User Manual for

PMPal

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Introduction

PMPal is a full spectrum software project management transaction processing and software metrics tool. **PMPal** has the following modules

1. **Software Estimation** – software size, effort, cost and schedule
2. **Work Breakdown Structure** – for allocating and managing work execution
3. **Defect Manager** – for reporting and resolving software defects
4. **Change Manager** – for reporting, and tracking all changes to resolution
5. **Time Sheet** – to capture effort being spent
6. **Software metrics and reports**
7. **Administration**
8. **Master Maintenance**

Explanation of the theory of Project Management discipline is beyond the scope of this manual. It is suggested that the corresponding literature be studied or a professional training be undergone to gain expertise in these techniques. However, a minimal understanding of the theory is sufficient to use this tool to produce professional estimates.

Preliminaries

Before you attempt the tool, the following activities need to be carried out by you –

1. Set up the database and establish network connectivity – this needs to be carried out by your **PMPal** Administrator
2. Enter the name of your organization – this name will be used while generating reports - this task needs to be carried out by the Administrator. Please see Administration section for more details.
3. Enter the names of employees that are going to use **PMPal** – this needs to be carried out by the Administrator. Please see Administration section for more details.

Entering the name of your organization

This task needs to be carried out by the Administrator.

Once you have installed the tool on your system, please enter the details of your organization by selecting – **Tools - Company Details**

Enter the details of the name of your organization and optionally, the address. The name entered here shall be used in all the reports generated by the organization.

Effort Estimation

It is well recognized that software estimation - size, effort, cost and schedule - calls for human ingenuity owing to the following aspects -

i. The activities to be performed in order to complete the project varies from project to project, even in similar projects
ii. Quality of resources that can be employed on the project has a significant impact on the effort
iii. The working environment, tools usage and the process-orientation do have a significant impact on the effort

Therefore, there is no substitute to professionals in the preparation of the software estimation.

What is attempted in this software is to assist the professional in preparing the software estimation and to the extent possible, reduce the time he needs to spend on the estimate preparation activity.

This tool facilitates use of the following Estimation techniques -

i. Function Point Analysis Technique
ii. Objects Points Technique
iii. Use Case Points Technique
iv. Task-Based Estimation Technique
v. LOC (Lines of Code)
vi. Intermediate COCOMO
vii. FPA Mark II

Explanation of these techniques is beyond the scope of this manual. Chemuturi Consultants suggests that the corresponding books be studied or a professional training be undergone to gain expertise in these techniques. However, a minimal understanding of these techniques is sufficient to use this tool to produce professional estimates.

Function Points Analysis / Counting

Tabs of this screen

There are seven (7) tabs in this screen, which can be accessed by clicking on the tabs. These are, namely,

i. Summary Tab - gives the summary of the estimate showing the total of External Inputs, External Out Puts, External Queries, Internal Logical Files, and External Interface Files, Total Unadjusted FP, composite VAF, Adjusted FP, Productivity in FP per Person Day and the total Effort in Person Days. All Estimate Entry work of entering all the component details is facilitated in this tab.
ii. EI Tab - shows list of External Inputs in the project and their complexity level.
iii. EO Tab - shows list of External Outputs in the project and their complexity level.
iv. EQ Tab - shows list of External Queries in the project and their complexity level.
v. ILF Tab - shows list of Internal Logical Files in the project and their complexity level.
vi. EIF Tab - shows list of External Interface Files in the project and their complexity level.
vii. VAF Tab - shows all the fourteen Value Adjustment Factors and their values.

Summary Tab

In this tab, one needs to enter the components in the Estimate Entry section of Summary tab, Value Adjustment Factors in the VAF tab and Productivity FP/Day. These need to be entered –

i. Function Point Name - name of the component or function point - maximum 50 characters are allowed
ii. Function Point Type - this is a selectable box - choices are External Input, External Output, External Query, Internal Logical File and External Interface File
iii. FTRs (or RETs) - Enter the number of FTRs (File Types Referenced) or RETs (Record Element Types)
iv. DETs – Data element Types – Enter the number of DETs. The complexity of the FPA Transaction would be determined by the software based oin the info entered by you adhering to the rules.
v. Notes/Assumptions - You may like to record your assumptions or some additional info, you may record it here. You can enter up to a maximum of 255 characters.
vi. Clicking on Save button will save the data entered above.
vii. Clicking on the Clear button would clear the entry in the Function Point Name box and set to default the other two values.

In the Summary section

i. Select from the box either PH per FP (Person Hours per Function Point) or PD per FP (Person Days per Function Point) – this will allow the tool to interpret the productivity figure
ii. Time per Function Point - this is the value that determines how much total effort is needed for the project. This value comes from your organizational standards or from an experienced developer. The Total Effort value is computed using this value.
iii. Clicking on the Save Project button would save the details of the project entered.
iv. Clicking on the Close Project would close the project screen and allow you to do other tasks
v. Clicking on the Print Report button would display the report. This report may be printed on the printer or save to a disk file.

Value Adjustment Factors (VAF)

In the VAF (Value Adjustment Factor) tab, you would find two boxes –

i. GSC (General System Characteristic) and
ii. Degree of Influence

For all the fourteen GSCs select the appropriate Degree of Influence. You can verify the results in the list box. Once you are satisfied, you may return to the Summary Tab, where you would find the composite VAF for the project.

The composite VAF for the project would be calculated using the formula -

VAF = (Sum of the 14 values entered / 100) + 0.65

Reviewing and editing / deleting the entries

The tabs EI, EO, EQ, ILF, and VAF allow you to review the entered values and edit / delete them. Follow these steps -

i. Access the desired tab by clicking on the tab
ii. Scroll thru the entries displayed there and select the desired entry by clicking on it and the row is highlighted
iii. Double click on the row and you would be taken to the Summary Tab and the values of the selected row would be displayed in the Estimate Entry section. You may edit them as desired. Click on Save button to save the changes.

Object Points Estimation

Tabs of this Screen

This screen has four tabs, namely, Summary Tab, Screens Tab, Reports Tab, and 3GL Components Tab.

Summary Tab

This tab has two sections - one is the Estimate Entry Section and the other is Summary Section.

In Estimate Entry Section, you need to enter three values, namely, -

i. Object name - name of the object (Screen or Report or a stored procedure) up to 50 characters long
ii. Object Type - select from the available choices of Screen, Report, or 3GL Component
iii. Complexity - select from the available choices of Low, Medium or High
iv. Clicking on the Save button would save the entry
v. Clicking on the Clear clears the Object Name box and set the other two boxes to their default values

In the Summary Section, you need to enter two values, namely, Percentage of SW Reuse and Productivity NOP / PD. Both these values are numbers.

i. Clicking on the Save Project button would save the details of the project entered.
ii. Clicking on the Close Project would close the project screen and allow you to do other tasks

Reviewing and editing / deleting the entries

The tabs Screens, Reports and 3GL Components allow you to review the entered values and edit / delete them. Follow these steps -

i. Access the desired tab by clicking on the tab
ii. Scroll thru the entries displayed there and select the desired entry by clicking on it and the row is highlighted
iii. Right click on the row and the choices Edit, Delete would be pop up.

iv. If you select Delete and click on that choice, the row would be deleted and the necessary adjustments would be effected in the summary tab and the total Effort in Person Days would be adjusted accordingly
v. If you select Edit and click on that choice, you would be taken to the Summary Tab and the values of the selected row would be displayed in the Estimate Entry section. You may edit them as desired and the changes would be appropriately effected in the Summary tab and the relevant tab.

Print Report

Clicking on the Print Report button would cause the report to be displayed. You may print it on the printer or save it to a disk file by clicking the appropriate icon.

Use Case Points Estimation

This screen has four tabs, namely, Summary Tab, Use Case List Tab, Adjustment Factors (TF) Tab, and Adjustment Factors (EF) Tab.

Summary Tab

This tab has two sections - one is the Estimate Entry Section and the other is Summary Section.

In Estimate Entry Section, you need to enter three values, namely, -

i. Use Case Name - name of the use Case up to 50 characters long
ii. Complexity - of the Use Case - select from the available choices of Simple, Average, or Complex
iii. Actors - you need to enter three values
    a. Simple - number of Simple complexity of actors in the use case
    b. Average - number of Average complexity of actors in the use case
    c. Complex - number of Complex complexity of actors in the use case
iv. Clicking on the Save button would save the entry
v. Clicking on the Clear clears the Use Case Name box and set the other two boxes to their default values

In the Summary Section, you need to enter one value, namely, Productivity AUCP / PD. AUCP stands for Adjusted Use Case Points.

i. Clicking on the Save Project button would save the details of the project entered.
ii. Clicking on the Close Project would close the project screen and allow you to do other tasks

Adjustment Factors (TF)

In this tab, you need to enter 13 (thirteen) values for various Technical Factors affecting the Project. You need to enter only the Assigned Values and the Calculated Factor would be automatically computed using the pre-defined Weight for the factor on your clicking Save Button. Clicking on Cancel button would reset the last entries made by you since last clicking on save button.

Adjustment Factors (EF)

In this tab, you need to enter 8 (eight) values for various Environmental Factors affecting the Project. You need to enter only the Assigned Values and the Calculated Factor would be automatically computed using the pre-defined Weight for the factor on your clicking Save Button. Clicking on Cancel button would reset the last entries made by you since last clicking on save button.

