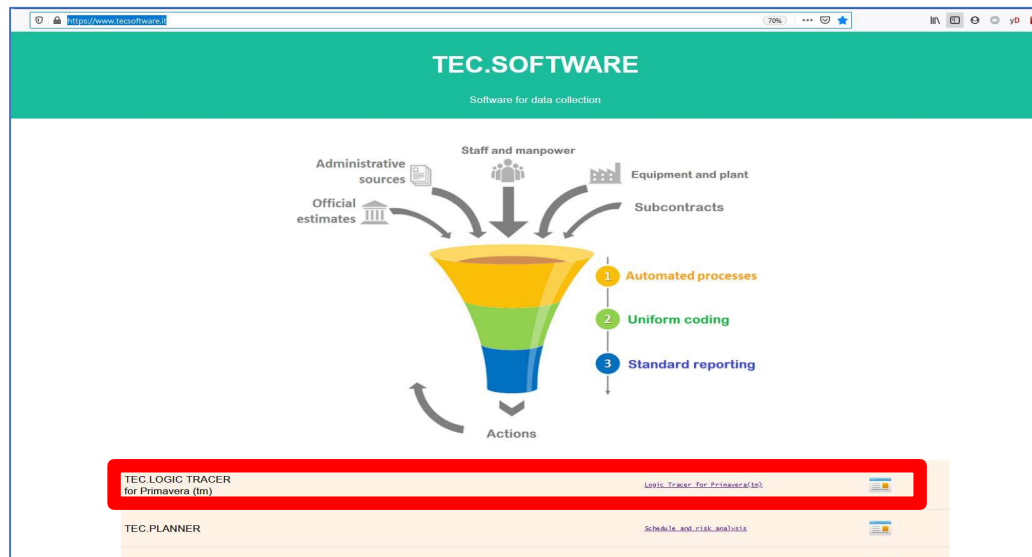Figure 1 – TEC Software web page

The Tec logic tracer web page will prompt you with several options as per below Figure 2.

Figure 2 – TEC Logic Tracer Options

Let's analyse each of the five options available:

☐ Trial: Download – from this link can download the zip file that does contain the following key files, the use of which will be explain in the following chapters:

- o "TEC-LogicTracer.xlsb" – The MsExcel VBA routine to identify the predecessor logic of a chosen activity;
- o "TEC-LogicTracer.plf" – Primavera P6 layout; and

- o "TEC-LogicTracerP6Report.erp" – Primavera P6 report, that generate the detail logic report, base of the analysis.
- Instruction EN – This instruction manual in PDF format;
- Video Tutorial – Video showing from the generation of the report into Primavera P6, elaboration of the Predecessor by the VBA code up to filtering the identified activities in Primavera P6;
- Technical Information – Email address in case assistance is required or further development sought; and
- Service – Our Primavera P6 experts will be happy to process any analysis you may require.

TEC Logic Tracer - Overview

The "TEC-LogicTracer" is a routine in excel that run a series of VBA macros to identify the full set of predecessor of a defined activity, up to the point no any more predecessors can be identified.

The routine does work on few simple steps.

Those steps are presented below in a summary way, for a more detail step by step explanation please make reference to next chapter.

Create Primavera P6 Logic Report

In Primavera P6 open the schedule you want to identify the activity predecessor.

If want can load the "TEC-LogicTracer.plf" into the Gantt Chart view, to have an uniform view of the scheduling information.

Create a User Defined Field (or Activity Code) that will be later used for filtering the identified predecessors. In the later example I defined an User Defined Field ("PICK").

Into the "Report" section of Primavera P6 import, if not already done, the Primavera P6 detail logic report "TEC-LogicTracerP6Report.erp".

At this point can run the imported report bearing in mind that:

☐ Report format is "text/CSV" one;
☐ At the report add the extension (.CSV) for later easy working with MsExcel;
☐ Use "Tab" as "Field Delimiter" as Figure 3;
☐ Use " ' " as "Text Qualifier" as Figure 3; and
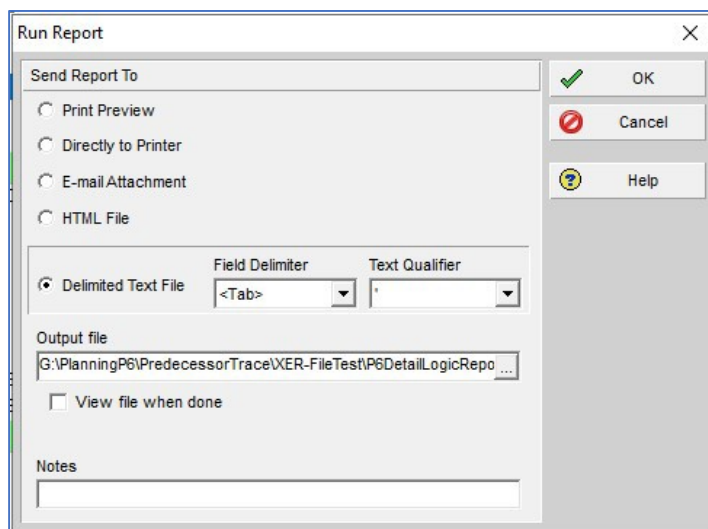☐ Do not choose to "View File when Open".

