



Pro-Meth Investigator  
An Introduction



# Wireless Gravity

THE MISSING LINK

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Author: Marc Borburgh

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# Wireless Gravity

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## Introduction

The demand for a trustworthy and quick comparison between two versions of a project resulted in the development of **pm Investigator** (PI). **pm Investigator** is the solution for projects where a lot of different plans are merged into one central schedule. Before merging a planning into the overall planning, changes and possible consequences are shown instantly.

**pm Investigator** is frequently used for claim management. **pm Investigator** reports give a clear view on the changes in the planning and the financial consequences of these changes.



### The Basis

pm Investigator is only compatible with Primavera Project Planner (P3) files. Two projects can be selected, to be compared on every aspect of the planning. The projects can have different names or the same name but then they have to be located in different folders.

The projects are compared on every aspect and the changes are shown on the screen. The grid shows all the items that can be assigned to a task only once. The data for resources, relations and log records have there respective detail screens, but for each is a column indicating if there are any changes to be displayed in the detail screens (explained in more detail below).

When starting the PI, one can select the columns to be displayed in the grid view. This does not mean that only changes in those columns are checked, but the complete project will be checked. Only in reports the selected columns will be used.

Searching for specific changes is made easy by using two kinds of filters. Changes are clarified with clear colors to see them at a single glance.

S	M..	Activity...	Activity Description	Activity T...	Origin...	Remai...	Percent ...	Calen...	Early Start
	✗	AS100	Define System Requirements	Task	10	0	100.0%	1	
	✓	AS101	System Design	Task	20	0	100.0%	1	
	✗	AS102	Approve System Design	Task	10	0	100.0%	1	
	✓	AS103	Install Robot Base	Task	18	18	0.0%	1	29S... ⇒
	✗	AS104	Run Sealant, Air, and Water Piping	Task	13	13	0.0%	1	29SEP93
	✓	AS105	Install Temperature Control Equipmen	Task	20	20	0.0%	1	02NOV93
	✓	AS106	Set & Connect Robots	Task	18	18	0.0%	1	02DEC93
	✓	AS107	Install System & Misc. Components	Task	30	30	0.0%	1	29DEC93
	✓	AS108	Install System Controller	Task	16	16	0.0%	1	10FEB94
	✗	AS109	Test & Debug Line A	Task	24	24	0.0%	1	10FEB94
	✓	AS110	Test & Debug Line B	Task	24	24	0.0%	1	10FEB94
	✗	AS111	Pilot Start Line A	Task	1	1	0.0%	1	17MAR94
	✓	AS112	Start-Up Line B	Task	1	1	0.0%	1	17MAR94
	✓	AS113	Install Processor/Software/Data Ta...	Task	2	2	0.0%	1	01A... ⇒ 05x
	✓	AS114	Calibrate Robot Controller & Power Up	Task	1	1	0.0%	1	05A... ⇒ 07x
	✓	AS115	Load System Software	Task	20	20	0.0%	1	06A... ⇒ 08x
	✓	AS116	Program	Task	15	15	0.0%	1	04M... ⇒ 06x
	✓	AS117	Startup Procedure Development	Task	3	3	0.0%	1	30J... ⇒ 05x
	✓	AS118	Training Manuals/System Operation	Task	9 ⇒ 8	9 ⇒ 8	0.0%	1	06J... ⇒ 08x
	✓	AS119	Training Manuals/System Final Appr..	Finish Mile..	0	0	0.0%	1	
	✓	AS150	Production Start	Start Miles..	0	0	0.0%	1	01A... ⇒ 05x

The Blue texts are changes, the Green rows are new tasks (in the revised project) and the Red rows are deleted tasks (from the revised project).



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### Filters

There are two types of filters in **pm Investigator**: the standard filters and the selection filters. Both filters help you find specific changes and for both filters you can add and save definitions.

### Standard filters

There are two ways to save a standard filter:

1. Global filters; these are saved in the folder where **pm Investigator** has been installed. These filters can be used for all projects that are compared with each other.
2. Normal filters: these are saved at the main project that is used. They are always available if the same main project is chosen again.

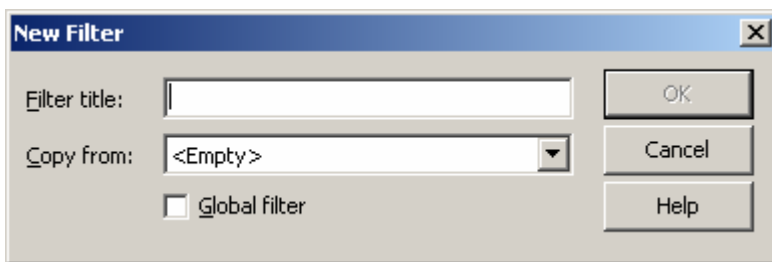
It is easy to see the changes of one specific P3 - field through the standard filters.

If we want **pm Investigator** to show us all tasks where the "Early Start" has been changed, if we simply select the "Early Start" field from the combo box and the results will be shown on the screen. These standard filters are all based on fields in Primavera.

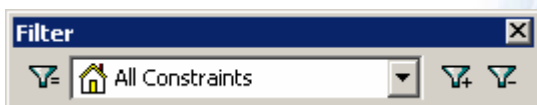
To check on more standard fields at the same time, we have to make our own standard filter. An example of a common developed filter is one showing changes on constraints. This shows at single glance all the tasks that are changed on **either** the 'Start No Earlier than' **or** the 'Mandatory Start' **or** on the 'Start on' etcetera.



By clicking on the "Filter" symbol with the "+" sign we can create our own standard filter.