Reviewing and editing / deleting the entries

The tab Use Case List allows you to review the entered values and edit / delete them. Follow these steps -

i. Access the desired tab by clicking on the tab
ii. Scroll thru the entries displayed there and select the desired entry by clicking on it and the row is highlighted
iii. Right click on the row and the choices Edit, Delete would be pop up.
iv. If you select Delete and click on that choice, the row would be deleted and the necessary adjustments would be effected in the summary tab and the total Effort in Person Days would be adjusted accordingly
v. If you select Edit and click on that choice, you would be taken to the Summary Tab and the values of the selected row would be displayed in the Estimate Entry section. You may edit them as desired and the changes would be appropriately effected in the Summary tab and the relevant tab.

Print Report

Clicking on the Print Report button would cause the report to be displayed. You may print it on the printer or save it to a disk file by clicking the appropriate icon.

Task Based Effort Estimation

This screen has two tabs, namely, Summary Tab, and Task List Tab.

Summary Tab

This tab has two sections - one is the Estimate Entry Section and the other is Summary Section.

In Estimate Entry Section, you need to enter three values, namely, -

i. Development Phase - Select from the list of Development Phases
ii. Development Task - Select from the list of tasks that form part of the selected development phase. You can also add a new task with in the selected phase by clicking on the Add New button located besides the box.
iii. Effort in PD- PD stands for Person Days - you need to enter three values
    a. Optimistic - number of person days the task takes, if every thing can be completed at quickest pace

b. Most Likely - number of person days the task takes, in normal scenario
c. Pessimistic - number of person days the task takes, if every thing can be completed at slowest pace

iv. Clicking on the Save button would save the entry
v. Clicking on the Clear clears the Use Case Name box and set the other two boxes to their default values
vi. Clicking on the Add New button located besides the Development Task box will pop up a dialog box in which you can enter a new task name for the selected Development Phase. Clicking on Save button would add the new task to the list and clicking on Cancel button would close the dialog box and return to the main screen.
vii. Clicking on the Close would close the project screen and allow you to do other tasks

Reviewing and editing / deleting the entries

The tab Task List allows you to review the entered values and edit / delete them. Follow these steps -

i. Access the desired tab by clicking on the tab
ii. Scroll thru the entries displayed there and select the desired entry by clicking on it and the row is highlighted
iii. Right click on the row and the choices Edit, Delete would be pop up.
iv. If you select Delete and click on that choice, the row would be deleted and the necessary adjustments would be effected in the Summary Tab and the Total value would be adjusted accordingly
v. If you select Edit and click on that choice, you would be taken to the Summary Tab and the values of the selected row would be displayed in the Estimate Entry section. You may edit them as desired and the changes would be appropriately effected in the Summary tab and the relevant tab.

Print Report

Clicking on the Print Report button would cause the report to be displayed. You may print it on the printer or save it to a disk file by clicking the appropriate icon.

LOC or Lines of Code method of effort estimation.

This screen facilitates you to carry out LOC based effort estimation. The following details need to be entered.

1. Module Name can be up to 50 characters long. It also facilitates selection of an existing module name.
2. Component Name can be up to 50 characters long. It also facilitates selection of an existing component to enter new information.
3. Component Type - select the type of component. This helps to ensure that all types of components are included in the estimate
4. Minimum LOC this box takes the input of the minimum number of estimated lines of code for the component - this is the size when an expert programmer writes the code
5. Most Likely LOC this box takes the input of the most likely number of estimated lines of code for the component - this is the size when an average programmer writes the code

6. Maximum LOC this box takes the input of the most likely number of estimatedlines of code for the component - this is the size when a novice (trainee or a programmer with little expertise) programmer writes the code

Once these details are entered pressing Down Arrow button below the Estimate Entry frame saves the details and new details can be entered. The details already entered by you would be shown in the table below the Estimate Entry frame for your reference.

LOC/Person Day - in this box enter the expected lines that can be produced per person day by a qualified programmer after having some experience on the platform of development and the programming language who is neither a novice nor a specialist.

The boxes Total LOC which is a sum of Expected LOC and Effort in person Days would be automatically filled.

The formula of computing Expected LOC is -

Expected LOC = (Minimum LOC + (4*Most Likely LOC)+ Maximum LOC) / 6

To delete an entry already made, follow these steps -

1. Select the row in the table containing the entry that is to be deleted by clicking on the row
2. Click the Top Arrow button above the table.
3. A warning message would be dispalyed "Delete this component Name?".
4. 4. Clicking Cancel button would cancel your delete action. Clicking OK button would cause the row to be deletedand the row would be deleted.

To modify the information entered for a component, follow these steps -

1. Select the row in the table containing the entry that is to be deleted by double-clkicking on the row
2. The details would be loaded into the boxes in the Estimate Entry frame
3. Make the desired modifications and click Down Arrow button - the changes would be saved.

Print Report

Clicking on the Print Report button would cause the report to be displayed. You may print it on the printer or save it to a disk file by clicking the appropriate icon.

Intermediate COCOMO

The reason for selecting Intermediate COCOMO method for inclusion is -

1. Basic COCOMO is a very gross estimate based on just a formula, which in our opinion is of little practical value
2. Advanced COCOMO can be applied only after detailed design is completed, which in our opinion, is superfluous
3. 3.Intermediate COCOMO is applied after requirements are known, which in our opinion is more common.

To make an effort estimate using Intermediate COCOMO, the following steps are to be performed.

First select the Project Type from the list - Organic, Semi-detached or Embedded. ·Organic projects are relatively small, simple software projects in which small teams with good application experience work to a set of less than rigid requirements. Semi-detached projects are intermediate (in size and complexity) software project in which teams with mixed experience levels must meet a mix of rigid and less than rigid requirements projects are intermediate (in size and complexity) software project in which teams with mixed experience levels must meet a mix of rigid and less than rigid requirements. Embedded projects are software project that must be developed within a set of tight hardware, software, and operational constraints

Project size in LOC - enter the estimate lines of code. You may LOC based estimation to arrive at this value.

Then there are 15 (fifteen) selection boxes with the degree of influence ranging from a minimum of Very Low to Extra High for each of the attribute of the estimate. Please note that some boxes do not have all the six degrees. Select the appropriate degree of influence for each of the boxes. Please note that there is no default value for any of the boxes. Each one needs to be selected assiduously.

Once you completed the above selections, click on Save button - this would save the details of selection and also compute the effort required and fills it in Project Effort in Person Months box. This is the effort estimated for the project using Intermediate COCOMO method of estimation

Print Report

Clicking on the Print Report button would cause the report to be displayed. You may print it on the printer or save it to a disk file by clicking the appropriate icon.

FPA Mark II Estimation

Tabs of this Screen

This screen has three tabs, namely, Estimate Summary Tab, LTLTab, TCAF Tab.

Estimate Summary Tab

This tab has two sections - one is the Estimate Entry Section and the other is Summary Section.

In Estimate Entry Section, you need to enter four values, namely, -

i. Logical Transaction Name - name of the Logical Transaction up to 50 characters long
ii. Entity Type Referenced - Name of the ETR - normally a table in the RDBMS context and a Record type in the flat file context. After you enter the name, click on the down arrow button. It will be entered in the list below. You have facility to enter up to ten (10) ETRs per Logical Transaction. If you wish to delete an ETR from the list,
iii. Highlight the row containing the ETR to be deleted by clicking on the row
iv. Click the up arrow button. - a message "You are deleting - name of the ETR will be displayed with two options, namely OK and Cancel. Clicking on Ok button will delete

the ETR from the list. Clicking on Cancel button will cancel the delete action and retains the ETR in the list.

v. DETs Below the ETR list, you will find facility for entering the DETs (Data Element Types) referenced by the Logical Transaction being referenced. There are two boxes one for Input DETS and the other for Output DETs. In the Input DETs box enter the number of DETs that are input into the Logical Transaction and in the Output DETS box enter the number of DETs output by the Logical Transaction being entered.

vi. Clicking on the Save Transaction button would save the entry

vii. Clicking on the Clear clears all the boxes

In the Summary Section, you need to enter one value, namely, Productivity FPU / PD. Both these values are numbers.

i. Clicking on the Save Project button would save the details of the project entered.

ii. Clicking on the Close Project would close the project screen and allow you to do other tasks

Explanation of other acronyms used on this tab

ETRs - Entity Types Referenced. Normally an ETR is a table in the RDBMS context and a Record type in the flat file context.

Input DETs - Data Element Types - Input to the Logical Transaction being entered

Output DETs - Data Element Types - Output by the Logical Transaction being entered

TCAF - Technical Complexity Adjustment Factor - computed value of the factors in the TCAF Tab

MK II FPI (Adjusted) - this is the software size expressed as Function Point Index

Productivity FPI/PD - Number of FPI that can be produced in one Person Day (PD). Please note that this includes all phases of software development including Quality Assurance activities.

LTL Tab - Logical Transaction List Tab

This tab presents you the list of Logical Transactions entered by you.

This tab facilitates editing the information entered by you.

i. Slect the Logical Transaction to be edited / deleted by double-clicking on the row
ii. You will be taken to the Estimate Summary Tab and all relevant boxes will be filled with the information of the selected Logical Transaction.
iii. Clicking on the Clear button will clear all the boxes and retains the transaction
iv. Clicking on the Delete Transaction button will display a message with the message You are deleting transaction along with the name of the transaction will be displayed. If you click on the OK button the Transaction will be deleted. Clicking on the Cancel button will cancel the delete action and retains the Logical Transaction in the estimate.

TCAF Tab - Technical Complexity Adjustment Factor Tab

This tab facilitates entry of all the Technical Factors that have a bearing on the project. There are in all Twenty (20) factors and each box takes a value between 0 (no influence) and 5 (maximum influence). Please enter the appropriate values in each of the boxes and click on the Save button. TCAF for the project will be computed and it will be displayed in the TCAF box on this tab as well as it will be carried into the Estimate Summary tab and necessary adjustments to the estimate are made.