Figure 3 – Primavera P6 Logic Report Option

Convert the Primavera P6 Logic Report in MsExcel Format

InMsExcel import the Primavera P6 Detail Logic report just created, using "Data" section of the Ribbon click "From Text/CSV", select "All Files" as filter and select the file.

When prompt, confirm to "Transform Data" and in Power Query delete the first row of the report and then promote the first raw to headings.

At this point can "Close and Load to", choosing to, as Figure 4,

- □ Create a "Table";
- □ Import into a "New worksheet"; and
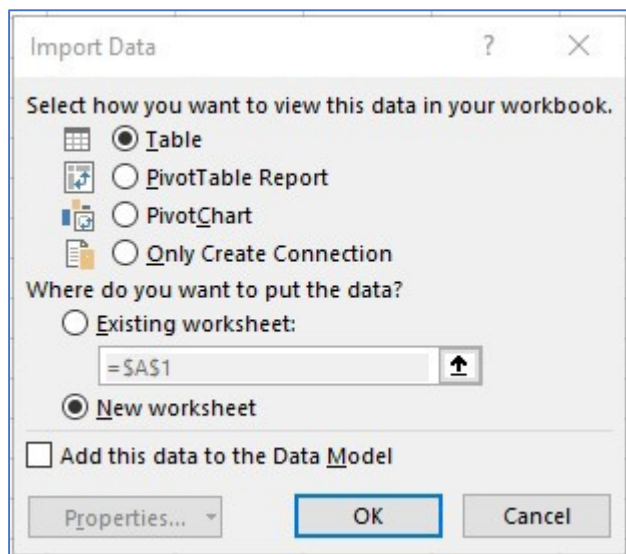- □ No to "Add this data to the Data Model".

Figure 4 – Power Query "Close and Load To" Options

You should be prompt with something like Figure 5

Successor Project	Activity ID	Activity Name	Predecessor Project	Activity ID_1	Activity Name_2	Successor Details	Predecessor Details	Driving	Critical	Relationship Type	Lag	Free Float	Rel
TEST001	ACT1100	1	TEST001	MLST1000	A	ACT1100: FS	MLST1000: FS	Yes	No	FS	0	0	
TEST001	ACT1200	2	TEST001	MLST1000	A	ACT1200: FS	MLST1000: FS	Yes	Yes	FS	0	0	
TEST001	ACT1110	3	TEST001	ACT1100	1	ACT1110: FS	ACT1100: FS	Yes	No	FS	0	0	
TEST001	ACT1120	8	TEST001	ACT1110	3	ACT1120: FS	ACT1110: FS	Yes	No	FS	0	0	
TEST001	ACT1140	11	TEST001	ACT1120	8	ACT1140: FS	ACT1120: FS	Yes	No	FS	0	0	
TEST001	ACT1130	10	TEST001	ACT1120	8	ACT1130: FS	ACT1120: FS	Yes	No	FS	0	0	
TEST001	MLST1100	B	TEST001	ACT1140	11	MLST1100: FF	ACT1140: FF	No	No	FF	0	104	
TEST001	MLST1100	B	TEST001	ACT1130	10	MLST1100: FF	ACT1130: FF	No	No	FF	0	64	
TEST001	ACT1210	4	TEST001	ACT1200	2	ACT1210: FS	ACT1200: FS	Yes	No	FS	0	0	
TEST001	ACT1220	5	TEST001	ACT1200	2	ACT1220: FS	ACT1200: FS	Yes	Yes	FS	0	0	
TEST001	ACT1240	6	TEST001	ACT1210	4	ACT1240: FS	ACT1210: FS	Yes	No	FS	0	0	
TEST001	ACT1230	7	TEST001	ACT1220	5	ACT1230: FS	ACT1220: FS	Yes	Yes	FS	0	0	
TEST001	ACT1300	9	TEST001	ACT1230	7	ACT1300: FS	ACT1230: FS	Yes	Yes	FS	0	0	
TEST001	ACT1310	12	TEST001	ACT1300	9	ACT1310: FS	ACT1300: FS	Yes	Yes	FS	0	0	
TEST001	MLST1100	B	TEST001	ACT1310	12	MLST1100: FF	ACT1310: FF	Yes	Yes	FF	0	0	
TEST001	ACT1300	9	TEST001	ACT1110	3	ACT1300: FS	ACT1110: FS	No	No	FS	0	64	
TEST001	ACT1310	12	TEST001	ACT1240	6	ACT1310: FS	ACT1240: FS	No	No	FS	0	64	

