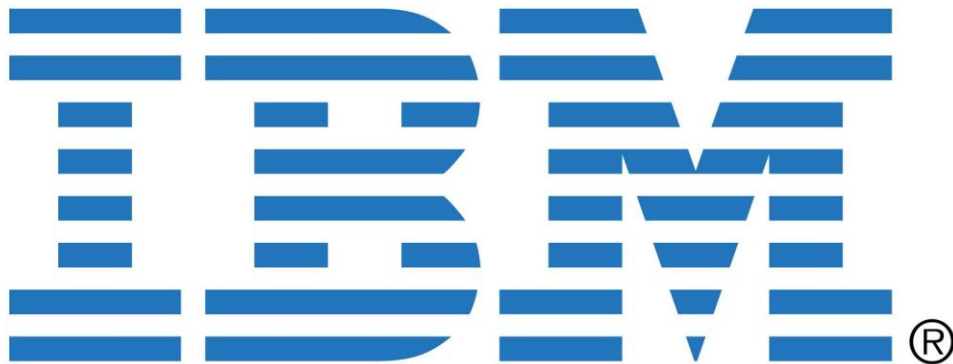


# WebEst User Manual

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*Detailed User Manual for IBM WebEst*



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## 1 Introduction

It is the responsibility of the project manager to make accurate estimations of effort and cost. This is particularly true for projects subject to competitive bidding where a bid too high compared to competitors would result in losing the contract or a bid too low could result in a loss to the organization. This does not mean that internal projects are unimportant. From a project leader's estimate the management often decides whether to proceed with a project or not.

Industry has a need for accurate estimates of effort and size at very early stages in a project. However, when software cost estimates are done early in the software development process, the estimates can be based on wrong or incomplete requirements. A software cost estimate process is the set of techniques and procedures that an organization uses to arrive at an estimate. An important aspect of software projects is to know the costs, where the major contributing factor is effort.

When we are examining a project we have always these questions in mind:

- What is our current status?
- What are our objectives?
- How can we monitor progress?
- How do we know when we have reached our goals?
- How do we do in comparison to others?
- Are we improving?
- How well are we likely to do in future projects?

WebEst is a software tool that can give these answers.

## **1.1 What is WebEst?**

WebEst is a web based management tool for estimation, analysis and presentation of software schedule, effort, and quality data. Estimation software is basically made to help the end users like project managers or any decision making key authorities to analyze their projects status and life cycle while helping them to make and analyze their decisions while observing key factors like time and staff in the light of previous project results. This helps them to decide whether to realize a project or not. WebEst will calculate time and effort to accomplish a project after providing certain parameters.

WebEst allows you to create and evaluate an unlimited number of possible solutions for each estimate. Calibrate WebEst's algorithms to your environment. Maximize the accuracy of your estimates. Negotiate and communicate more effectively with colleagues and customers.

## **1.2 Who are the users of WebEst?**

WebEst was originally developed for IBM Germany to be internally used as a light-weight and fast estimation tool to complement other, often more complex, estimation tools (e.g. SLIM) already in use. Its target users are project managers and estimators who are responsible to predict effort, time and cost for software projects. Since it is an open-source project, any software development company that is working on any sort of project can use WebEst to estimate their project schedule. It is designed to be accessible to a wide variety of users.

## **1.3 What does the software do?**

WebEst estimates projects according to given environmental conditions. After providing general data for the estimate like organization, division, application type, industry type, work days and hours etc. WebEst allows users to create different solutions for each one. Using the solution, the user can examine how changes in size, staffing, and productivity affect the likelihood of achieving their goals. Furthermore an optional time constraint can be set.

For each solution users can generate a detailed report at all times. Reports include key factors like UCP, PP, PI and SLOC as well as overviews about the phases, milestones and defect categories of the project. Additionally they provide a graphical chart of the staffing curve displaying time and effort.

## 2 System Requirements

Since WebEst is a web-based application, it should run on most browsers, although Mozilla Firefox and Apple Safari are recommended. The Graphical User Interface has been optimized for Firefox 3.6.

Although not officially supported, WebEst should also be usable on Mobile Devices, including iPhone, iPod and the iPad.

### System Requirements for Mozilla Firefox 3.6

#### Windows

- Windows 2000
- Windows XP
- Windows Server 2003
- Windows Vista
- Windows 7
- Pentium 233 MHz (*Recommended: Pentium 500 MHz or greater*)
- 64 MB RAM (*Recommended: 128 MB RAM or greater*)
- 52 MB hard drive space

#### Mac

- Mac OS X 10.4 and later
- Macintosh computer with an Intel x86 or PowerPC G3, G4, or G5 processor
- 128 MB RAM (*Recommended: 256 MB RAM or greater*)
- 200 MB hard drive space

#### Linux

Firefox will not run at all without the following libraries or packages:

- GTK+ 2.10 or higher
- GLib 2.12 or higher
- Pango 1.14 or higher
- X.Org 1.0 or higher

For optimal functionality, we recommend the following libraries or packages:

- NetworkManager 0.7 or higher
- DBus 1.0 or higher
- HAL 0.5.8 or higher
- GNOME 2.16 or higher

Please visit

<http://www.mozilla.com/en-US/firefox/system-requirements.html>

for further information regarding client system requirements.