Print Report

Clicking on the Print Report button would cause the report to be displayed. You may print it on the printer or save it to a disk file by clicking the appropriate icon.

Test Points Estimation

This facility can be accessed from the top File pull down menu and selecting Test Points Estimation.

Introduction

Testing activity is different from development activity. The primary objective of testing being unearthing all the defects that are in the code, it is improbable that all possible usage scenarios are envisaged and executed during testing. It is commonly agreed that it is highly improbable to carry out 100% testing and unearth 100% bugs. It is possible, comparatively, to achieve the secondary objective of testing, which is, ensuring that the product works to the specifications.

What constitutes a Test Point?

In this tool, we define a Test Point as a size measure for measuring the size of a software-testing project and that a Test Point is equivalent to a normalized test case.

It is common knowledge that test cases differ widely in terms of complexity and the activities necessary to execute it. Therefore, the test cases need to be normalized - just the way Function Points are normalized in to one common measure using weightage factors. Now there are no uniformly agreed measures of normalizing the test cases to a common size. Also , what is the relation between other software size measures like Function Points, or Use Case Points etc to Test Points? Would it be fair to say one Adjusted Function Point would result in one normalized Test Point - again no agreement. Perhaps, we may say that one Adjusted Function Point results in one (or 1.2 or 1.3 etc.) Test Points depending on the software application at hand. Similarly, we may say in case of other software size measures too.

There are many types of testing carried on software. Is there a standard saying that these are the tests that should be included in a Testing Projects? I am afraid - that there is no agreement here either. Generally - not necessarily - a Testing Project would include Integration Testing, System Testing and Acceptance Testing - all using the black box testing technique.

But the reality may be different.

The variety in applications - on which testing depends - is significant. The method for normalization between various application types is not commonly agreed to.

The types of testing carried out varies from project to project. There is no uniformly agreed set of the types of testing to be carried out on any given project.

There is barely enough research and empirical data that strict guidelines can be drawn - as the profession of testing itself is very nascent.

Therefore, there is a need to allow maximum flexibility for the user in the matter of selection of the tests and the corresponding weights. **PMPal** precisely facilitates this.

Therefore, **PMPal** took the approach to facilitate estimation of Test Points by providing a facility to convert the size estimate using a conversion factor to convert the size into Test Points and adjust the Test Point size using various weightages.

Weightages

PMPal provides weightages for the following - by default

1. Application weight
2. Programming language Weight
3. Weights for each of the types of testing, namely,
    a. Unit Testing
    b. Integration Testing
    c. System Testing
    d. Acceptance Testing (Positive Testing)
    e. Load Testing
    f. Parallel Testing
    g. Stress Testing
    h. End to End Testing
    i. Functional Testing
    j. Negative Testing

All tests and weightages can be changed and are project specific, and are applied only when included

Test Point has a weight 1, when the combined weights of the three tests, namely, Integration, System, and Acceptance tests - is equal to one. When other tests are added to the project, their weights may be assigned.

PMPal suggests weights for all these tests, but suggests that these be validated in-house or assign weights appropriate to the project at hand.

Tools usage is expected to reduce the total time of testing. Perhaps true - but it really depends on the tool itself. Hence, the weight for the tools usage may be set appropriately. A weight of 1 indicates that tools usage is indifferent to the testing size - more than 1, the tool increases the size and hence the effort - less than 1, the tool reduces the size and hence the effort.

The weight for the language comes into effect only when Unit Testing is selected (that is, its weightage is set to greater than zero),- the reasons -

1. Unit Testing is white box, normally
2. White box testing is conducted from within the code

If Unit Testing was not selected (that is, its weightage is set to zero), this factor would not be used.

The Method of computing Test Points

1. This tool uses an existing development effort estimation
2. It converts development project size into Unadjusted Test Points (UTP) using a conversion factor which can be modified by the user to suit his environment
3. It computes a Composite Weightage Factor (CWF)
    a. Sum up all individual weights of included tests
    b. Multiply it by the weight of the application weight
    c. Multiply it by the language weight if Unit Testing is selected
    d. Multiply it by Tools Weight if Tools Usage is selected
4. UTP are multiplied by CWF to obtain the testing size in Test Points size
5. The Productivity Factor indicates the number of Test Points that can be covered by one test engineer. This may be input by the user
6. Testing Effort in Person Days is computed by dividing Test Point Size by the Productivity Factor.

Report Generation

i. Click on the Save button to save the details of the estimate. This will enable the Print Report button
ii. Click on the Print Report button - the report will be generated and displayed.

Customization

It is recognized that the types of testing being many, an organization may wish to have their own types of testings instead of the ones used by **PMPal** by default.

The following tests and their weights can be changed. Of course, all weights can be changed during estimation itself.

a. Load Testing
b. Parallel Testing
c. Stress Testing
d. End to End Testing
e. Functional Testing
f. Negative Testing

Other test types cannot be changed.

To modify any test -

i. Locate the row containing the test and Double Click on that row
ii. The text boxes above the list would be filled with the values in the selected row.

iii. Make desired modification - either change the name of test or change its weight
iv. Click on the Down Pointing Arrow button and the modifications would be saved.

To delete any test

The tests, namely, Unit, Integration, System and Acceptance tests can not be deleted. Others can be deleted. To delete a test, the steps are

1. Locate the row containing the test and Click on the row to select it
2. Click on the X button
3. A message box will appear with the message "Do you want to Delete :" and the name of the selected test.
4. If you click on No - the delete action will be cancelled
5. If you click on Yes - the selected test will be deleted

ISBSG Metrics

ISBSG - International Software Benchmarking Standards Group uses Project Size in Function Points, and team size to give Effort Estimates in Person Months for eight different types of projects.

The ISBSG estimation techniques published in the ISBSG Practical Project Estimation – 2nd edition are used to derive these metrics.

PMPal implements the formulae of ISBSG and gives a facility to obtain ISBSG effort estimates.

To access this facility, click on top File menu and select ISBSG Method of Estimation - the corresponding screen will be displayed.

The box captioned as Project would contain the names of projects estimated using Function Points technique. Select the desired project name. This will cause -

1. The box captioned as Size in FP would contain the size of the software in Function points. This size can be changed. Please note that if the size is changed here, it will not change the size in the original estimate. The change will only be for the purpose of this screen.
2. Enter the team size as desired.
3. Click the down arrow button - this will cause the effort estimated to be computed in conformance with ISBSG formulae and display the same in the list box below the down arrow button
4. If you click on the Print Report button, a report will be displayed which can be either printed or saved to a disk file.

Cost Estimation

You can carry out Cost Estimation using the effort estimate already made by you.

You can access this facility from the top pull down menu File and selecting Cost Estimation. The Cost Estimation screen will be presented.

The screen will have Project Cost Estimation Section. This will display the summary of the cost estimation.

Select the project for which Cost Estimation is to be done from the Select Project box which contains all the projects. You will find that the ffort is automatically selected by the system and is displayed in the box captioned Effort in PD. You may enter Cost per PD the cost per one Person Day or modify the shown value. The cost of effort will be computed and shown in the box captioned as Cost of Effort.

In the Other Cost Items section,

i. Select the Cost item Description from the list of available items. Its unit cost will be displayed in the box captioned Unit Cost
ii. Enter the Quantity in the box captioned Quantity
iii. Click on the Down Arrow button and the cost item will be added to the list and its cost will be added to the project cost

If you wish to delete an existing cost item from the list,

i. Highlight the row containing the item by clicking on it.
ii. Click on the Up Arrow button = the system will display a message You are Deleting : along with the description of the cost item.
iii. Clicking on the Cancel button will cancel the delete action and retains the cost item in the list
iv. Clicking on the OK button will delete the cost item from the list.

After you have entered all the cost items, click on the Save Project Costing button and all cost details would be saved for later retrieval.

If you wish to add, modify or delete any cost item, please refer to the section on Maintain cost Items.

Print Cost Estimation Report

Save the project costing by clicking on the Save project Costing button.

Just click on the Print Cost Report button and the cost report will be displayed. You may print it by clicking on the Printer icon or save it as a text file by clicking on the Save icon.

Project Scheduling

It is well recognized that project scheduling calls for human ingenuity owing to the following aspects -

i. The granularity for the activities to be performed in order to complete the project varies from project to project, even in similar projects
ii. Resource availability and their allocation has a significant impact on the schedule
iii. The variety of human resources that can be employed on the project has been increasing in recent times.

iv. The working environment, tools usage and the process-orientation do have a significant impact on the schedule

Therefore, there is no substitute to professionals in the preparation of the project schedule.

What is attempted in this software is to assist the professional in preparing the schedule and to the extent possible, reduce the time he needs to spend on the schedule preparation activity. There are many tools dedicated to project scheduling activities that are built on techniques like PERT/CPM - **PMPal** tries to complement those tools than supplant them. **PMPal** provides a facility to export the schedule to an Excel sheet as an intermediate file for export to any of these tools. Therefore, please note that the schedule produced by this software is a rudimentary schedule and may need improvement by you.

Schedule preparation in **PMPal** proceeds in three steps, namely,

i. Prepare an initial schedule
ii. Prepare a detailed schedule
iii. Export the schedule

Preparation of Initial Schedule

This facility can be accessed from the top pull down menu File and selecting Schedule a Project. This will present the Schedule a Project screen. This screen has three sections, namely,

i. Select a Project section
ii. Project Resources section and
iii. Schedule section

Once the screen is displayed, select the desired project from Project Name box. This will cause the screen to show the relevant data on the screen.