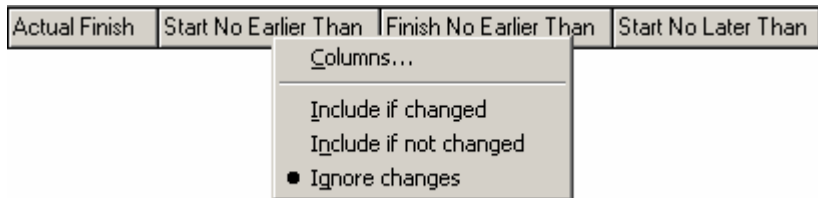
We give the filter a name and we can choose if we want to use another filter as basis. Now we also have to specify if this filter has to be available for all the projects that are compared (Global Filter).



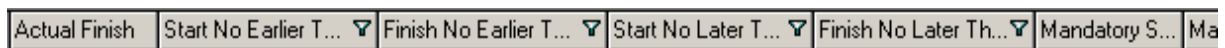
The filter is named "All Constraints" and is not a Global Filter. Global Filters will have a little Earth Icon in front of them.



The screen of **pm Investigator** will not show any tasks because we first need to select which changes we want to have displayed on our screen.



We go to the first constraint column (Start No Earlier Than) and right click on the column name. We can choose for *Include if changed* and all changed task for this column will be shown directly on your screen. We repeat this procedure for all columns that we want to add to the filter.



All the columns added to the filter have a small “filter symbol” behind the title.

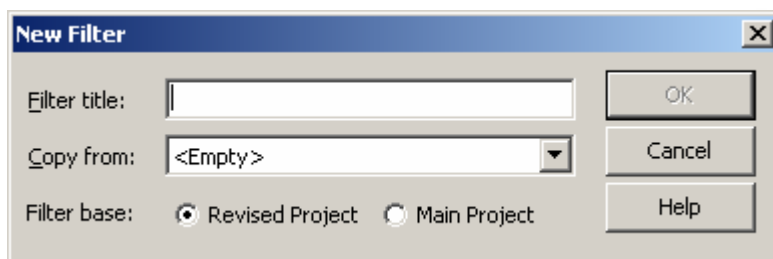
If we have to check on specific fields, like resource fields or relation fields, then we have to select this in there detail screens. These detail screens can be opened in the View menu.

### Selection filters

The secondary filter in **pm Investigator** is used to search on field specific content. We can for example select only tasks the *total float* is less then 0 planning units.



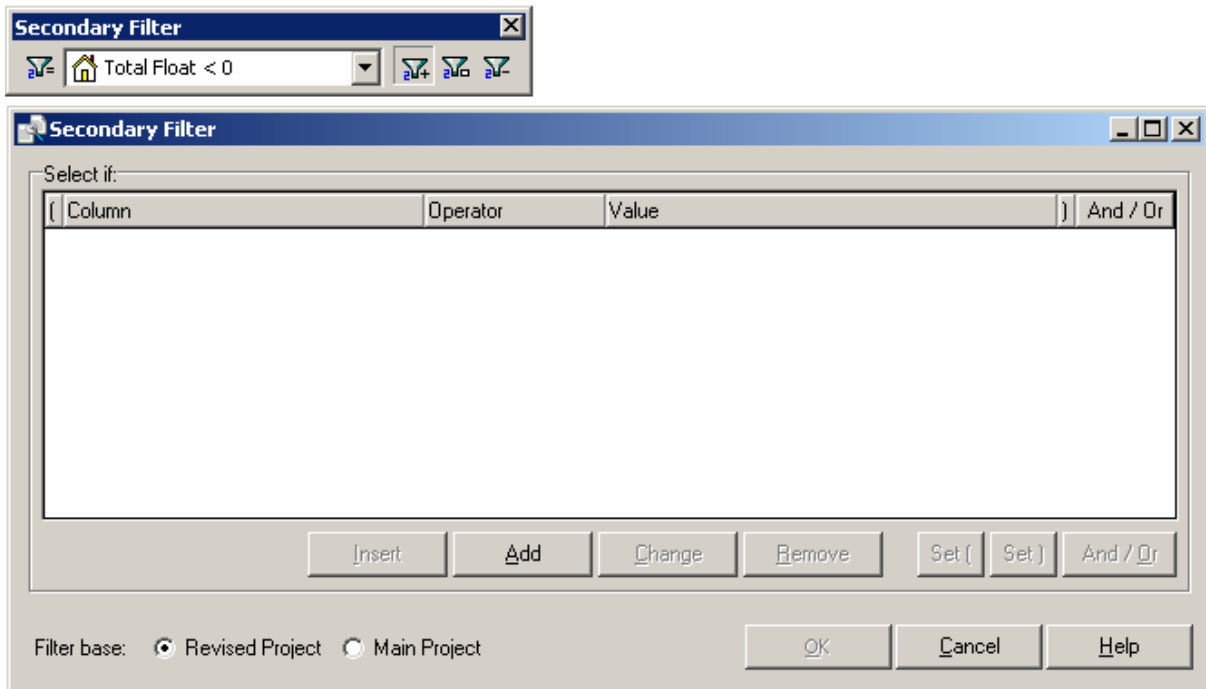
By clicking on the “Filter” symbol with the “+” sign we can create a new filter.