### 3 Installation Guide

Please refer to the Firefox home page for support regarding the installation:

Mozilla Firefox 3.6:

<http://support.mozilla.com/en-US/kb/Installing%20Firefox%20on%20Windows>

## 4 Estimates, Solutions and Reports

### 4.1 Estimates

An estimate serves as a basis for solutions. It is divided into four distinct tabs containing key data for the project.

#### Project Description

The first area of this tab contains master data for the project, including the estimate name, project name, estimator, organization, division and country; moreover the type of the application as well as the industry sector for which it is to be developed. The second area contains a selection field for basic units like currency and effort.

#### Reliability

On this tab, the user is able to set the operational runtime environment as well as define different defect categories.

#### Phases

This tab shows the four phases a project usually consists of and lets the user set an acronym, name, description and percentage of the full project duration.

#### Milestones

Here individual and detailed milestones can be set which are to be included in the project.

### 4.2 Solutions

For each estimate, many solutions can be created. The parameters influence the results of the report. Solutions are divided into three tabs.

#### Solution Assumptions

In the first part of the solution assumptions, the user can set a project name, gearing factor, as well as a PI or PP value. In the second part he can define the phases to be included as well as the probability distribution for each phase (although only Front Load Rayleigh is implemented at this moment). Finally, an optional time constraint can be set.

#### Use Case Granularity

On this tab a use case granularity can simply be chosen on top of the screen, or optionally it can be calculated by using the table below it.

#### Sizing

On the sizing tab the user can add use case packages, use cases and for each use case, define the complexity, certainty etc.

## 4.3 Reports

A report can be generated on-the-fly from a solution. It contains five parts.

### Overview

Contains the data used as a basis (taken from the estimation), including project name, application type, industry sector etc. as well as estimation values like UCP, Gearing Factor or PI.

### Defect Categories

Shows a table containing the defined defect categories and their percentages.

### Staffing Curve

A graphical representation of the time and effort needed to realize the project under the current solution assumptions.

### Phases

Each phase of the project is displayed separately, including duration and effort.

### Milestone Plan

A more detailed table showing not only the phases of the project but also the user-defined milestones.

## 5 Graphical User Interface – The Basics

The main screen is divided into three parts: Top bar, navigation and content.

In this chapter, each section will be described in detail.