The initial schedule shown in the Schedule section is based on the following heuristics -

i. The activities of Project Kickoff, Project Close Out and User Training are in addition to the estimated PD (person Days)
ii. The estimated PD are distributed across six (6) software development phases, namely,
    a. Requirements Analysis, including preparation of requirements specification documents - taken as 15% of the estimated PD
    b. System Design including preparation of design documents - taken as 25% of the estimated PD
    c. Construction - including coding and unit testing - taken as 35% of the estimated PD
    d. Integration & system Testing including Accepting Testing - taken as 20% of the estimated PD
    e. Documentation - preparation of user manuals, operations manuals, trouble shooting guides etc. taken as 5% of the estimated PD
    f. User Training

The percentages are followed in general in the software development industry. However, these need not be taken as is. These can be changed in line with the situation prevailing in your organization.

You can change the PD for any phase by -

i. Highlight the row containing the phase you wish to change by clicking on it
ii. Double click the row. The name of the phase is displayed in the box above the list captioned as Software Development Phase and the corresponding PD are displayed in the box captioned Effort in person Days. Modify the Pd as you desire and click on the Down Arrow button. The PD will be modified. The number in the box captioned Total Scheduled Pd will be automatically updated.

Please note that the schedule PD would be different from the estimated PD. The software does not check for correspondence between the estimated PD and scheduled PD.

Once you have adjusted the PD to your satisfaction, you can specify the number of resources that can be allocated to this project as and when it would be executed. **PMPal** recognizes two types of resources, namely,

i. Analysts - persons that carry out activities like User Requirements analysis, Software Requirement Specifications, System Design, Prepare Test Plans, Conduct Business Analysis, Leading and Managing software Development Projects etc. These persons normally carry functional designations such as Systems Analysts, Business Analysts, Project Leaders, Team Leaders, project Managers etc. In **PMPal** these persons are considered for activities of Requirements analysis, and System Design.

ii. Programmers - persons that carry out activities like software development, producing source code, testing etc. These persons normally carry functional designations such as Software Engineers, Programmers, Coders, Testers etc. In **PMPal** these persons are considered for activities of Construction, Testing and documentation.

Please enter the number of Analysts and Programmers in the boxes captioned as Analysts and Programmers in the Project Resources section. The schedule would be automatically be re-worked taking into consideration the new resource allocation.

Iterate the above activities as many times as you desire until you are satisfied with the schedule shown in the list.

Detailed Schedule

After you have successfully produced short schedule to your satisfaction, click on the top tab captioned Detailed Schedule.

Once you click the tab, you will be presented the detailed schedule.

Now you can export this schedule to an Excel sheet which can be used to export the schedule to MS-Project or any other tool dedicated to project scheduling activities.

Some important aspects to be noted

i. A Waterfall model of software development life cycle is assumed that is -
   a. System Design activity will start only after Requirements Analysis is completed
   b. Construction will start only after System Design Activity is completed
   c. Integration and system Testing will start only after Construction activity is completed.

d. Documentation would start only after Construction activity is completed
e. User Training would start only after Integration and System Testing activity is completed
f. Project Close Out would start only after all the other activities are completed.

ii. In the Schedule, there is a one-day lag for starting the next phase - that the succeeding activity would start on the next working day of finishing the preceding activity
iii. The Schedule is adjusted for weekends and holidays. Both Saturday and Sunday are taken as non-working days.

WBS – Work Management

WBS – Work Breakdown Structure is a means of managing work – it includes –

i. Defining work elements
ii. Allocating work elements for execution
iii. Keeping track of all work elements to ensure timely completion of every work element
iv. Capturing vital data that emanates from work execution for analysis and improvement

PMPal achieves this thru two artifacts, namely, WBS – Summary and WBS – Allocation

These two are explained in the subsequent sections

WBS – Summary

This facilitates –

i. Definition of work elements
ii. Keeping track of work completion

This can be accessed from top File menu – Work Breakdown Structure – WBS Summary.

This screen has three sections, namely,

i. Summary Section
ii. Define WBS Element
iii. List of Work Elements Defined

Select a project from the list of projects available in the box captioned as Project Name.

Please note that the above box will consist of the names of those projects for which you have been allocated.

This will cause the summary of the work progress to be displayed in the WBS Summary Section.

Define WBS Element

i. The box captioned Module Name would contain the list of modules already defined in the project. You may select one of the existing modules or type in a new name – up to 50 characters.

ii. Type in the name of the Component Name I the box captioned Component Name – up to 50 characters..
iii. Select the type of component from the list of choices available in the box captioned as Component Type – up to 50 characters..
iv. Select an existing attribute for the component from the box captioned Component Attribute or enter a new one. This indicates the platform / programming language in which the component would be developed – up to 50 characters.
v. Enter the probable size in the box captioned Estimated Size. Here a number is expected.
vi. Enter the estimated effort in PD (Person Days) in the box captioned Estimated Effort in PD – here a number is expected
vii. Select the phase in which the work element is being defined from the box captioned Phase. If you feel that the list of phases shown is not appropriate and a new phase needs to be defined, approach the Administrator and get the new phase defined.
viii. Select the task from the list of choices available in the box captioned Task. If you need a new task, get it defined thru Administrator.
ix. Check the box captioned To Be Reviewed? If peer review is to be carried out for this component.
x. Check the box captioned Unit Testing? If unit testing is to be conducted for this component.
xi. Check the box captioned Integration? If this component needs to be allocated for integration with other components.

Clicking on down arrow button would save the work element and it would be included in the list box below the boxes.

To modify a definition

i. Locate the row containing the element that needs modification
ii. Double click on the row – it will cause the boxes to be filled with the definition
iii. Make desired modifications and click the down arrow button to save the element.

To delete a definition

i. Locate the row containing the element that needs modification
ii. Click on the button marked X
iii. A message will appear asking for confirmation of the delete action.
iv. Selecting No would cancel the delete action
v. Selecting Yes would cause the definition to be deleted.

WBS – Allocation

This facilitates –

i. View the work elements pending execution
ii. Allocate work elements for execution
iii. Capture completion details of execution of work elements

This can be accessed from top File menu – Work Breakdown Structure – WBS Summary.

This screen has three sections, namely,

i. WBS Element Description Section
ii. Allocate Work
iii. Update Allocation

Select a project from the list of projects available in the box captioned as Project Name.

Please note that the above box will consist of the names of those projects for which you have been allocated.

Select the type of allocation proposed from the box captioned Allocation for. This box has the relevant of the four choices (depending on the definition in the WBS Summary Screen) namely,

i. Construction
ii. Review
iii. Unit Testing and
iv. Integration

Select appropriate action from the box captioned Action. There are two choices available, namely, Make Allocation and Update Allocation.

Based on these selections, the list box at the bottom would display the list of elements pending allocation for that type selected.

To allocate work

i. Make appropriate selection of project, allocation and action boxes
ii. Locate the row that contains the work element that is proposed for allocation and double click on it
iii. The details of work elements would be displayed in the boxes in the WBS Element Description section. These boxes would be disabled and bar modification. To modify them, if necessary, you need to do it from the WBS Summary Screen
iv. The section Allocate Work would be enabled
v. Select Team Member from the box captioned Team member. Please note that those employees allocated to the selected project only would be included in this box.
vi. Selecting a team member would cause the list captioned Employee Loading to be filled with details of work already allocated to the selected team member in the dates captioned Sch Start Date and Sch End Date. Changing these dates would appropriately update the Employee Loading list box.
vii. Enter the Estimated Size and Estimated Effort in PD (Person Days) in the corresponding boxes with a number.
viii. Select the start and end dates scheduled
ix. Ensure that the team member is available during the dates for your allocation. If you allocate him for more elements, it would result in overloading of the employee, but **PMPal** would not prevent you from overloading.
x. Once you are satisfied, click on the down arrow button to save the allocation. Please note that allocation once made can not be reversed or modified
xi. This would cause the element to be updated with the allocation details and it would no longer be available for allocation. Summary would be updated. The work element would now be available for Update Allocation action.

These points need to be noted –

i. After definition all elements would be available for allocation for Construction.
ii. Those elements that are completed construction would be available for subsequent allocation – review, unit testing, or integration
iii. Unless Review / Unit Testing / Integration are defined during definition, elements would not be available for those actions
iv. The workflow is Construction and then Review (if applicable), then Unit Testing (if applicable) and lastly Integration (if applicable).

Update Allocation

Based on the selections made, the list box at the bottom would display the list of elements already allocated but not yet completed for that type (Construction, Review etc) selected.

This will cause the Update Allocation section to be enabled.

i. Enter the Actual Size in the corresponding box
ii. Select the Actual Attribute from the box captioned Comp Act. Attr
iii. Select the Actual Start Date from the box captioned Act Start Date
iv. Select the Actual End Date from the box captioned Act End Date
v. Once you are satisfied with the entries, click on the down arrow button to save the update action.
vi. This will cause the element to be updated with details and it will be made available for subsequent allocations, if any. The list box would be appropriately updated.

Please note these points –

i. It is assumed that person who was allocated the element has completed the work.
ii. If you wish to change the name of the person or change allocation details, the only way is to use WBS Summary Screen to delete the element and define a fresh element.