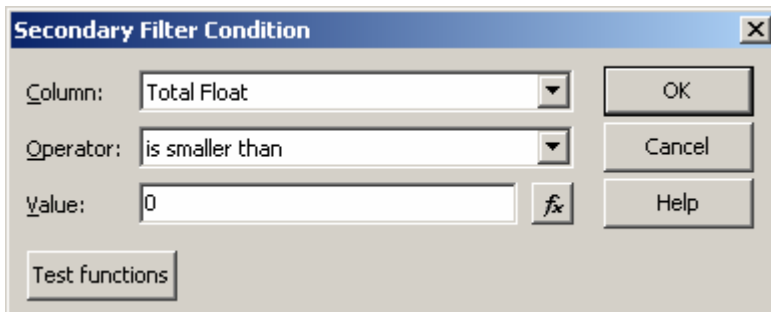
Except the title and the basis of the filter, we have to select whether the filter has to run on the Revised Project or the Main Project.



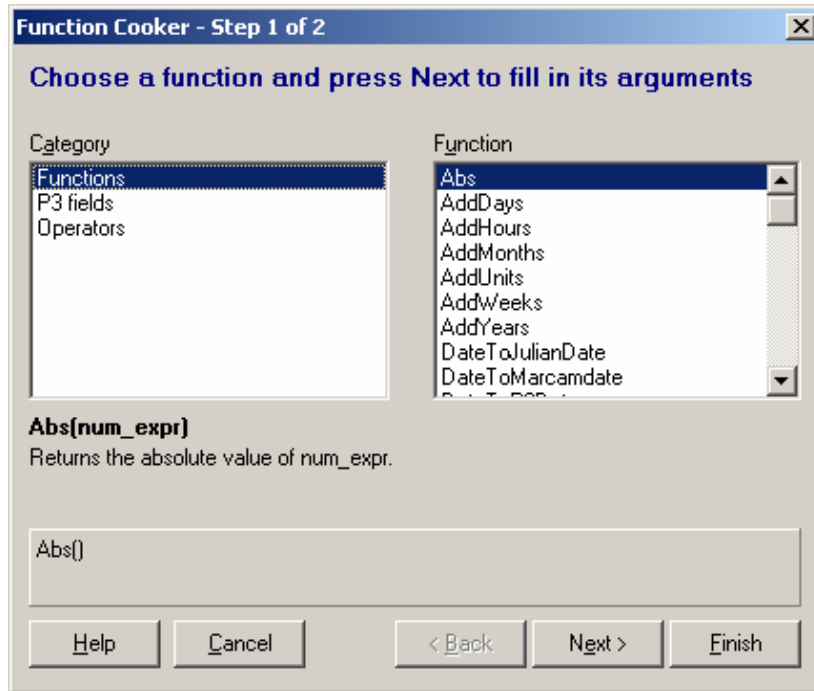
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Pressing the Add-button allows the user to add a line to the selection:



Using the *fx* button opens the screen for further use of various functions and other P3 fields:

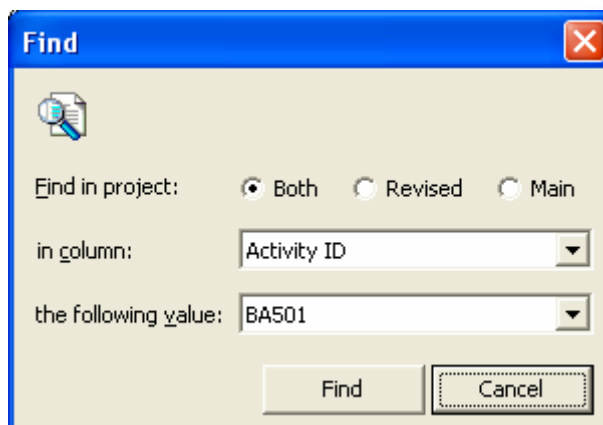


An unlimited number of selection filters can be added to fit the users' requirements. This is where we can create all kinds of filters, much like pm Flint.

### Search function

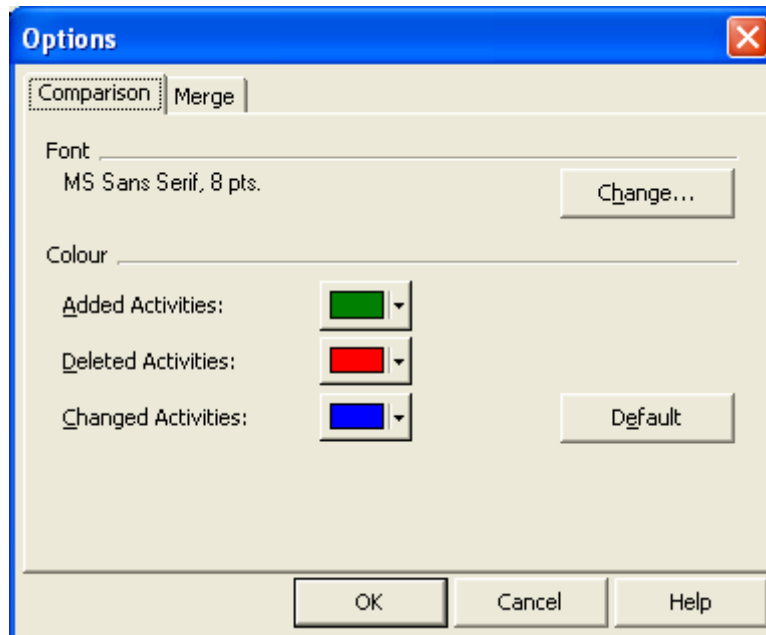
In **pm Investigator** there is a search function that can address all the fields available. The search dialog can be opened in different ways, like the key combination CTRL-F, by double clicking in the lower status bar on the activity ID and thru the Edit... Find menu option.

