



## User Manual for FPAPal

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## Introduction - Software 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 by 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.

**FPAPal** is a software tool that assists software developers to estimate the size, effort, cost and schedule required for the software development of projects.

This tool facilitates use of **Function Point Analysis Estimation** technique -

Explanation of this technique 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 this technique is sufficient to use this tool to produce professional estimates.

## Preliminaries

### Entering the name of your organization

Once you have installed the tool on your system, please enter the details of your organization by selecting - Tools- Maintain Organizational 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.

### New Project definition

When you invoke **FPAPal**, you will be presented with the Signature Screen with two choices, namely,

- i. Define New Project
- ii. Open Existing Project

The list of existing projects is displayed below the choices.

When you select **Define New Project**, a screen with two tabs, namely, **New Project** and **Copy from Existing Project** would be displayed.

When you select **New Project** tab, it will assist you to define a new project. The following details need to be entered -



- i. **Project Name** - the name of the project up to 50 characters
- ii. **Project Id**- Project Identification code, if any, up to 50 characters
- iii. **Project Type**- Select from the list of project types
- iv. **Project Start Date** - Starting date of the project - select from the calendar control
- v. **End Date** - Ending date of the project - select from the calendar control
- vi. **Technique**- Estimation technique - choices available are Function Points, Object Points, Use Case Points and Task-based Estimation
- vii. **Save** - would save the details and create the project and
- viii. **Close** - would close the screen

You can also copy the details from an existing project and create a new project and edit the details as needed for the new project. This option would save valuable data entry time. To do this, access **Copy from Existing Project** tab by clicking on the tab. There are two sections in this tab -

- i. **New Project Details** and
- ii. **Existing Project Details**

Please enter the details of **Project Name**, **Project Id**, **Start Date**, and **End Date** for the new project in the **New Project Details** Section

In the **Existing project Details** Section, please select the **Project Name** and its details would be displayed to assist you to verify the veracity of your selection. By clicking on **Save** button would copy all the details from the existing project into the new project. By clicking on the **Close** button would close the screen.

### Function Points Analysis Technique

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 data 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.

First select project name for which you are carrying out the estimation from the box captioned **Project Name** and select the module name from the box captioned **Module Name** or you may enter a new module name also.



Now you can enter details of the function point transactions. These need to be entered –

- i. **Enter 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. **Complexity** - this is the perceived complexity of the function point – this is automatically set by the software based on the function point type selected and the values entered in the boxes captioned **FTRs/RETs** and **DETs**. Please Note that when the function point type selected is either **EI/EO/EQ** then the box will be captioned **FTRs (File Types Referenced)** and when you select either **ILF/EIF**, the box will be captioned **RETs (Record Element Types Referenced)**. **DETs** stand for **Data Element Types Referenced**
  - a. **FTRs/RETs** – enter the number of either FTRs/RETs used by the function point transaction – this needs to be a number and of Integer type
  - b. **DETs** – enter the number of DETs used by the FTRs/RETs used by the function point transaction
- iv. **Notes/Assumptions of the FP Transaction** – you may enter any assumptions or make notes about the FP transaction here – up to a maximum of 255 characters
- v. Clicking on **Save** button will save the data entered above.
- vi. Clicking on the **Cancel** button would clear the entry in the Function Point Name box and set to default the other two values.
- vii. **Productivity FP/Day** - 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 Effort in Person Days value is computed using this value to divide the Total Adjusted FP.
- viii. Clicking on the **Save Project** button would save the details of the project entered.
- ix. Clicking on the **Close Project** would close the project screen and allow you to do other tasks

### Value Adjustment Factors (VAF)

One needs to enter fourteen (14) **Value Adjustment Factors** that define the project environment. The VAF is automatically computed based on your choices, in the boxes captioned, namely,

- i. GSC – General System Characteristic – select any of the 14 choices available there
- ii. Degree of Influence – select any one of the statements that describe your project scenario best for the selected GSC
- iii. Click on the Save button – this would cause your choice to be saved and the VAF to be recomputed.

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

$$\text{VAF} = (\text{Sum of the 14 values entered} / 100) + 0.65$$

### 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
- iv. **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.
- v. You may edit them as desired and click on the **Save** button to save the modification.
- vi. You may delete the item by clicking on the **Delete** button and the item would be deleted.

## Report Generation

You can access this function by selecting from main menu Report - Generate Report. The report generation screen would have –

- i. **Type of Report** – choices available are – select one of them
  - a. **Summary of all Projects**
  - b. **For a Project**
- ii. **Project Name** - select from the available choices, if you selected “**For a Project**” option in the box captioned **Type of Report**.
- iii. **Report Type** - there are two types you can select, namely -
  - a. **Summary Report** - it shows the information shown in the Summary Tab of the estimation except for the data entry section of the tab.
  - b. **Detailed Report** - It shows the summary tab information first and then information shown in each of the other tabs would be listed one after the other.

The generated report would be displayed on the screen and you would see two icons one for sending it to printer and the other to save it to a text file for future use.

## 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 effort 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 - **FPAPal** tries to complement those tools rather than supplant them. **FPAPal** 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 **FPAPal** proceeds in three steps, namely,

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

### Preparation of Initial Schedule



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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. **FPAPal** 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





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Analysts, Project Leaders, Team Leaders, project Managers etc. In **FPAPal** 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 **FPAPal** 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 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.
- i. 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
- ii. The Schedule is adjusted for weekends and holidays. Both Saturday and Sunday are taken as non-working days.

### Maintain Holidays

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.



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To delete an existing holiday, select the row containing 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.

### Cost Estimation - Maintain Cost Items

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

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
- v. Clicking on the **OK** button will delete the Cost Item from the list.

### Backup and Restore

It is always better to backup data regularly to provide for safety in case of any unforeseen occurrences resulting in loss of data. **FPAPal** provides for backup of data and restoration of data from a backed up database.

This facility can be accessed from top pull down menu **Tools** sand selecting **Backup & Restore** option. This will present **Database Backup** screen.

This screen has two sections, namely,

- i. **Backup** section and
- ii. **Restore** section



In **Backup** section, select the location where you want to back up the database by clicking on the **Browse** button. Select the appropriate drive and directory in the popup screen that is displayed and click **OK** button. The selected location would be displayed in the **Destination Database** box. Click on the **Backup Now...** button and the database would be backed up.

To restore a database from back up use the **Restore** section. Click on the **Browse** button to select the database that you desire to restore and click **OK** button in the popup screen. The selected database name would be displayed in the box captioned **Source Database**. Click on the **Restore** button and the database would be restored.

### Working on multiple activities concurrently

You can open more than one project or a project and report generator simultaneously. You can switch between various screens by clicking on Window option in the main menu and selecting the desired screen.