Defect Manager – Defect Management

Defect Manager is a means of managing defects – it includes –

i. Reporting Defects
ii. Allocating defects for resolution
iii. Keeping track of all defects to ensure resolution of every defect and thereby achieve software quality
iv. Capturing vital data that emanates from defect resolution for analysis and improvement

PMPal achieves this thru two artifacts, namely, Defect Summary and Defect Resolution

These two are explained in the subsequent sections

Defect Summary

This facilitates –

i. Reporting of Defects
ii. Keeping track of Defect Resolution

This can be accessed from top File menu – Defect Manager – Defect Summary.

This screen has three sections, namely,

i. Defect Summary Section
ii. Report Defects section
iii. List of Defects Reported

Select a project from the list of projects available in the box captioned as Project Name.

Please note that the above box will consist of the names of those projects for which you have been allocated.

This will cause the summary of the Defect Summary to be displayed.

Report Defect

i. The box captioned Module Name would contain the list of modules already defined in the project. You may select one of the existing modules or type in a new name – up to 50 characters.
ii. Type in the name of the Component Name I the box captioned Component Name – up to 50 characters.
iii. Select the type of component from the list of choices available in the box captioned as Component Type – up to 50 characters..
iv. Type in the description of the defect in the box captioned Defect Description – up to 150 characters.
v. Select the phase in which the defect is unearthed from the box captioned Phase. If you feel that the list of phases shown is not appropriate and a new phase needs to be defined, approach the Administrator and get the new phase defined.
vi. Select the task from the list of choices available in the box captioned Task. If you need a new task, get it defined thru Administrator.
vii. Type in the name of person reporting the defect in the box captioned Defect Reported By – up to 50 characters
viii. Select the date on which the defect is reported from the box captioned Reported On.

Clicking on down arrow button would save the defect reported and it would be included in the list box below the boxes.

To modify a reported defect

i. Locate the row containing the defect that needs modification
ii. Double click on the row – it will cause the boxes to be filled with the defect
iii. Make desired modifications and click the down arrow button to save the changes.

To delete a defect

i. Locate the row containing the defect that needs deletion

ii. Click on the button marked X
iii. A message will appear asking for confirmation of the delete action.
iv. Selecting No would cancel the delete action
v. Selecting Yes would cause the definition to be deleted.

Defect Resolution

This facilitates –

i. View the defects pending resolution
ii. Allocate defects for resolution
iii. Capture completion details of defect resolution

This can be accessed from top File menu – Defect Manager – Defect Resolution.

This screen has three sections, namely,

i. Defect Description Section
ii. Allocate Defect
iii. Update Allocation

Select a project from the list of projects available in the box captioned as Project Name.

Please note that the above box will consist of the names of those projects for which you have been allocated.

Select the type of allocation proposed from the box captioned Allocation for. This will cause the list box at the bottom to contain those defects that are to be resolved for the selected action. This box has four choices namely,

i. Analysis – this action is assumed to analyze the reported defect to ensure that the defect report is accurate and that it needs fixing
ii. Fixing – fixing the defect
iii. Review – code review of the fixed defect
iv. Testing – regression testing for the fixed defect

Select appropriate action from the box captioned Action. There are two choices available, namely, Make Allocation and Update Allocation.

Based on these selections, the list box at the bottom would display the list of elements pending allocation for that type selected.

To allocate defect

i. Make appropriate selection of project, allocation and action boxes
ii. Locate the row that contains the defect that is proposed for allocation and double click on it

iii. The details of defect would be displayed in the boxes in the Defect Description section. These boxes would be disabled and bar modification. To modify them, if necessary, you need to do it from the Defect Summary Screen
iv. The section Allocate Work would be enabled
v. Select Team Member from the box captioned Team member. Please note that those employees allocated to the selected project only would be included in this box.
vi. Selecting a team member would cause the list captioned Employee Loading to be filled with details of work already allocated to the selected team member in the dates captioned Sch Start Date and Sch End Date. Changing these dates would appropriately update the Employee Loading list box.
vii. Select the start and end dates scheduled
viii. Ensure that the team member is available during the dates for your allocation. **PMPal** would not prevent you from overloading.
ix. Once you are satisfied, click on the down arrow button to save the allocation. Please note that allocation once made can not be reversed or modified
x. This would cause the defect to be updated with the allocation details and it would no longer be available for allocation for the action selected in the box captioned Allocation For. Summary would be updated. The defect would now be available for Update Allocation action.

These points need to be noted –

i. After definition all defects would be available for allocation for Analysis.
ii. Those elements that are completed construction would be available for subsequent allocation – fixing, review, and testing
iii. The workflow is Analysis and then Fixing and then Review, then Testing. That is, unless a defect is analyzed, it won't be available for fixing; unless it is fixed, it won't be available for review and unless it is reviewed, it won't be available for testing.

Update Allocation

Based on the selections made, the list box at the bottom would display the list of elements already allocated but not yet completed for that type (Analysis, Review etc) - select the row containing the element to be allocated and double click the row.

This will cause the Update Allocation section to be enabled.

i. Enter the defect description in the box captioned Defect Description – it is possible that the defect description to change when analyzing or fixing. Hence it is facilitated to re-enter the defect description
ii. Select the Defect Category from the list of choices available in the box captioned Defect Category. If you feel that a new category is needed, please approach the administrator to create a new category.
iii. Select the Actual Start Date from the box captioned Act Start Date
iv. Select the Actual End Date from the box captioned Act End Date
v. Once you are satisfied with the entries, click on the down arrow button to save the update action.
vi. This will cause the defect to be updated with details and it will be made available for subsequent allocations, if any. The list box would be appropriately updated.

Please note these points –

i. It is assumed that person who was allocated the defect has completed the work.

ii. If you wish to change the name of the person or change allocation details, the only way is to use WBS Summary Screen to delete the defect and define a fresh defect.

Change Manager

Change Manager is a means of managing changes requests – it includes –

i. Recording Change Requests
ii. Allocating change requests for resolution
iii. Keeping track of all change requests to ensure resolution of every change requested
iv. Capturing vital data that emanates from change request resolution for analysis and improvement

PMPal achieves this thru two artifacts, namely, Change Request Summary and Change Request Resolution

These two are explained in the subsequent sections

Change Request Summary

This facilitates –

i. Recording of Change Requests
ii. Keeping track of Change Request Resolution

This can be accessed from top File menu – Change Manager – Change Request Summary.

This screen has three sections, namely,

i. Change Request Summary Section
ii. Define Change Request section
iii. List of Changes Requested

Select a project from the list of projects available in the box captioned as Project Name.

Please note that the above box will consist of the names of those projects for which you have been allocated.

This will cause the Change Request Summary to be displayed.

Define Change Request

i. Enter the Change Request Id in the corresponding box – up to 50 characters
ii. The box captioned Module Name would contain the list of modules already defined in the project. You may select one of the existing modules or type in a new name – up to 50 characters.
iii. Type in the name of the person requesting the change in the box captioned Change Requested By – up to 50 characters.
iv. Select the date on which the change was requested from the box captioned Requested On

v. Select the category of the change from the list of choices available in the box captioned Change Category - If you feel that the categories shown are not appropriate and a new category needs to be defined, approach the Administrator and get the new category defined
vi. Type in the description of the change in the box captioned Change Description – up to 250 characters.

Clicking on down arrow button would save the change request and it would be included in the list box below the boxes.

To modify a reported Change Request

i. Locate the row containing the change request that needs modification
ii. Double click on the row – it will cause the boxes to be filled with the change request details
iii. Make desired modifications and click the down arrow button to save the changes.

To delete a Change Request

i. Locate the row containing the change request that needs deletion
ii. Click on the button marked X
iii. A message will appear asking for confirmation of the delete action.
iv. Selecting No would cancel the delete action
v. Selecting Yes would cause the definition to be deleted.

Change Request Resolution

This facilitates –

i. View the change requests pending resolution
ii. Allocate change requests for resolution
iii. Capture completion details of change request resolution

This can be accessed from top File menu – Change Manager – Change Request Resolution.

This screen has three sections, namely,

i. Change Request Description Section
ii. Allocate Change Request
iii. Update Allocation

Select a project from the list of projects available in the box captioned as Project Name.

Please note that the above box will consist of the names of those projects for which you have been allocated.

Select the type of allocation proposed from the box captioned Allocation for. This will cause the list box at the bottom to contain those changes that are to be resolved for the selected action. This box has four choices namely,

i. Analysis – this action is assumed to analyze the reported change request to ensure that the change report is accurate and its impact on the project
ii. Fixing – fixing the change request
iii. Testing –testing for the fixed change request

Select appropriate action from the box captioned Action. There are two choices available, namely, Make Allocation and Update Allocation.

Based on these selections, the list box at the bottom would display the list of elements pending allocation for that type selected.

To allocate change request

i. Make appropriate selection of project, allocation and action boxes
ii. Locate the row that contains the change request that is proposed for allocation and double click on it
iii. The details of change would be displayed in the boxes in the Change Request Description section. These boxes would be disabled and bar modification. To modify them, if necessary, you need to do it from the Change Request Summary Screen
iv. The section Allocate Change Request would be enabled
v. Select Team Member from the box captioned Team member. Please note that those employees allocated to the selected project only would be included in this box.
vi. Selecting a team member would cause the list box captioned Employee Loading to be filled with details of work already allocated to the selected team member in the dates captioned Sch Start Date and Sch End Date. Changing these dates would appropriately update the Employee Loading list box.
vii. Select the start and end dates scheduled
viii. Ensure that the team member is available during the dates for your allocation. **PMPal** would not prevent you from overloading.
ix. Once you are satisfied, click on the down arrow button to save the allocation. Please note that allocation once made can not be reversed or modified
x. This would cause the change request to be updated with the allocation details and it would no longer be available for allocation for the action selected in the box captioned Allocation For. Summary would be updated. The change would now be available for Update Allocation action.