The dialog will give the option to select a P3 field and it will directly populate the combo box below it with possible values that are in use in the project.



### Screen Colors

The user is allowed to change the colors being used by **pm Investigator**. This can be done by double clicking in the lower status bar on the Added – Deleted – Changed part or via menu option Edit ... Options. Both will get the dialog box where the colours can be changed.



## Merging of changes

pm Investigator can also be used to merge selected changes from the revised project into the main project by using the merge option.

S	M	Activity...	Activity Description	Activity
	X	AS100	Define System Requirements	Task
	✓	AS101	System Design	Task
	X	AS102	Approve System Design	Task
	✓	AS103	Install Robot Base	Task
	X	AS104	Run Sealant, Air, and Water Piping	Task
	✓	AS105	Install Temperature Control Equipmen	Task
	✓	AS106	Set & Connect Robots	Task
	✓	AS107	Install System & Misc. Components	Task
	✓	AS108	Install System Controller	Task

A blue (green or red) bar in the first column indicates the type of change found. Blue means 'Changed', Green for 'New task in revised project' and Red for 'Deleted activity from revised project'. No colour indicates 'No change'.

The second column indicates which tasks are marked for merging into the main project.

A red cross (X) indicates that any indicated change will not be merged; a green checkmark indicates that the merge will include this task.

This allows the user to identify per task if changes are accepted or rejected.

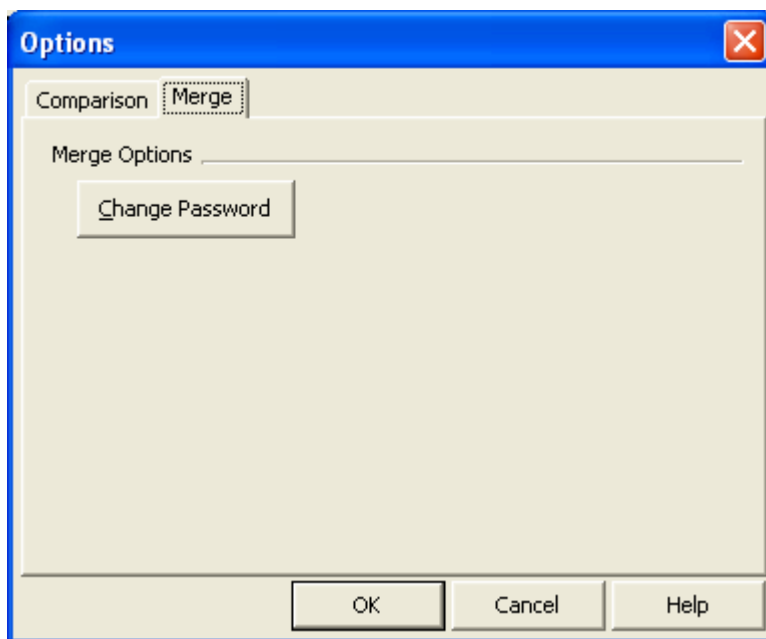


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AS106	Set & Connect Robots	Task	18
✓ AS107	Install System	Merge	30
✓ AS108	Install System		16
✗ AS109	Test & Debug	Copy	24
✓ AS110	Test & Debug		24
✗ AS111	Pilot Start Line	Accept	1
✓ AS112	Start-Up Line	Reject	1
✓ AS113	Install Process		2
✓ AS114	Calibrate Robo	Relations	1
✓ AS115	Load System S	Resources	20
✓ AS116	Program		15
✓ AS117	Startup Proce	Log	3
✓ AS118	Training Manu	Difference Summary	9
✓ AS119	Training Manuals/System Final Appr..	Finish Mile..	0

In the selected task (AS106) it is possible to indicate if changes are accepted or rejected. It is also possible to specifically merge this task only by choosing the merge option.

Merging of activities can be protected by a password. This password can be set in the Edit ... Options dialog on the Merge tab.





### Copy to Clipboard option

pm Investigator has a Copy to Clipboard option on the toolbar. This option will copy all the changed items of the selected activities.

BA620	Main	Revised
Early Start	05NOV93	12NOV93
Early Finish	02FEB94	09FEB94
Late Start	14APR94	25MAR94
Late Finish	08JUL94	17JUN94
Total Float	109	90
Free Float	109	90

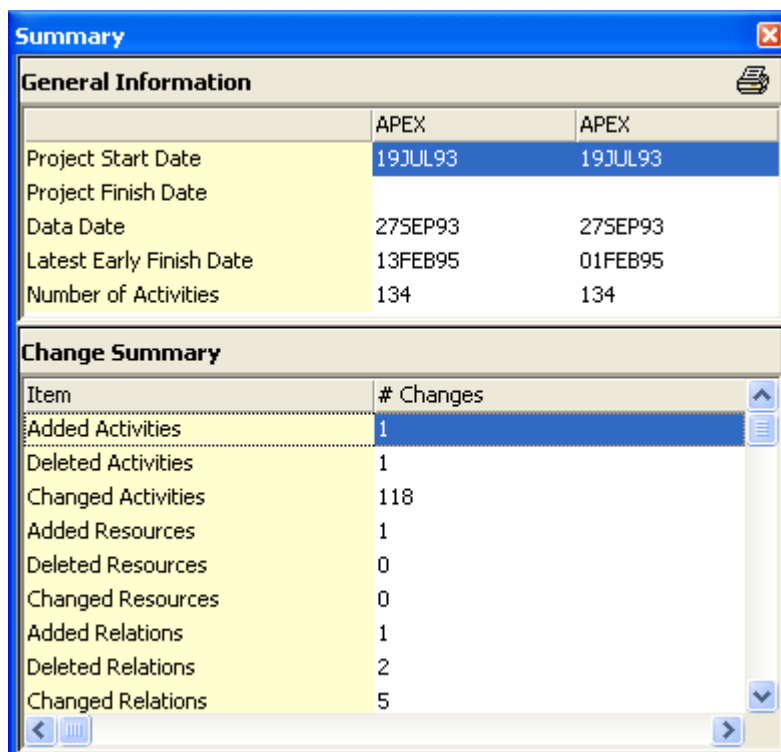
BA630	Main	Revised
Total Float	0	1
Critical Status	Yes	No
Changed Successor:	BA640 - BA630 (FS, 0, Driving)	BA640 - BA630 (FS, 0, Driving)