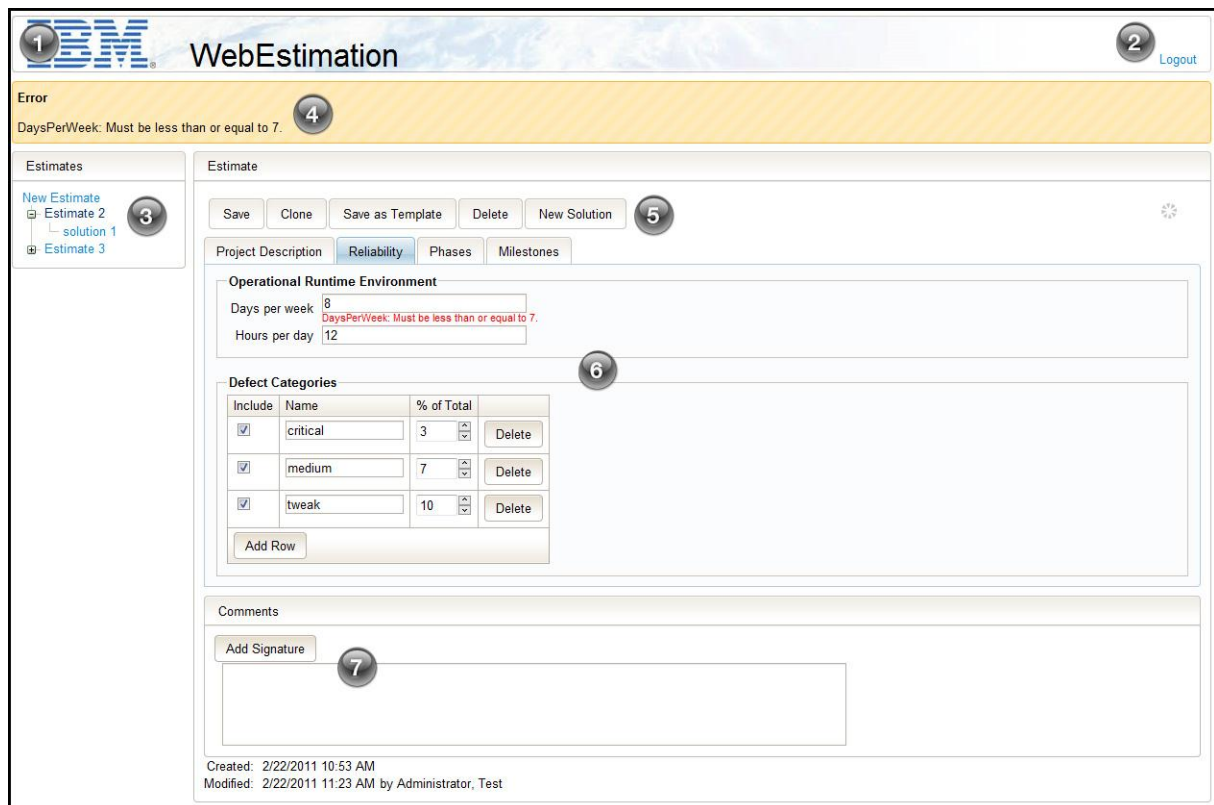


Figure 1: Basic layout of the graphical user interface

### 5.1 Top bar – home button and log out

On the top of the screen you will find the top navigation bar. The IBM logo on the left side on the screen serves as a **home button (1)**. Click it if you want to go back to the welcome screen. If you want to log out, click the **"Logout" link (2)** on the right side of the screen.

### 5.2 Navigation

On the left side of the screen you will find the **main navigation (3)**. Click "New Estimate" to create a new estimation. A popup window will appear where you can choose a template or start with an empty estimate. Below the "New Estimate" link you will find a tree containing all estimates which you are allowed to see according to your user role. If a specific estimate has solutions assigned to it, you can view these by clicking the small plus symbol left of the estimate name. Click the name of an estimate or solution to open it, so you can view or edit its contents.

## 5.3 Message box

The section below the top navigation will show a **message box (4)** when necessary. You will recognize it by its orange background. It shows messages about form fields if they contain false values or are empty as well as feedback about saving and cloning estimates etc. General error messages are also shown here. Please keep in mind that the message box is only shown when there are messages to display.

## 5.4 Options toolbar on the estimate screen

When editing an estimate, you will find an **options toolbar (5)** on top of the estimate panel, just below the top bar. The available buttons when editing an estimate are save, clone, save as template, delete and new solution. Inactive buttons (which you can't click at the moment) are displayed with greyed-out button text.

### 5.4.1 Save

Saves the current estimate and all values entered into the form. Information entered on all of the tabs will be saved.

### 5.4.2 Clone

Creates a copy of the current estimation. After clicking this, you are now automatically viewing the newly created copy. Please note that the copy has not been automatically saved. You still have to change the estimate name in the project description tab and use the save button to save the copy.

### 5.4.3 Save as template

Saves the values entered into the form as a template. If you click this, a pop-up window appears, asking you for the name and description for your new template. You can choose templates when creating a new estimate. Please note that not all values are being saved as a template. The saved values are estimator, organization, application type and industry sector on the project description tab, operational runtime environment on the reliability tab, the phases table on the phases tab and the milestones table on the milestones tab.

### 5.4.4 Restore Template Defaults

If you click this button, all template values in this estimate are returned to their respective default values saved in the template.

### 5.4.5 Delete

Deletes the current estimate. You will have to confirm this choice by clicking yes on a pop-up window.

### 5.4.6 New Solution

Creates a new solution for the current estimate. After clicking this, you are now automatically viewing the created solution. Please note that the solution has not been automatically saved. You still have to save your new solution by clicking the save button.

## 5.5 Options toolbar on the solution screen

When editing a solution, you will also find an **options toolbar (5)** on top of the solution panel, just below the top bar. The available buttons when editing a solution are save, clone, delete and generate report. Inactive buttons (which you can't click at the moment) are displayed with greyed-out button text.

### 5.5.1 Save

Saves the current solution and all values entered into the form. Information entered on all of the tabs will be saved.

### 5.5.2 Clone

Creates a copy of the current solution. After clicking this, you are now automatically viewing the newly created copy. Please note that the copy has not been automatically saved. You still have to change the solution name in the solution assumptions tab and use the save button to save the copy.

### 5.5.3 Delete

Deletes the current solution. You will have to confirm this choice by clicking yes on a pop-up window.

### 5.5.4 Generate Report

Creates a report using data from the current solution. After you click this, you are automatically viewing the report screen.

## 5.6 Content – using tabs and forms

The main part of the screen is dominated by the **content (6)**. This can be the welcome screen, estimation screen, solution screen or report screen. Each screen displays different elements and forms which you can manipulate to view and enter information. Besides simple buttons these elements consist of the following.

### 5.6.1 Tabs on top of the content pages

On the estimation and solution pages you will find different tabs just below the options bar. Click on a tab to display its contents. Information on one tab does not get lost when you go to a different tab, although it is only saved when you click the save button on the options bar.

### 5.6.2 Text boxes

You can use text boxes to enter information, usually consisting of letters and/or numbers. Sometimes there are small up and down arrows on the right side of the text box. Use these to increase or decrease number values.