Figure 5 – Primavera P6 Detail Logic Report Imported in MsExcel

Upload the P6 Logic Report in MsExcel Format into the TEC-LogicTracerTool

Open the "TEC-LogicTracer.xlsb", click ok to the various messages/warning.

Please do ensure to have the Macro VBA enabled in your MsExcel, in case google provide various article on how to activate them and "Enable Editing " of tile if requested to do so.

Please bear in mind that no tabs should be deleted or rename, and work should be performed only into the selected cells, as shown by this instruction manual.

Clean tab "Table" from row "2" of the previous data, if any.

Copy the Primavera P6 detail Logic report from row "2" up to the end into the TEC tool inside the tab "Table", from row "2". We do keep the headings without making any changes.

At this point into the tab "Items_List" from row "2" of column "B" define the activities that is required to identify the predecessor logic, as per Figure 6.

sheet	Activity ID1
1	A1050
2	B1020

Figure 6 – Identification of the Activities to be Processed

Run the TEC-LogicTracerTool

At this point we are ready to run the macro.

Let invoke the "Main Menu" with "CTRL" + "A".
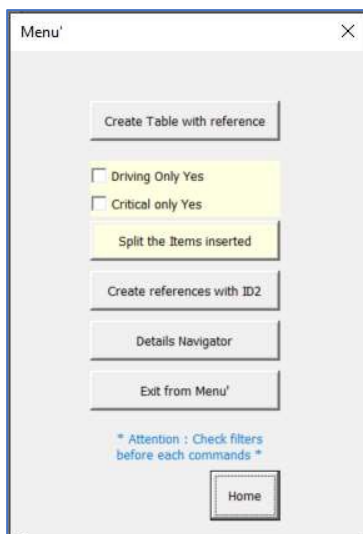
Figure 7 – TEC Main Menu

Four steps need to be performed:

- ☐ Click on "Create Table with Reference";
- ☐ Choose if pick all predecessors or one just flagged as "Driving" or "Critical" with the relevant flags;
- ☐ Click on "Split the Items Inserted"; and
- ☐ Click on "Create references with ID2".

Note may need to invoke the "Main Menu" between each operation.

At this point when last operation is completed the tool will open the tab "Data_base" where can be found the identified predecessors as per Figure 8.

Figure 8 – Predecessors List

where:

- ☐ Column "A" – "rid:ID". find the reference of grouping for each predecessor;
- ☐ Column "B" – "ID". find the identification of the activity from where the predecessor identification started"; and
- ☐ Column "C"- "Activity_ID". Find the list of the predecessor network. In order to have all predecessor for example of "A1050", task "1" on column "A" filter for "1".

Save the file with the name you want.

Please do note that even if the tool may be able to process several activities, due to processing time may be good practice to limit each run to no more than 10 activities (all of course depending from computer performance, and network complexity)

Create Primavera P6 Export/Import Mask

At this point an Export/Import mask need to be created in Primavera P6.

Can use as many as User Defined Field or Activity Codes as required, one for each activity analysed.

In this case will use the "PICK" previously define and import one predecessor network.

In Primavera P6 create an export (File->Export->Spreadsheet"XLSX") for "Activity" type with the characteristic as Figure 9, with at minimum the following activities attributes:

- ☐ Activity ID
- ☐ Activity Status
- ☐ WBS Code
- ☐ The UDF/Activities Codes defined
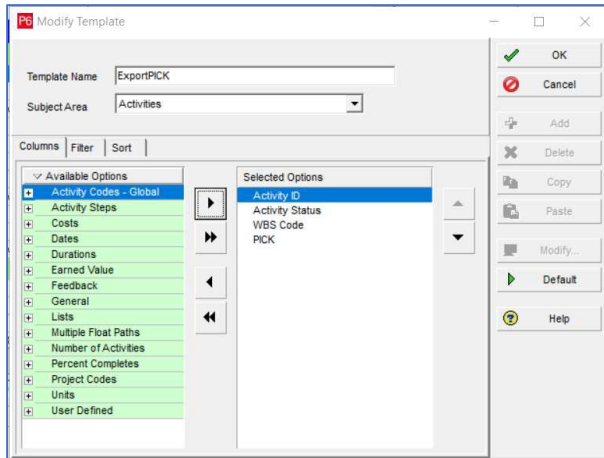
Figure 9 – Primavera P6 Export/Import Mask

Bring back to Primavera P6 the Identified Activities

At this point generate a text within the "PICK" UDF to identify the relevant task as required.