### Detail Screens

pm Investigator has several detail screens. The detail screens are for all the planning items that have a one-to-many relationship with activities. In P3e there are quite a few of these. To sum some of them:

- Relations
- Resources
- Steps
- Notebook items
- Expenses
- ...

pm Investigator currently uses the following detail screens:



This detail screen gives a total summary of changes. It shows the project level information (general Information) and it will sum the # of changes per item in the schedule.



Relationships BA700				
Predecessor	Type	Lag	Driving	Description
BA690	FS	0	Yes	Form and Pour Slab

Successor	Type	Lag	Driving	Description
BA701	FS	0	Yes	Foundation Phase Complete
BA710	FS	0	Yes ...	Erect Structural Frame

This is the relationship detail dialog. It shows the predecessors and successor information for the currently selected task.

Resources AS100		
Resource	Cost Account	Curve
ANALYST	11101 L	
ATM ENG	11101 L	

Item	Changed from...	to...	Change
Resource Driving	No	No	
Units Per Time Period	0.00	0.00	0.00
Budgeted Quantity	40.00	40.00	0.00
Resource Lag	0	0	0
Resource Duration			
Resource Percent Comp...			
Actual Quantity This Per...	40.00	40.00	0.00
Actual Quantity To Date	40.00	40.00	0.00
Quantity To Complete	0.00	0.00	0.00
Quantity At Completion	40.00	40.00	0.00
Unit Variance	0.00	0.00	0.00
Budgeted Cost	1200.00	1200.00	0.00
Actual Cost This Period	1200.00	1200.00	0.00
Actual Cost To Date	1200.00	1200.00	0.00
Percent Expended	100.00	100.00	0.00
Earned Value	1200.00	1200.00	0.00
Cost To Complete	0.00	0.00	0.00
Cost At Completion	1200.00	1200.00	0.00
Cost Variance	0.00	0.00	0.00
CMMT	0.00	0.00	0.00
ORBC	1200.00	1200.00	0.00

The details for the resources are displayed as on the left. For each resource, all information is shown.



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Log A5101

Mask	Log Entry
1	System design includes hardware and software
2	components and their integration. A materials
3	listing is also required.
4	
5	

Also for the log fields (notebook items in P3e) there is a detail screen. The first line shows the Main project log fields, the second (grey line) show the revised projects log fields. In this case, log fields were added in the revised project.

Difference Summary A5118

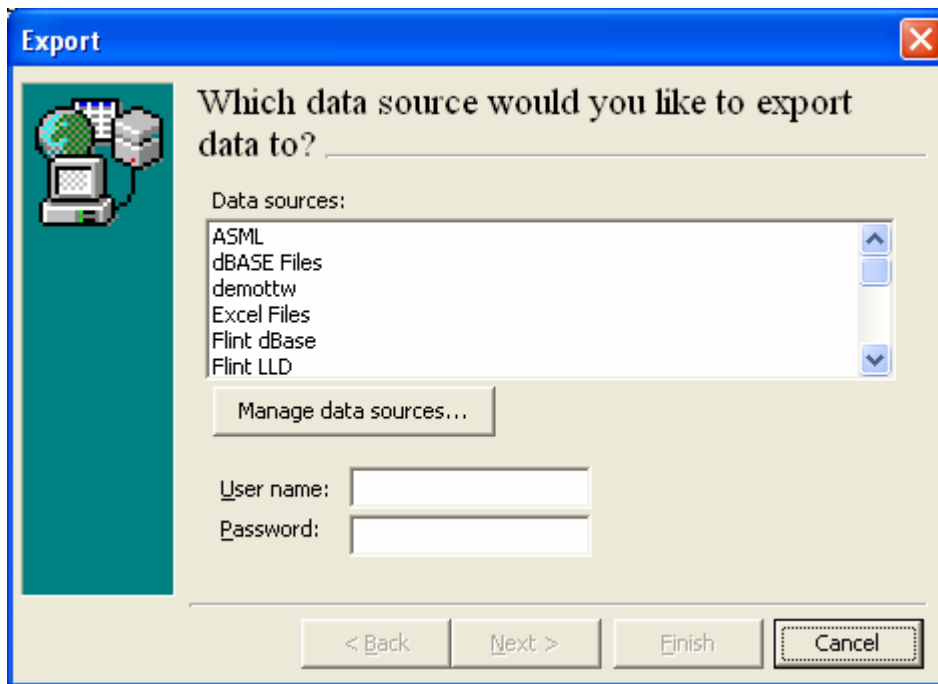
Item	Changed from...	to...	Change
Original Duration	9	8	-1
Remaining Duration	9	8	-1
Early Start	06JUL94	08JUL94	
Early Finish	18JUL94	19JUL94	
Late Start	06JUL94	08JUL94	
Late Finish	18JUL94	19JUL94	
Successors		A5118 - A5119...	
Resource	Changes were made		

This is the difference summary screen. In this screen all the changes on the selected task are displayed.