### 5.6.3 Drop-down menus

Click a drop-down menu to view all available choices. Click an option from the list to change the current selection.

### 5.6.4 Check boxes

Some of the information is optional, for example defect categories. Click the check boxes to activate specific sections of the form to include them in the calculation.

### 5.6.5 Calendar icon

On the solution assumptions tab you will find a small calendar icon. You can use this to choose a start date for your project via a pop-up calendar.

### 5.6.6 Tables

Many of the pages incorporate tables. Usually you can sort a column by clicking the top of it. Furthermore you can sometimes add rows, select all, unselect all etc. Please refer to the individual buttons on each table.

## 5.7 Comments box

While on the estimate and solution page, you will find the **comments box (7)** on the bottom of the screen, below the content. If you want to leave a comment, just type it into the box. It will be saved when you click the "Save" button on the options toolbar. Click the "Add Signature" button to add your user name and the current date. Comments for estimates and solutions are saved separately.

## 6 Graphical User Interface – Step by Step

This chapter illustrates all sections of WebEst step by step. You will learn how to create estimates and solutions and how to generate reports.

### 6.1 Log in / log out

#### 6.1.1 Logging in and user roles



Figure 2: Login screen

In order to use this software, the user has to first log in in to the system. Only registered users can log-in in to the system. After the authentication the user will be assigned a role as administrator, project manager or estimator. These are the three different roles defined in the System. All of the roles have different properties and certain restrictions.

**The administrator** can see and modify all the estimates. This means the administrator is allowed to make changes in every estimate from different organizations and divisions. The Administrator is allowed to do everything.

**The project manager** on the other hand is only allowed to see those estimates which belong to his organization and division. The project manager is not allowed to make and save changes.

**The estimator** is allowed to see and modify his own and his divisions' estimates. He isn't allowed to see estimates of different estimators or from other organizations and divisions, although he is able to create estimates for other organizations and divisions.

#### 6.1.2 Logging out

Use the "Logout" link on the right side of the top bar to log out. You will be signed out and taken back to the log-in screen.



## 6.2 Welcome Screen

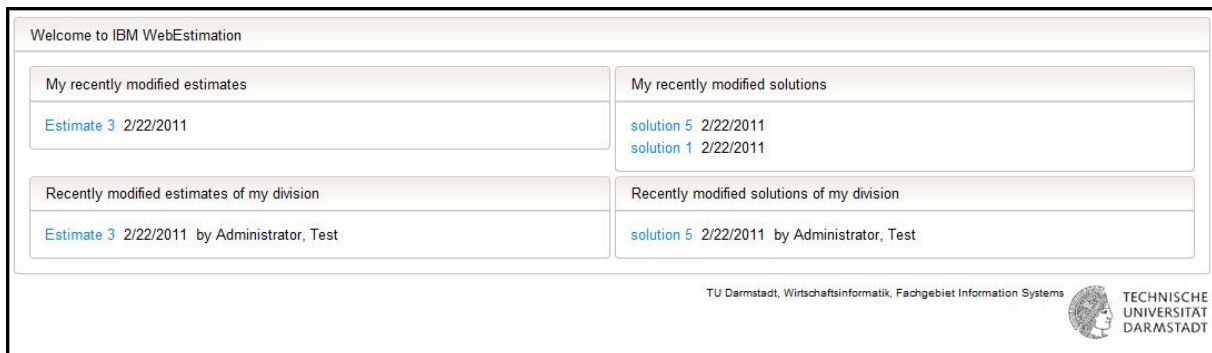


Figure 3: Welcome screen

After a successful login you will be taken to the welcome screen. This screen is divided into four parts. You can view the estimates and solutions you modified last as well as those of your division accordingly. For each estimate and solution you will find its name and the date on which it was modified. Click an estimate or solution name to go to the corresponding page immediately.

## 6.3 Creating a new estimate



Figure 4: Choose template pop-up

If you want to create a new estimate, click "New Estimate" on top of the navigation on the left side of the screen. A pop-up window will appear asking you to choose a template. You may do this, but it is not compulsory. If you want to start with an empty estimate, just leave the option "No Template" selected and click the "OK" button. Templates are predefined in the system containing some default values which makes creating a new estimate easier and faster. The saved values are estimator, organization, application type and industry sector on the project description tab, operational runtime environment on the reliability tab, the phases table on the phases tab and the milestones table on the milestones tab. If you want to use a template, choose it from the drop-down menu and click the "OK" button. If you change your mind and do not want to create a new estimate after all, click the "Cancel" button to be taken back to the last screen.

## 6.4 Modifying an estimate

Estimates contain basic data concerning a project, which consists of everything relating to the project environment. The information provided in the estimate can then be used to create different solutions later in the process. This project environment data is split into four categories on different tabs. These tabs are "project description", "reliability", "phases" and "milestones". Each of these tabs will be explained in detail in this section of the manual.