These points need to be noted –

i. After definition all change requests would be available for allocation for Analysis.
ii. Those elements that are completed construction would be available for subsequent allocation – fixing, and testing
iii. The workflow is Analysis and then Fixing and then Testing. That is, unless a change is analyzed, it won't be available for fixing; unless it is fixed, it won't be available for testing.

Update Allocation

Based on the selections made, the list box at the bottom would display the list of elements already allocated but not yet completed for that type (Analysis, Fixing etc) - select the row containing the element to be allocated and double click the row.

This will cause the Update Allocation section to be enabled.

i. Select the attribute in which the change requested is implemented from the choices available in the box captioned Change Act Attr. Normally this box should contain the programming language in which the software for the change request is written
ii. Select the Actual Start Date from the box captioned Act Start Date
iii. If the change request is closed, then check the box captioned Change Closed?
iv. Select the Actual End Date from the box captioned Act End Date
v. Once you are satisfied with the entries, click on the down arrow button to save the update action.
vi. This will cause the change request to be updated with details and it will be made available for subsequent allocations, if any. The list box would be appropriately updated.

Please note these points –

iii. It is assumed that person who was allocated the change request has completed the work.
iv. If you wish to change the name of the person or change allocation details, the only way is to use Change Request Summary Screen to delete the change and define a fresh change request.

Time Sheet

To access Time Sheet, there are two options, namely,

i. Select from File drop down menu Time Sheet option
ii. Click on the icon timesheet

The Time sheet screen is presented.

First select the date from the Calendar shown on the left side of the screen before you enter the times in the time sheet. Below the calendar, Frozen Date show the date before which the entry is not accepted. This date indicates that reports have been generated till that date and therfore, data can not be changed. You may select any date after that date and again, it should not be futuristic!!

Of course, the date can be selected at any time before, you click on the Save button, but remember that selecting date in the beginning is a good practice.

In this the following need to be followed -

i. Project Name - select from the existing list
ii. Module - you may either select from the list or type in a new module name, as necessary
iii. Component - you may either select from the list or type in a new module name, as necessary
iv. Phase - select from the existing list
v. Task - select from the existing list
vi. From Time - - select from the list
vii. To Time - select from the list

Verify the entries and once you are sure that the entries are accurate, click on the Save button and the data would be saved and also shown in the table below the entry area for your information.

Time Sheet allows you to enter data with a minimum time slot of thirty (30) minutes and allows as many entries as are necessary.

Metrics

PMPal provides for software metrics at the click of a button – literally. It provides for –

i. Organizational Metrics
ii. Project Metrics
iii. Project Status

These are explained in subsequent sections

Organizational Metrics

This facility can be accesses from top View – Organizational Metrics.

The organizational metrics screen has five tabs, namely,

i. Productivity Metrics
ii. Defect Metrics
iii. Effort Metrics
iv. Change Metrics
v. Schedule Metrics

Productivity Metrics tab will display the productivity metrics for all attributes used in the organization. The data for this is obtained from –

i. Work Breakdown Structure – gives the attributes and the corresponding sizes
ii. Time Sheet – effort spent by the employees

Defect Metrics tab presents three kinds of Defect Metrics –

i. Number of defects by origin – such as coding, design, requirements etc. The data for these metrics are collected from Defect Manager
ii. Number of defects by category – such as Logic Problem, Loops, Initialization etc. The data for these metrics are collected from Defect Manager
iii. Defect Metrics, namely,
    a. Defect Injection Rate – Critical, Major and Minor categories
    b. Defect Density – defects uncovered per FP

Effort Metrics tab presents two types of Effort Metrics –

i. Effort Variance Project-wise
ii. Phase-wise effort spent, variance and percentage of effort spent on a phase

Change Metrics tab presents two types of Change Metrics –

i. Changes per Function Point
ii. Change Category-wise changes

Schedule Metrics tab presents –

i. Project-wise schedule variance

By clicking Print Report button, you can generate a comprehensive report of all the metrics presented in the above mentioned five tabs.

Project Metrics

This facility can be accesses from top View – Project Metrics. Then select the desired project from the box captioned Project Name.

The organizational metrics screen has five tabs, namely,

i. Productivity Metrics
ii. Defect Metrics
iii. Effort Metrics
iv. Change Metrics
v. Schedule Metrics

Productivity Metrics tab will display the productivity metrics for all attributes used in the Project. The data for this is obtained from –

i. Work Breakdown Structure – gives the attributes and the corresponding sizes
ii. Time Sheet – effort spent by the employees

Defect Metrics tab presents three kinds of Defect Metrics –

i. Number of defects by origin – such as coding, design, requirements etc. The data for these metrics are collected from Defect Manager
ii. Number of defects by category – such as Logic Problem, Loops, Initialization etc. The data for these metrics are collected from Defect Manager
iii. Defect Metrics, namely,
    a. Defect Injection Rate – Critical, Major and Minor categories
    b. Defect Density – defects uncovered per FP

Effort Metrics tab presents two types of Effort Metrics –

i. Effort Variance Project-wise
ii. Phase-wise effort spent, variance and percentage of effort spent on a phase

Change Metrics tab presents two types of Change Metrics –

i. Changes per Function Point
ii. Change Category-wise changes

Schedule Metrics tab presents –

i. Project-wise schedule variance

By clicking Print Report button, you can generate a comprehensive report of all the metrics presented in the above mentioned five tabs.

Project Status

PMPal provides for a snapshot of the project progress. This facility can be accessed from top View – Project Status. Then select the desired project from the box captioned Project Name. The following are presented –

i. Overall Summary – including Group Leader / Manager, Project Manager, Project Leader, Number of Persons allocated to the Project and the total effort spent till that date
ii. WBS Summary – including components defined, completed, under progress, to be allocated and % completed under the four heads of Construction, Review, Unit Testing and Integration
iii. Defect Summary – including defects defined, completed, under progress, to be allocated and % completed under the four heads of Analysis, Fixing, Review and Testing
iv. Change Request Summary – including change requests received, completed, under progress, to be allocated and % completed under the three heads of Analysis, Fixing, and Testing

By clicking Print Report button, you can generate a comprehensive report of all the metrics presented in the above mentioned five tabs.

Employee Loading

PMPal provides a facility to know how a specific employee has been loaded during any given period.

This facility can be accessed from top View – Employee Loading.

Select the desired employee name from the box captioned Name of the Employee
Select the start date from the box captioned as From Date
Select the ending date from the box captioned as To Date.
Click the Get Details Button

The list box will be filled with the details of Project Name, Activity, Start Date and End Date of each of the allocations made between the dates selected above.

Reports

PMPal provides for a variety of useful reports that aid the Project Manager and the Management in gauging the execution efficiency besides billing assistance. These are in addition to the reports provided in the screens like estimation screens, metrics screens etc. These are grouped into three classes, namely,

i. Effort Reports
ii. Productivity Reports
iii. Defect Reports
iv. Employee Reports

These are explained in detail in the subsequent sections.

Reports - Effort Reports

This can be accessed from top Reports – Effort Reports. In this screen the following reports are available.

i. Effort Spent on a Project-Detailed – this reports gives the details of employee-wise time spent on a project including the date, from time and to time, component name and the task accomplished. These details are grouped Module-wise. Select the Effort Spent on a Project-Detailed report from the box captioned Select Type of Report, then select the desired project name from the box captioned Project Name and click on Generate button to generate this report.

ii. Effort Spent on a Project-Summary – this reports gives the details of component-wise time spent on a project. These details are grouped Module-wise. Select the Effort Spent on a Project-Detailed report from the box captioned Select Type of Report, then select the desired project name from the box captioned Project Name and click on Generate button to generate this report.

iii. Effort Spent on Phases for a Project – this report gives the effort – in absolute values as well as percentage values for a selected project. Select the Effort Spent on Phases for a Project report from the box captioned Select Type of Report, then select the desired project name from the box captioned Project Name and click on Generate button to generate this report.

iv. Effort Spent on a Phase-All Projects – this report gives the time in absolute value and as a percentage of total effort is presented project-wise for a selected phase. Select the Effort Spent on a Phase-All Projects report from the box captioned Select Type of Report, then select the desired phase name from the box captioned Development Phase and click on Generate button to generate this report.

v. Effort Spent on a Project – Summary – Employee-wise – this report gives the summary of effort spent on project by employees for each employee who worked on the project. Select the Effort Spent on a Project-Summary-Employee-wise report from the box captioned Select Type of Report, then select the desired project name from the box captioned Project Name and click on Generate button to generate this report.

vi. Effort Spent Between Dates – This report gives employee-wise time spent including Module, Component, Task, Date, from and To times, and grouped project-wise. Select the Effort Spent between Dates report from the box captioned Select Type of Report, then select the desired dates from the boxes captioned as From and To and click on Generate button to generate this report.

vii. Effort Variance – All projects – This report gives the Estimated Hours, Actual hours, Variance and percentage Variance for all projects. Select the Effort Variance-All Projects report from the box captioned Select Type of Report, and click on Generate button to generate this report.

viii. Time Sheet for an Employee – this report gives the time sheet for an employee between selected dates. Select the Timesheet for an Employee report from the box captioned Select Type of Report, then select the desired employee name from the box captioned Employee Name, then select the desired dates from the boxes captioned as From and To and click on Generate button to generate this report.

ix. Time Sheet for a Project– this report gives the time sheet for a project between selected dates. Select the Timesheet for a Project report from the box captioned Select Type of Report, then select the desired dates from the boxes captioned as From and To and click on Generate button to generate this report.