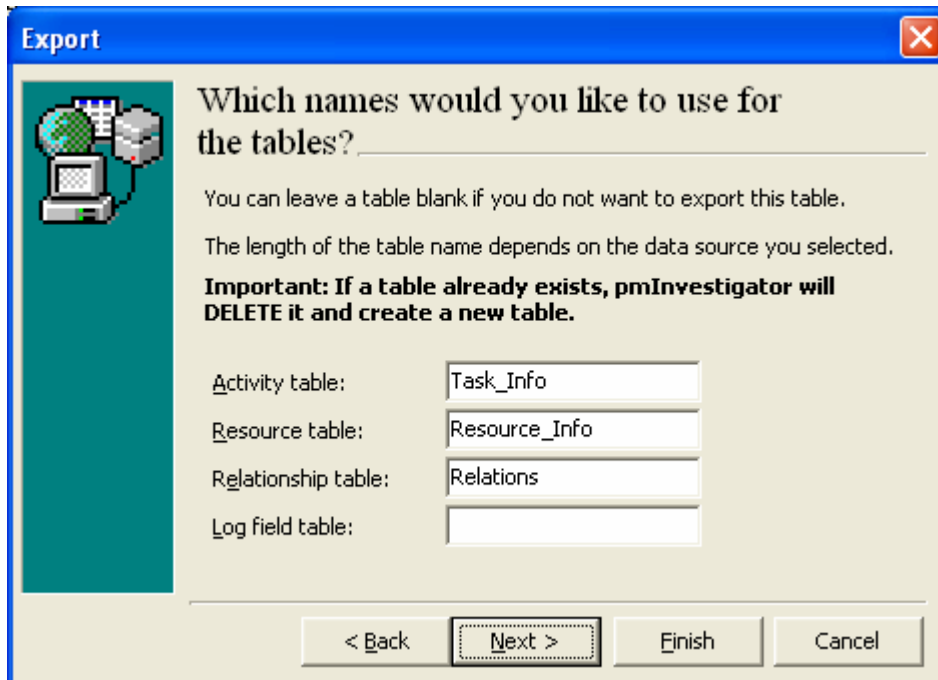


## Export Option

pm Investigator has an option for exporting the data to any ODBC compliant database. This option is created so users can create their own reports in any program they wish. It's also a digital way to preserve the current differences between two projects.



When exporting, the DNS must have been created and an (preferably) empty file must exist in the folder that is specified in the DNS. If necessary, the Manage data sources button can be pressed to create a new DSN prior to exporting. Optional is the User name and Password. This is dependant on the type of DNS.



After choosing a DSN, pm Investigator will prompt for the names of the tables it should create in the database. 4 types of tables can be created. If you don't want to export the Log fields, just leave the table box blank.



On this dialog we can define what to export.



The final dialog. Pressing Finish will start creating the tables as specified. When exported to MS Access, the table for the task information looks like this:



**Task\_Info : Table**

Field Name	Data Type
Activity_ID	Text
Main_Activity_Description	Text
Rev_Activity_Description	Text
Main_Activity_Type	Text
Rev_Activity_Type	Text
Main_Original_Duration	Number
Rev_Original_Duration	Number
Main_Remaining_Duration	Number
Rev_Remaining_Duration	Number
Main_Percent_Complete	Number
Rev_Percent_Complete	Number
Main_Calendar	Text
Rev_Calendar	Text
Main_Early_Start	Date/Time
Rev_Early_Start	Date/Time
Main_Early_Finish	Date/Time
Rev_Early_Finish	Date/Time
Main_Late_Start	Date/Time
Rev_Late_Start	Date/Time
Main_Late_Finish	Date/Time
Rev_Late_Finish	Date/Time

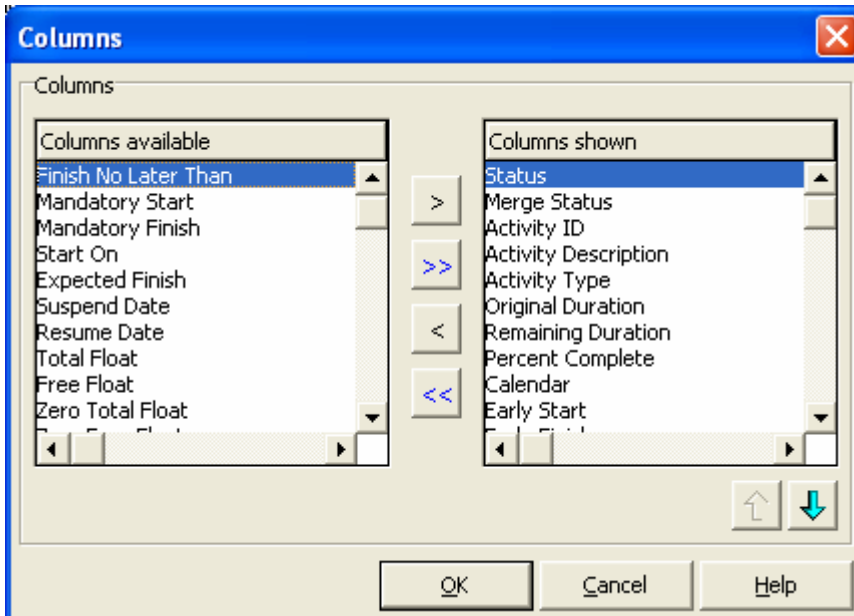
General    Lookup

Field Size	10
Format	
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Allow Zero Length	Yes
Indexed	No
Unicode Compression	No
IME Mode	No Control
IME Sentence Mode	None
Smart Tags	



### Column Selection

At the first start of the comparison of two projects, the wizard gives you the option to select the columns for display. When the comparison is done and the data is being displayed, one can change the columns he/she wants to have displayed by pressing F11 or choosing Columns from the Edit menu.