### 6.4.1 Project description tab

The first tab, project description, allows you to describe the project environment in as much detail as you desire. Please note that the fields on this tab are mandatory.

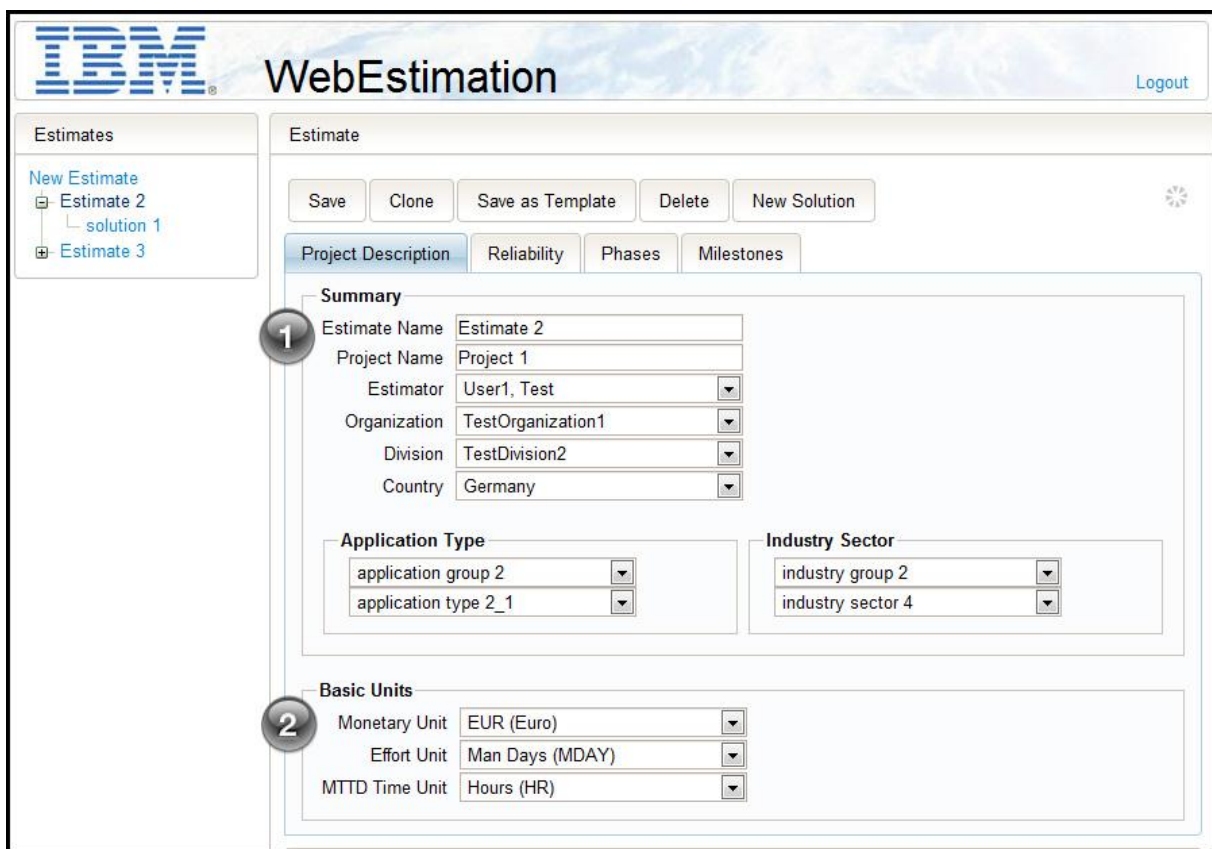


Figure 5: Project description tab

#### 6.4.1.1 Summary (1)

##### Estimate Name

The **name** under which this estimate will be saved. This name will show up on the navigation bar on the left side of the screen as well as on the welcome page.

##### Project Name

In this box you can enter the **name of the project**.

**Estimator**

The **person who has created** this estimate.

**Organization**

Here you can specify the **organization or company** the project belongs to. One organization can have more than one division.

**Division**

The **business unit within the organization** that is responsible for the project. Any Organization can have more than one division.

**Country**

The **country** where the project is taking place.

**Application Type**

Every project has an **application type** and it may have subsections.

**Industry Sector**

Specifies the **industry or sector** for which the project is being developed. Industry sectors may have subsections.

**6.4.1.2 Basic Units (2)****Monetary Unit**

The **currency** used for this project. Since WebEst does not do cost calculations, this value is not used in the calculation.