For example if do want to trace the predecessor logic of activity "A1050", can use a lookup as Figure 10 below, or which other method are more confident with.

The formula used in the example is:
IF(
    ISNA(VLOOKUP(A7,'[TECLogicTracer.xlsb]Data_base'!$C$2:$C$11,1,FALSE)),
        "",
        VLOOKUP(A7,'[TEC-LogicTracer.xlsb]Data_base'!$C$2:$C$11,1,FALSE)
)

Figure 10 – Populate the Primavera P6 Export/Import Mask

The Primavera P6 Export/Import file may be looking something like Figure 11.

Figure 11 – Primavera P6 Export/Import Mask Populated

Copy and paste value all column "D", then save the Mask file and let import back into Primavera P6 (File->Import-> Spreadsheet"XLSX")

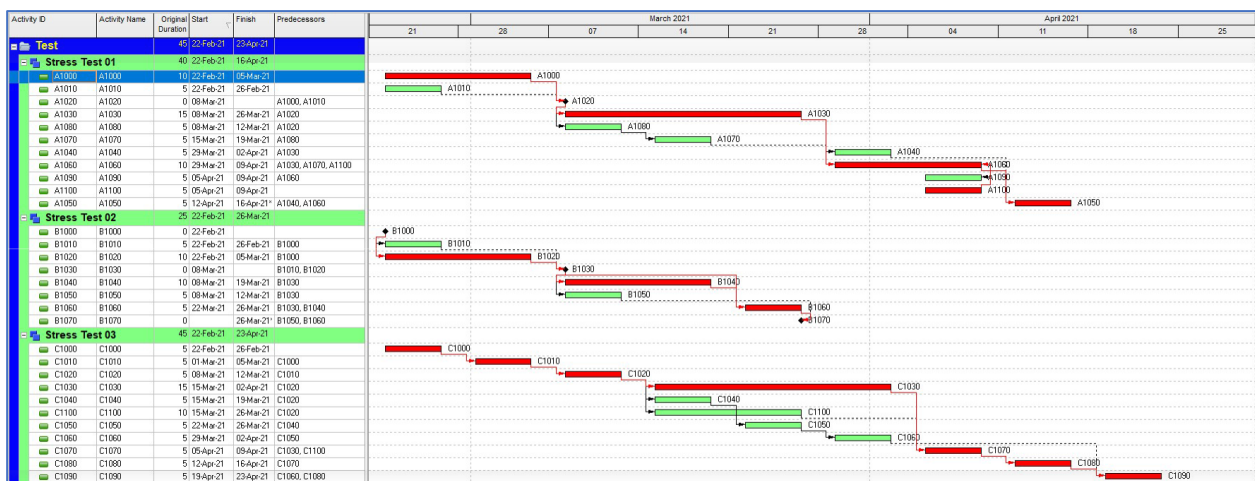The original schedule was as Figure 12 and the "PICK" filed populated is shown in Figure 13

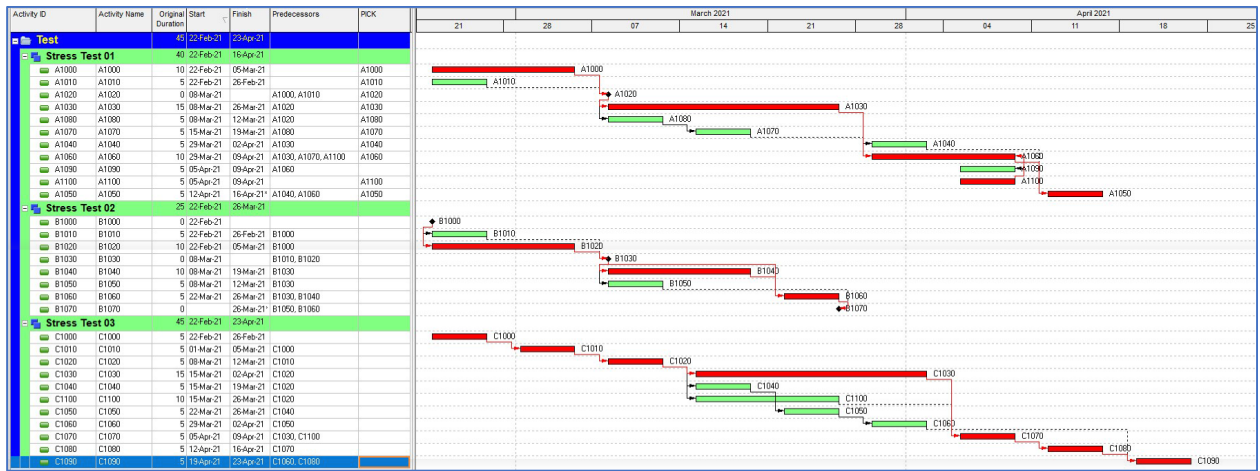Figure 12 – Original Primavera P6 schedule