Productivity Reports

This can be accessed from top Reports – Productivity Reports. In this screen the following reports are available.

i. Organizational Productivity – this report gives productivity for all attributes used in the organization. The report details include attribute name, size, effort in PD, and productivity. Select the Organizational Productivity report from the box captioned Select Type of Report, and click on Generate button to generate this report.
ii. Project Productivity – this report gives productivity for all attributes used in a project. The report details include attribute name, size, effort in PD, and productivity. Select the Project Productivity report from the box captioned Select Type of Report, select the desired project from the box captioned as Project Name, and click on Generate button to generate this report.
iii. Employee Productivity – this report gives productivity for all attributes used by an employee. The report details include attribute name, size, effort in PD, and productivity. Select the Employee Productivity report from the box captioned Select Type of Report, select the desired employee from the box captioned as Employee Name, and click on Generate button to generate this report.
iv. Productivity for an Attribute– this report gives organizational productivity for an attribute. The report details include attribute name, size, Time in Hours, and productivity project-wise. Select the Productivity for an Attribute report from the box captioned Select Type of Report, select the desired attribute from the box captioned as Attribute, and click on Generate button to generate this report.

Defect Reports

This can be accessed from top Reports – Defect Reports. In this screen the following reports are available.

i. Defect Metrics, gives Defect Injection Rate – Critical, Major and Minor categories and Defect Density – defects uncovered per FP. Select the Defect Metrics report from the box captioned Select Type of Report, and click on Generate button to generate this report.
ii. Defects by Origin – such as coding, design, requirements etc. The data for these metrics are collected from Defect Manager. Select the Defects by Origin report from the box captioned Select Type of Report, and click on Generate button to generate this report.
iii. Defects by Category – such as Logic Problem, Loops, Initialization etc. The data for these metrics are collected from Defect Manager. Select the Defects by Category report from the box captioned Select Type of Report, and click on Generate button to generate this report.

Employee Reports

This can be accessed from top Reports – Employee Reports. In this screen the following reports are available

i. Defect Injection Reports
   a. For a selected employee – this report gives the defects uncovered in an employees work. Select employee name and select the dates within which the employee completed the work and click Generate to obtain the report. The dates are provided so that the defect injection rate for the employee can be obtained in a given period.

b. For all employees for a selected attribute – this report gives the defects uncovered in the work of all employees in a given attribute (eg VB, Java etc.). This report helps to ascertain the defect injection rate for a selected attribute in a given period. Select "All" in employee name box and select the desired attribute and click Generate button to obtain the report.

ii. Schedule

a. For a selected employee – this report gives all the work assignments completed by an employee within the selected dates with a summary of total assignments handled and number of times schedule was met and the percentage of times the schedule was met. Select the desired employee name and the desired dates of the period in which the assignments were completed and click Generate button to obtain this report.

b. For all employees – this report gives the summaries of the assignments handled and number of times the schedule was met for every employee in a grouped manner. Select "All" in the employee name box and select the desired dates within which assignments were completed and click the Generate button to obtain the report.

Administration

To be able to access this option, you should have logged in as Administrator.

This presents a screen with four tabs, namely,

i. Lock
ii. Employee
iii. Projects
iv. Activity
v. Project Allocation

Each of these are described in the subsequent sections

Administration - Lock Tab

You can access this tab once you are logged in as Administrator and clicking this tab.

Lock tab enables you to lock Time Sheet database by setting a date before which Time Sheet data can neither be entered nor modified by any one.

Normally, Time Sheet databvase is locked after submitting time sheet data to an external agency in order to protect the integrity of the database.

This tab show the date till which the data is locked and allow you to select the date till which data can be locked.

To lock the database,

i. Click on the Lock button
ii. Select the date from Next Locked Date box
iii. Click on the Set button

The database will be locked.

The unlock facility is also provided for those special circumstances when a locked database needs to be opened to enter new data or modify existing data.

Caution - Uncontrolled unlocking can severly damage the integrity of the database. Use this facilty only under strictly controlled manner and as soon as the data corrections are made, lock the database again.

To unlock the database,

i. Click on the Unlock button
ii. Select the date from Next Unlock Date box
iii. Click on the Set button

The database will be unlocked.

Administration – Employee

You can access this tab once you are logged in as Administrator and clicking this tab.

This tab functionality allows you to add new employees, modify employee details, delete employees or change passwords.

The table on the left side of the screen displays the list of employees and by clicking on any row loads the data into the form on the right side of the screen.

Adding a new employee details

i. Use the form on the right side of the screen
ii. Select Add New in the Employee id box
iii. Enter unique Employee id an integer number. In case the id is already used, the software will alert you and does not allow a duplicate value
iv. Enter Employee name a text entry - maximum of thirty characters
v. Enter User Id - a text entry - maximum of twenty characters
vi. Enter Password - a text entry - maximum of ten characters - when you enter this field, only stars (*) will be displayed in the space provided to prevent others from seeing it
vii. Select the Employee Group from the list provided
viii. Enter the Designation - you may select one of the existing designations or enter a new one.
ix. Enter the Location - you may select one of the existing designations or enter a new one.
x. Select the Status of the employee A stand for Active, U stands for
xi. Enter the Computer Name from which he normally works

Then clcik on the Save button and the details are saved.

Change the details of an employee

To change the details of an employee -

i. Click on the row containing the employee details and highlight it

ii. The employee details will be displayed in the form to the right side of the list
iii. Make modifications as desired

Then clcik on the Save button and the details are saved.

Changing the password of an employee

To change the password of an employee -

i. Click on the row containing the employee details and highlight it
ii. Right clik the mouse
iii. select the Change Password option
iv. A pop up screen would be presented to you with the employee details
v. Enter details in New Password and then Confirm New Password

Click on Change button and the password would be set to the new password just entered.

Notes on Security

The philosophy behind the security implemented in PMPal is that “Access on a need basis”. So the data can enter only from the persons designated as either **Project Leader** or **Project Manager** only - that too, only for the projects in which they are allocated. Others would be allowed to see the data but not add, modify or delete.

PMPal has adopted “Role” based security. That means – PMPal provides for pre-defined roles to be performed in using the software and PMPal allows access to various facilities available based on the role assigned to the employee at the time of adding an employee. Of course, the role can be changed by the Administrator any time.

These are the roles –

i. **Administrator** – Administrator can set the prerequisites for using the software by others. His functions are –
   a. Enter the company details
   b. Maintain employees
   c. Maintain Projects
   d. Allocate employees to projects
   e. Lock the Timesheets
   f. Maintain –
      i. Project Types
      ii. Phases
      iii. Tasks
      iv. Use Case Factors
      v. Defect Types
      vi. Change Types
      vii. Cost Items
      viii. Holidays
   g. In addition, he can view all screens and can access all reports without the facility to change any data
   h. It is suggested not to have more than one (art most two) to maintain integrity of the data.

ii. **Senior Management** – persons with this role can see all data but not modify. They can generate all reports. We expect SEPG (Software Process Engineering Group), Quality Department, Marketing, and Senior Executives would all be assigned with this role, so that they have access to all the data. Persons with this role need not be allocated to projects.

iii. **Group Leader** – this role is like Senior Management, except that Group Leader (GL) would be allowed to see those projects that are under his control. GL also would not be able to modify any data. Persons with this role need to be allocated to the project in order to be recognized for accessing data.

iv. **Project Manager** - & **Project Leader** – these roles can access all facilities including modify data for the projects under their control. A Project Manager generally has one or more projects under his control and a Project Leader handles one project generally. Persons with these roles need to be allocated to projects in order to be recognized for allowing access to data.

v. **Team Member** – this role has limited access. He will be allowed access to data of the projects that are assigned to him without the facility to modify it. He can also access the reports, namely, Effort Reports, Productivity Reports, Defect Reports and Employee Reports.

Administration – Project

You can access this tab once you are logged in as Administrator and clicking this tab.

This tab assists in defining and adding new projects.

To add a new project, access this tab and enter the following details -

i. Project id - unique identifier of the project - this can be a combination of characters, numbers and special characters
ii. Project Name - name of the project - this can be a combination of characters, numbers and special characters
iii. Project Type - select the type of project form the choices
iv. Technique - select the desired estimation technique
v. Project Leader - select the name of the project leader responsible for this project
vi. Project Manager - select the project manager responsible for this project
vii. Group leader - select the name of the group leader responsible for this project
viii. Start Date - select the scheduled start date of the project
ix. End Date - select the scheduled end date for the project
x. Estimated Hours - enter the person hours of estimated effort required for the project

Click on Save button to save the details. A new project is added.

Administration - Project Allocation

You can access this tab once you are logged in as Administrator and clicking this tab.

This tab assists you in allocating employees to projects.

To allocate an employee to a project,

i. Select the desired project form Project name box

ii. Select the desired employee from the list box on the Left hand side of the Screen by clicking and highlighting the employee name
iii. Click the right arrow button to allocate him
iv. To de-allocate an employee, highlight the employee name in the Right hand Side list box and click on the right arrow button

When allocation is finished, click Save button to save allocation.

Tools

This facilitates maintenance of Masters

Tools – Maintain Defect Types

This can be carried out by Administrator only.