**Effort Unit**

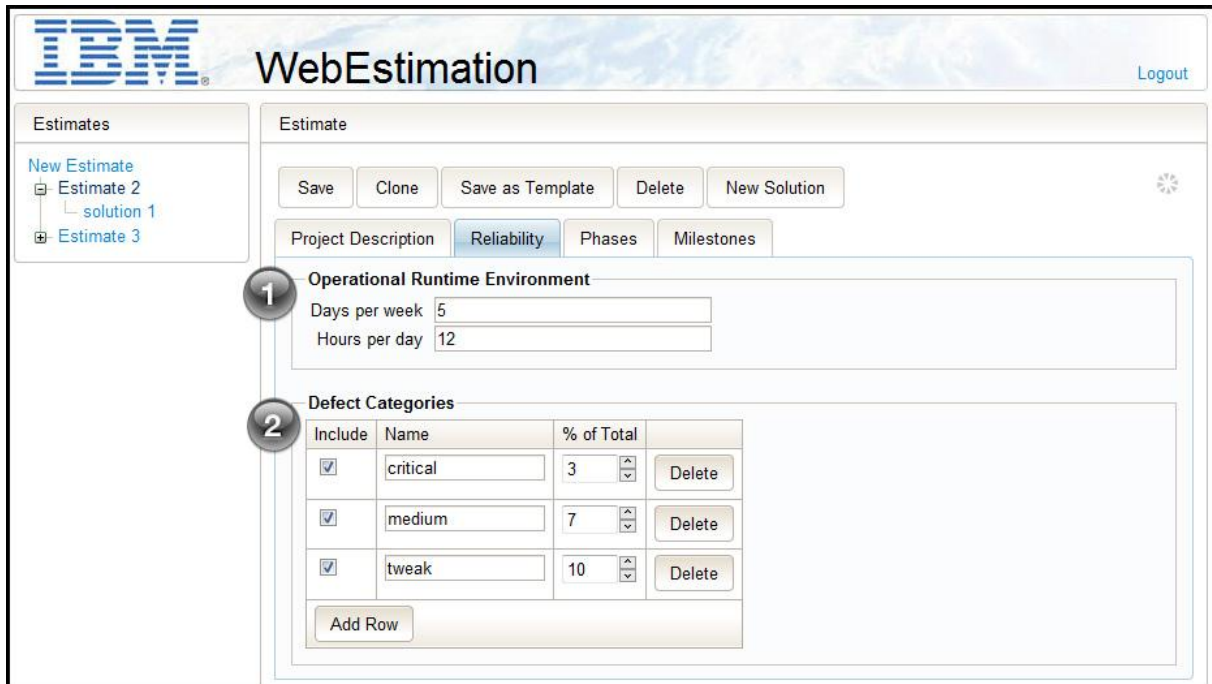
Allows you to display effort in **man/person/staff years, months, days, or hours**.

**MTTD Time Unit**

MTTD or Mean Time to Defect measures the amount of **time that software will operate before it encounters a defect**. This field allows you to choose the unit in which you wish to display your MTTD data. You may choose seconds, minutes, hours, days, or weeks. This value is not used in the calculation.

## 6.4.2 Reliability tab

After setting up the project description, the next step is to describe the environment under which the software must operate. The reliability tab has two main areas, operational runtime environment and defect categories. Operational runtime environment is a mandatory field, while defect categories are optional.



Include	Name	% of Total	Delete
<input checked="" type="checkbox"/>	critical	3	Delete
<input checked="" type="checkbox"/>	medium	7	Delete
<input checked="" type="checkbox"/>	tweak	10	Delete

Figure 6: Reliability tab

### 6.4.2.1 Operational Runtime Environment (1)

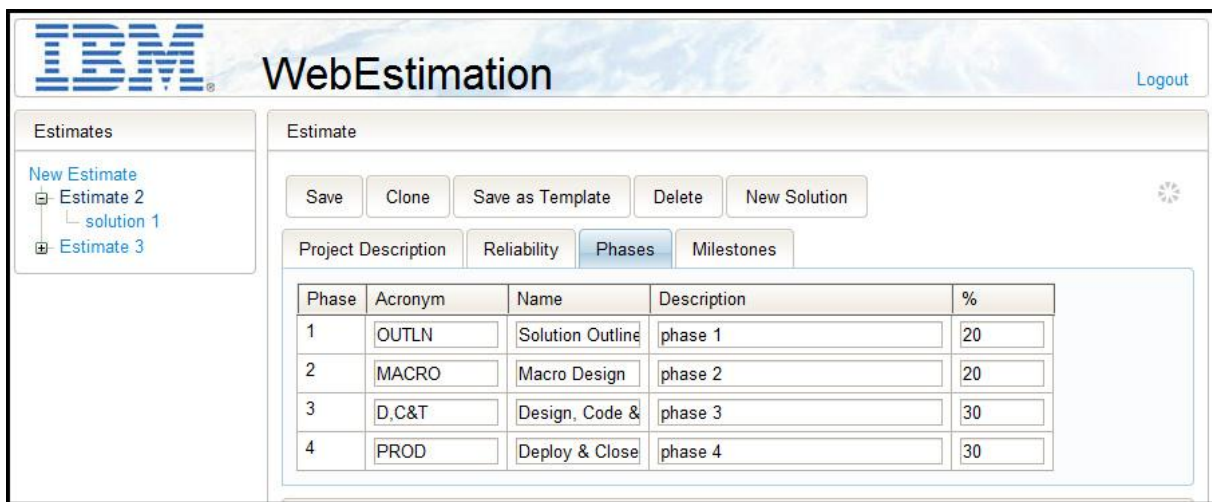
Here you can set how many **days per week** and how many **hours per day** the software will operate. For example for some systems this may mean they operate 24 hours a day and 7 days a week, while other systems will only operate 12 hours a day.