Figure 13 – Identified predecessor Activities of Activity "A1050"

At this point run a filter to show only the task with "PICK" is not equal to nill, for my example, and will have all predecessor of Activity "A1050" up to the beginning of the network, Figure 14

Figure 14 – Filtered Predecessor Network of "A1050"

Last note if you remember in the Activity selection we have choose also activity "B1020" that from Figure 13 can see have only Activity "B1000" as predecessor, task that was identified by the tool, see Figure 8.

Purchase of the TEC-LogicTracer Tool

If you find the tool of use and want to unlock the time trial version, please follow the instructions into the tab "Order".

The tool is under continuous improvement and soon will be released an enhancement that will plot the predecessing network outside Primavera P6.

APPENDIX 01 - Universal TEC-LogicTracer Tool

Following the various feed back the tool has been enhanced, adding the capability to work for different planning tools.

From your planning tool (Primavera, MsProject, Asta Power Project, Tilos, Safran, Sure Track to mention few of the available on the market).

From the main menu, that can be activated by CRTL + "A" click on the "Setup" bottom, see Figure 15.

Figure 15 – Main Menu
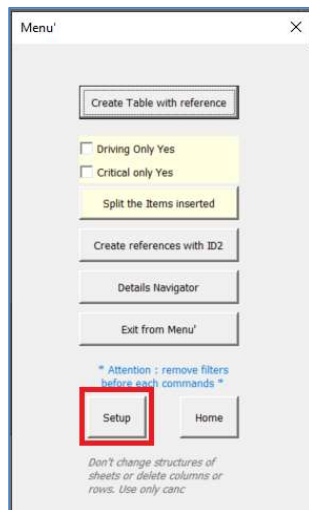
At this point you will prompt with the "Order & Setup" tab as Figure 16.

Figure 16 – Activity / Predecessor Mapping Tool

In this tab several tasks can be accomplished:

- A summary of the key menus available, and how to call them is presented

combined keys for Macro options	Open
[Ctrl]+[a]	Menu' commands
[Ctrl]+[z]	Menu' navigator
[Ctrl]+[q]	Check Memory

Figure 17 – Available Menus with the Tools

- The mapping tool is available

	Setup			
	Items position in the sheet TABLE			
	Type	Column reference (sheet Table)	Check	Column Name
5	Activity ID	B	Ok	Activity ID
6	Activity ID2	E	Ok	Activity ID2
7	Driving	I	Ok	Driving
8	Critical	J	Ok	Critical

Figure 18 – Universal Mapping Tools

In this section can map the columns from your tool detail logic report with the processing engine of the tool.

Where:

- o Activity ID – Does represent the task;

- o Activity ID2 – Does represent the predecessor task;

- o Driving – Is the flag (Yes/No) indicating if the link under examination is a driving one; and

- o Critical - Is the flag (Yes/No) indicating if the link under examination is a critical one.

This make the tool flexible to be use with any report, even a different report from Primavera P6, and subject to map the columns correctly.

The tool has been used also for analysis of Graph and network, not coming from planning network.

APPENDIX 02 – Hot Tips

Following the various feedback and questions, please follow these best practice:

- The tool may take a long time to run on complex heavy network (tens of thousand of activities).
  => In this case is suggested to process few predecessor identification at time;
  => run the tool during breaks (meeting, lunch time, evening, etc...);
  => make sure no other memory and processor hungry application are working at the same time; and
  => after few run of the tools, re start the computer. VBA for MsExcel do keep some memory locked and in the long run may slow down the processing time. A good computer restart solve the issue.

- If you do want to run a predecessor identification for only Driving or Critical activities, instead of using the flags within the main menu, filter the Driving and/or Critical within the dataset in the "Table" tab and run the process without any flag.

- Do no change any tab name.

- Do not save the tool as normal MsExcel Format (XLSX) or you will loose the VBA code;

- Do not have merged cells into your data input table.

Your continuous feedback is welcome and the "Hot Tips" section will be kept update.