This can be accessed from the top Tools – Maintain Defect Types

This accomplishes definition of defect types used in the organization. **PMPal** comes with many pre-defined change types. You may retain them, modify them, delete them or add new ones. The steps are as under –

To modify an existing Defect type

i. Double click on the row containing the defect desired to be modified
ii. The boxes will be filled with appropriate details
iii. Make desired modifications and click on the down arrow button to save changes

Please note that when you change the defect description, a new change type will be added. This is provided to reduce your typing effort so that you may create new ones by editing the existing ones. Should you desire to change the defect description of an existing one, modify it following the above steps and then delete the undesirable one.

To delete an existing defect type

i. Double click on the row containing the defect desired to be modified
ii. The boxes will be filled with appropriate details
iii. Click on the X button
iv. A message appears asking for confirmation of delete action
v. Selecting Yes will delete the defect type
vi. Selecting No will cancel the delete action

To define a new defect type

You have two choices of achieving this – you can modify an existing one and create a new defect type of enter afresh. Modifying an existing one is explained above. To define afresh is explained below.

i. Enter the defect description in the box captioned Defect Description – up to 50 characters
ii. Select the severity of the defect from the box captioned Severity
iii. Enter the source of defect – up to 15 characters. **PMPal** comes with pre-defined sources, you may use them or use new ones
iv. Click on the down arrow button to save the definition

Tools – Maintain Change Types

This can be carried out by Administrator only.

This can be accessed from the top Tools – Maintain Change Types

This accomplishes definition of change types used in the organization. **PMPal** comes with many pre-defined change types. You may retain them, modify them, delete them or add new ones. The steps are as under –

To modify an existing change type

i. Double click on the row containing the change desired to be modified
ii. The boxes will be filled with appropriate details
iii. Make desired modifications and click on the down arrow button to save changes

Please note that when you change the change description, a new change type will be added. This is provided to reduce your typing effort so that you may create new ones by editing the existing ones. Should you desire to change the change description of an existing one, modify it following the above steps and then delete the undesirable one.

To delete an existing change type

i. Double click on the row containing the change desired to be modified
ii. The boxes will be filled with appropriate details
iii. Click on the X button
iv. A message appears asking for confirmation of delete action
v. Selecting Yes will delete the change type
vi. Selecting No will cancel the delete action

To define a new change type

You have two choices of achieving this – you can modify an existing one and create a new change type of enter afresh. Modifying an existing one is explained above. To define afresh is explained below.

i. Enter the change description in the box captioned Change Description – up to 50 characters
ii. Select the Change Impact of the change from the box captioned Change Impact
iii. Click on the down arrow button to save the definition

Tools – Maintain Project Types

This can be carried out by Administrator only.

This can be accessed from the top Tools – Maintain Project Types

This accomplishes definition of Project types used in the organization. **PMPal** comes with many pre-defined Project types. You may retain them, modify them, delete them or add new ones. The steps are as under –

To modify an existing type

i. Double click on the row containing the Project Type desired to be modified
ii. The box will be filled with appropriate details
iii. Make desired modifications and click on the down arrow button to save changes

Please note that when you change the Project Type description, a new Project Type will be added. This is provided to reduce your typing effort so that you may create new ones by editing the existing ones. Should you desire to change the Project Type description of an existing one, modify it following the above steps and then delete the undesirable one.

To delete an existing Project type

i. Double click on the row containing the Project Type desired to be modified
ii. The box will be filled with appropriate details
iii. Click on the X button
iv. A message appears asking for confirmation of delete action
v. Selecting Yes will delete the Project type
vi. Selecting No will cancel the delete action

To define a new Project type

You have two choices of achieving this – you can modify an existing one and create a new Project Type or enter afresh. Modifying an existing one is explained above. To define afresh is explained below.

i. Click on the down arrow button to save the definition

Maintain Holidays

This can be carried out by Administrator only.

This is necessary for Scheduling of projects so that calendar dates for the activities will take into consideration the holidays of your organization.

This facility can be accessed from the top pull down menu Tools and selecting maintain Holidays

To enter a new holiday, simply select a date from the Holiday calendar control and click on the Down Arrow button and you will find that it is moved into the List of Existing Holidays list.

To delete an existing holiday, select the row congaing the date in the list of existing holidays list by clicking and highlighting the row. Click the Up Arrow button, system will display a message You are Deleting: along with the date selected. Clicking on the Cancel button would cancel delete action and retains the holiday in the list. Clicking on the OK button will delete the date from the list.

Maintain Cost Items

To carry out Cost Estimation for any project, the pre-requisite is the have the components of the cost ready.

This activity can be carried out only by the Administrator.

This facility can be accessed from the top menu Tools and selecting Maintain Cost Items from the pull down menu.

This presents you the Maintain Cost Items Screen. This screen has two boxes for cost items entry and a list of all the cost items entered and available for the cost estimation activity.

Enter a new Cost Item

i. Enter the description of the Cost Item (maximum length of 50 characters) in the box captioned as Cost Item Description (50 Characters)
ii. Enter Unit Cost of the Cost Item in the box captioned as Item Cost Per Unit
iii. Click on the Down Arrow button and the item will be saved and shown in the List of Existing Cost Items list.

Editing an existing Cost Item

i. Locate the row in which the item to be modified in the List of Existing Cost Items list
ii. Double Click the row and the boxes above the list will be filled with the existing values
iii. Make desired modifications and click the down arrow button to Save the changes

Delete an existing Cost Item

i. Locate the row in which the item to be modified in the List of Existing Cost Items list
ii. Click and highlight the row containing the Cost Item to be deleted

iii. Click on the Up Arrow button and the system will display a message You are Deleting: along with the description of the item being deleted
iv. Clicking on the Cancel button will cancel the delete action and retains the Cost Item in the list
iv. Clicking on the OK button will delete the Cost Item from the list.

Maintain Project Phases

Task Based Estimation comes with a set of predefined set of project types and their corresponding phases and tasks. This facility provides for adding, modifying and deleting development phases.

This can be accessed and maintained only by a person logged in the capacity of Administrator

This facility can be accessed from top pull down menu Tools and selecting the option Maintain Project Phases.

First select the Project Type from the box captioned as Project Type and the corresponding development phase will be displayed in the list box below.

To add a new Development Phase

i. Select appropriate project type in the box captioned Project Type
ii. Type in the description of the new development phase in the box captioned Development Phase
iii. Click on the Down Arrow button. It will be added

To modify an existing phase

i. Double click on the row containing the Phase desired to be modified
ii. The box will be filled with appropriate details
iii. Make desired modifications and click on the down arrow button to save changes

Please note that when you change the Project Type description, a new Project Type will be added. This is provided to reduce your typing effort so that you may create new ones by editing the existing ones. Should you desire to change the Project Type description of an existing one, modify it following the above steps and then delete the undesirable one.

To delete an existing Project Phase

To delete an existing Development Phase,
i. Highlight the row containing the desired development phase
ii. Click on the X button.
ii. You will be prompted with the message You are Deleting along with the description of the development phase being deleted. Clicking on OK button will delete the development phase. Clicking on the Cancel button will cancel delete action

Maintain Development Tasks

Task Based Estimation comes with a set of predefined set of project types and their corresponding phases and tasks. This facility provides for adding, modifying and deleting development tasks.

This facility can be accessed from top pull down menu <bTtools and selecting the option Maintain Development Tasks.

First select the Project Type from the box captioned as Project Type and the development phase from the box captioned Development Phase - then the corresponding tasks will be displayed in the list box below.

To add a new Development Task

i. Select approprioate project type in the box captioned Project Type
ii. Select the appropriate development phase from the box captioed Development Phase
iii. Type in the description of the new development task in the box captioned Development Task
iv. Click on the Down Arrow button. It will be added

To modify an existing task

i. Double click on the row containing the Task desired to be modified
ii. The box will be filled with appropriate details
iii. Make desired modifications and click on the down arrow button to save changes

Please note that when you change the Project Type description, a new Project Type will be added. This is provided to reduce your typing effort so that you may create new ones by editing the existing ones. Should you desire to change the Project Type description of an existing one, modify it following the above steps and then delete the undesirable one.

To delete an existing Project task

To delete an existing Development Task,
i. Highlight the row containing the the desired development task
ii. Click on the X button.
iii. You will be prompted with the message You are Deleting along with the description of the development task being deleted. Clicking on OK button will delete the development task. Clicking on the Cancel button will cancel delete action

Maintain Use Case Adjustment Factors

This facility is accessible only by the persons logged in as Administrator. This can be accessed from the top Tools pull down menu.

Use Case Points estimation technique uses two types of complexity adjustment factors, namely, Technical Factors and Environmental Factors. EstimatorPal comes with standard predefined values for both these factors.

However, a facility is provided to tailor these to the unique needs of an organization. The following points need to be noted.

1. There will be 13 Technical Factors and 8 Environmental Factors - the number of factors in each category remains unchanged
2. The nomenclature and the corresponding weightage can be changed
3. The changed values affect the entire organization
4. The changes cannot be set at project level - that is all projects will have the same nomenclature and weightages
5. Values can be changed only by the administrator

Maintain Adjustment Factors

Once you log in as Administrator and access this facility from Tools - Maintain TCF EF For Use Case Points, the screen will be displayed with a list of all adjustment factors.

1. Double click on the row containing the factor that you wish to modify.
2. The text boxes will be filled with the values
3. The box captioned as Factor Description will contain the description of the factor - this description can be changed to your need or a new description can be typed
4. The box captioned as Factor Weight will contain the existing weightage and this can be changed to a new value
5. Once the above two boxes are set to you need, click the Down Arrow button and the changes will be saved and displayed in the list.

The Factor Id column will contain the identification of the factors - prefix T indicates Technical Factor and prefix E indicates Environmental Factor

When you are done with the maintaining the factors, you may close the window.