### 6.4.2.2 Defect categories (2)

This table contains your **custom defect categories**. You can add a row to the table by clicking the "Add Row" button. Each row consists of four columns. The first column contains a check box defining if this row is to be **included** in your project. The second row contains the **name of the defect**, for example these could be "critical", "minor" etc. In the third column you can set the **percentage of this defect in relation to all defects** while the last column provides a **delete button to erase rows**. Note that the total of the percentages does not need to add to 100%. Defect categories are not included in the calculation, but you can review them on the associated accordion panel on the report screen.

### 6.4.3 Phases tab

In software projects, usually four general phases of software development are being used. The first phase is the concept definition phase. It is the earliest phase in the software cycle, where consistent requirements and top-level plans for meeting them are developed. In the second phase, requirements & design, appropriate technologies are chosen and allocated to the requirements. During the next phase, construct & test, a working system is produced by detailed logic design, coding, testing and integration. The fourth and last phase is the maintenance phase. It still takes place when the system is already operating and includes correcting errors or enhancing the system.



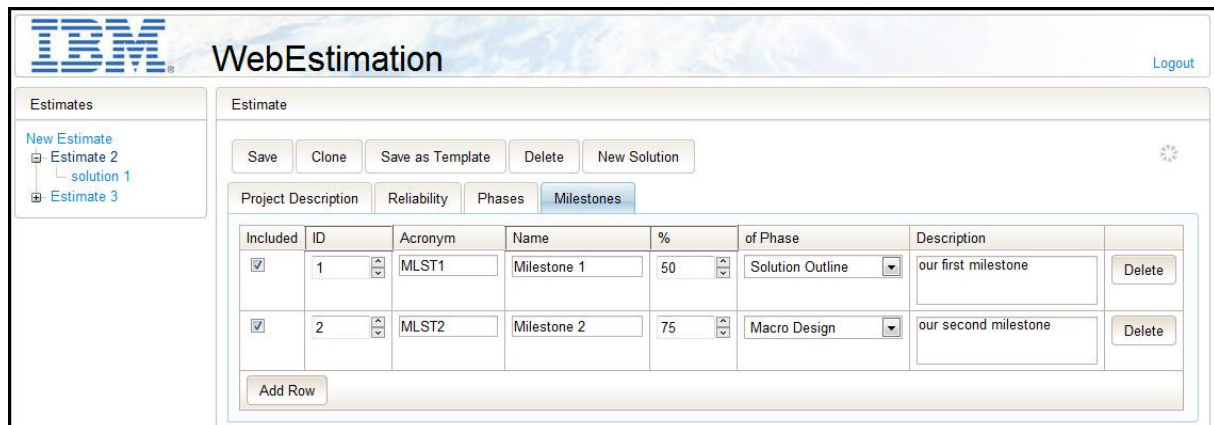
Phase	Acronym	Name	Description	%
1	OUTLN	Solution Outline	phase 1	20
2	MACRO	Macro Design	phase 2	20
3	D,C&T	Design, Code &	phase 3	30
4	PROD	Deploy & Close	phase 4	30

Figure 7: Phases tab

The phases tab allows you to change the phase acronyms and phase names as well as their percentages to match your development style and life cycle.

The **phases table** consists of five columns. Click the top of a column to sort its contents. You can change the **acronym** and **name** for each phase as well as add a **short description**. The last column constitutes the **percentage** of each phase relating to the duration of the whole project. Please note that the total of the percentages has to add up to 100%.

#### 6.4.4 Milestones tab



Included	ID	Acronym	Name	%	of Phase	Description	
<input checked="" type="checkbox"/>	1	MLST1	Milestone 1	50	Solution Outline	our first milestone	Delete
<input checked="" type="checkbox"/>	2	MLST2	Milestone 2	75	Macro Design	our second milestone	Delete

Figure 8: Phases tab

The milestones table allows you to customize the milestones of your project. As with the other tables, you can sort a column by clicking on the top of it. You can add a row by clicking the "Add Row" button. The first column allows you to **include a milestone** in your project by clicking the check box. The second column allows you to **choose an ID**, while the third and fourth columns allow you to set an **acronym** as well as a **name**. The next two columns let you set the **planned percentage of the phase** where the milestone will occur. Choose a percentage and a phase accordingly. Finally you can add a **short description** to each milestone or use the **"Delete" button** to delete it.

#### 6.5 Saving an estimate

If you want to save an estimate, click the "Save" button from the options bar above the estimate tabs. There will be a confirmation on the "Message Box" that the estimate has successfully been saved.