From the Columns shown list, the option is there to change the position of the column with the up/down arrow buttons. In the grid, it's also possible to drag/drop the column to the desired location.

For readability, we can “freeze” some columns on the left of the screen by moving the screen divider, that's located on the right side of the horizontal scroll bar, to the left.



The screenshot shows the pmlInvestigator software interface. The main window displays a table of project activities. The table has columns for Activity ID, Activity Description, Remaining, Percent Complete, Calendar, Early Start, Early Finish, and Late Start. The activities listed include System Design, Install Robot Base, Install Temperature Control Equipment, Set & Connect Robots, Install System & Misc. Components, Install System Controller, Test & Debug Line B, Start-Up Line B, Install Processor/Software/Data Transfer, Calibrate Robot Controller & Power Up, Load System Software, Program, Startup Procedure Development, Training Manuals/System Operation, Production Start, Prepare and Solicit Bids for System Controller, Review Bids for System Controller, Award Contract for System Controller, Prepare Drawings for System Controller, Review and Approve System Controller, and Fabricate and Deliver System Controller. The status bar at the bottom shows 'AS101' selected, 'Main project: APEX', and 'Revised project: APEX'.

M	Activity...	Activity Description	Remai...	Percent ...	Calen...	Early Start	Early Finish	Late Start
✓	AS101	System Design	0	100.0%	1			
✓	AS103	Install Robot Base	18	0.0%	1	29S...	22OCT93	07O...
✓	AS105	Install Temperature Control Equipmen	20	0.0%	1	02NOV93	01DEC93	02NOV93
✓	AS106	Set & Connect Robots	18	0.0%	1	02DEC93	28DEC93	02DEC93
✓	AS107	Install System & Misc. Components	30	0.0%	1	29DEC93	09FEB94	29DEC93
✓	AS108	Install System Controller	16	0.0%	1	10FEB94	04MAR94	25F...
✓	AS110	Test & Debug Line B	24	0.0%	1	10FEB94	16MAR94	10F...
✓	AS112	Start-Up Line B	1	0.0%	1	17MAR94	17MAR94	17M...
✓	AS113	Install Processor/Software/Data Ta...	2	0.0%	1	01A...	05A...	04A...
✓	AS114	Calibrate Robot Controller & Power Up	1	0.0%	1	05A...	07A...	05A...
✓	AS115	Load System Software	20	0.0%	1	06A...	08A...	03M...
✓	AS116	Program	15	0.0%	1	04M...	06M...	24M...
✓	AS117	Startup Procedure Development	3	0.0%	1	30J...	05J...	05J...
✓	AS118	Training Manuals/System Operation	9	0.0%	1	06J...	08J...	18J...
✓	AS150	Production Start	0	0.0%	1	01A...	05A...	01A...
✓	AS213	Prepare and Solicit Bids for System ...	5	0.0%	1	14OCT93	20OCT93	12N...
✓	AS214	Review Bids for System Controller	4	0.0%	1	21OCT93	26OCT93	19N...
✓	AS215	Award Contract for System Controller	1	0.0%	1	27OCT93	27OCT93	29N...
✓	AS216	Prepare Drawings for System Contro..	3	70.0%	1		29SEP93	
✓	AS217	Review and Approve System Contr...	10	0.0%	1	30SEP93	13OCT93	29O...
✓	AS218	Fabricate and Deliver System Contr...	60	0.0%	1	28OCT93	25JAN94	30N...

Now we have a split screen and we can scroll the right part of the screen while the left part remains on the displayed columns.

## Audit Log

pm Investigator also keeps an log in which it will store information about projects compared and merges that have been done.

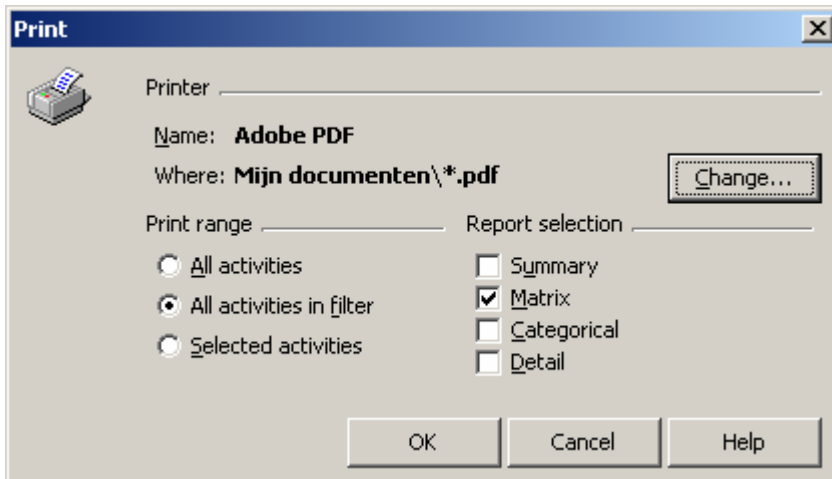
The screenshot shows the Audit Log window. It contains a table with columns for Time, Activity ID, and Message. The log entries are as follows:

Time	Activity ID	Message
08-Mar-2007 12:42:14		Merge successfully completed
08-Mar-2007 12:42:14	AS113	Changed Late Finish from '04APR...
08-Mar-2007 12:42:14	AS113	Changed Late Start from '01APR...
08-Mar-2007 12:42:14	AS113	Changed Early Finish from '04AP...
08-Mar-2007 12:42:14	AS113	Changed Early Start from '01APR...
08-Mar-2007 12:42:14	AS113	Merging
08-Mar-2007 12:42:14		Merge Started
08-Mar-2007 09:56:10		Compared projects APEX and APEX.



## Reporting

pm Investigator has four types of reports (Summary/Matrix/Categorical/Detail).



These reports can each be run using three various types of selections (All/ Filtered/ Selected) as shown in the dialog above.

## Summary Report

This report shows changes on a project level. It highlights summaries of changes per change type. E.g. Remaining Duration; 7 activities changed.

Also general project information, like start date and finish date are shown.

### Summary Report

Main Project : C:\PROGRAM FILES\PROMETH\PMINVESTIGATOR\SAMPLE

Rev. Project : C:\PROGRAM FILES\PROMETH\PMINVESTIGATOR\SAMPLE

#### All Activities

General Information	APEX	APEX
Start Date	19JUL93	19JUL93
Finish Date		
Data Date	27SEP93	27SEP93
Latest Early Finish Date	13FEB95	01FEB95
Number of Activities	134	134

Change Summary	# Changes
Added Activities	1
Deleted Activities	1
Changed Activities	117
Activity Description	0
Activity Type	0
Original Duration	5
Remaining Duration	7
Percent Complete	2
Calendar	0



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### Matrix Report

The matrix report is used to create a quick overview of changes occurring in the project, without listing the actual change.

#### Matrix Report

**Main Project :** C:\PROGRAM FILES\PROMETH\PMINVESTIGATOR\SAMPLE\VERSION1\APEX - Plant

**Rev. Project :** C:\PROGRAM FILES\PROMETH\PMINVESTIGATOR\SAMPLE\VERSION2\APEX - Plant

**Primary Filter :** All

**Secondary Filter :** <Empty>

Activity ID	Activity Description	Activity Description	Activity Type	Original Duration	Remaining Duration	Percent Complete	Calendar	Early Start	Early Finish	Late Start
AS100	Define System Requirements									
# AS101	System Design									
AS102	Approve System Design									
# AS103	Install Robot Base						✓			✓
AS104	Run Sealant, Air, and Water Piping									
# AS105	Install Temperature Control Equipme									
# AS106	Set & Connect Robots									
# AS107	Install System & Misc. Components									
# AS108	Install System Controller									✓
AS109	Test & Debug Line A									
# AS110	Test & Debug Line B									✓
AS111	Pilot Start Line A									
# AS112	Start-Up Line B									✓

A # before the activity indicates 1 or more changes found. A '+' defines added tasks and a '-' indicates a deleted tasks. The columns show the selected fields from P3, flagged with a checkmark when changes have occurred.



## Categorical Report

This report shows changes per P3 field.

### ■ Added Activities

Act. ID	Activity Description	OD	TF
AS119	Training Manuals/System Final Approval	0	0

### ■ Deleted Activities

Act. ID	Activity Description	OD	TF
BA913	Install Elevator Cab and Finishes	2	38

### ■ Activity Description

No Activity Description changes in revised project

### ■ Activity Type

No Activity Type changes in revised project

### ■ Original Duration

Act. ID	Activity Description	Old	New	Change	
AS118	Training Manuals/System Operation		9	8	-1
AS265	Path Refinement and Shakedown-Line A		10	12	2
BA480	Assemble and Submit Flooring Samples		10	15	5
CS760	Field Painting		20	18	-2

### ■ Remaining Duration

Act. ID	Activity Description	Old	New	Change	
AS118	Training Manuals/System Operation		9	8	-1
AS265	Path Refinement and Shakedown-Line A		10	12	2
BA480	Assemble and Submit Flooring Samples		10	15	5
BA640	Site Preparation		10	0	-10
BA650	Excavation		10	5	-5
CS760	Field Painting		20	18	-2

## Detail Report

The detail report shows changes per task.

### # AS118 Training Manuals/System Operation

Original Duration:	9 → 8
Remaining Duration:	9 → 8
Early Start:	06JUL94 → 08JUL94
Early Finish:	18JUL94 → 19JUL94
Late Start:	06JUL94 → 08JUL94
Late Finish:	18JUL94 → 19JUL94
Added Successor:	AS118 - AS119 (FS, 0, Driving)
# Resource:	ATM ENG Cost Account: 11415 L Curve:
Units Per Time Period:	8.00 → 9.00



### Reminders

Using the program requires proper care as changes can be made easily. Following is a list of reminders:

Changing an Activity ID	<b>pm Investigator</b> regards this as a deleted and new task. P3 activity ID's are unique and <b>pm Investigator</b> handles these changes accordingly. All changes are recorded against this unique ID.
Relationships	In P3 relationships are unique based of the following combination: Succ/Pred ID <b>plus</b> Relation type. Hence, a change in relationship type (e.g. FS to SS) is regarded by <b>pm Investigator</b> as a deleted <b>and</b> added relationship.
Resources	In P3 Resources are unique on the basis of the Resource ID, Cost Account and Resource Curve. Changing one of these 3 is regarded by <b>pm Investigator</b> as a deleted <b>and</b> added Resource.
Project Type	Comparing two single user projects is not possible in <b>pm Investigator</b> . This is resolved by opening these projects in P3 and changing their status to multi-user after which comparison is possible in <b>pm Investigator</b> .