#### 6.6 Deleting an estimate

If you want to delete an estimate, click the "Delete" button from the options bar above the estimate tabs. You will have to confirm this choice by clicking yes on a pop-up window.

#### 6.7 Cloning an estimate

If you want to clone an estimate, click the "Clone" button from the options bar above the estimate tabs. This makes a copy of the current estimation. After clicking this, you are now automatically viewing the newly created copy. Please note that the copy has not been automatically saved. You still have to change the estimate name on the project description tab and use the save button to save the copy.

#### 6.8 Saving a template

If you want save the values of an estimate into a template, click the "Save as Template" button from the options bar above the estimate tabs. If you click this, a pop-up window will

appear, asking you for a name and description for your new template. You can choose templates when creating a new estimate. Please note that not all values are being saved as a template. The saved values are estimator, organization, application type and industry sector on the project description tab, operational runtime environment on the reliability tab, the phases table on the phases tab and the milestones table on the milestones tab.

## 6.9 Creating a new solution

After you have customized your estimate to your preferences, you can generate a solution for this estimate. One estimate may have any number of solutions associated with it. Click the "New Solution" button on the options toolbar above the estimate tabs to create a new solution for this estimate. You will be immediately taken to the main solution screen. Please note that the solution has not been automatically saved. You still have to save your new solution by clicking the save button. Solutions are split into three different areas which you can access by clicking the tabs on top of the screen. These tabs are "Solution Assumptions", "Use Case Granularity" and "Sizing". Each of these tabs will be explained in detail in the next section of the manual.

## 6.10 Modifying a solution

### 6.10.1 Solution assumptions tab

Figure 9: Solution assumptions tab

The solution assumption tab basically consists of global parameters, phases, optional constraints and two estimating parameters, PI and PP. The global parameters and Putnam fields are mandatory, while phases and constraints are optional. Also you can open a pop-up window containing the PI history by clicking the "Pi-History" button.

#### 6.10.1.1 Global Parameters (1)

##### Solution name

In this field you can provide the solution name. This is the **name under which this solution will be saved**. This name will show up on the navigation bar on the left side of the screen as well as on the welcome page.

##### Gearing factor

The gearing factor is a **user defined multiplier**, which allows the estimator to estimate the lines of code. That means the relation of SLOC and your number of basic units of work is:  $UCP \times GFACTOR = SLOC$ .

#### 6.10.1.2 Putnam (2)

To calculate a solution, you will either have to provide a PP or a PI value in this section.

##### PI

The **productivity index (PI)** measures the **efficiency of the development environment**. It describes such important factors as technical complexity, skill and experience of the development team as well as tools and processes used on the project. It is



an important driver in calculating any project estimate. You can either enter a value yourself or click "Show Pi-History" to choose projects from historical data and calculate an average value. In case you use the PI history, you'll see that a PP value, relating to the PI values of your chosen historical projects is calculated.

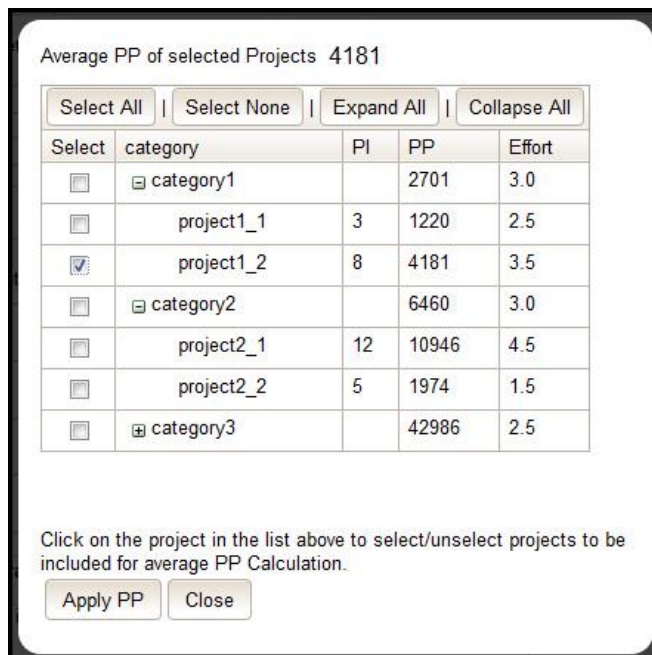
Read the paragraph "PI history" for further information regarding the use of the PI history screen.

## PP

The process **productivity parameter** is the **development process proficiency** of the organization. The PP value is same as the PI Value. The calculation functions just use the PP value but for the people who work with this estimation software, a PI value is easier to memorize.

## PI history

If you want to use **historical project data** to generate an average PP value for your solution, click the "Pi-History" button. On the pop-up window you will find a table listing projects in different categories. Click the small plus icons to expand a category to see all of the associated projects. Click the check boxes in the first column to select categories or projects to your liking. Each project has an associated **PP**, **PI** and **effort value**, which you can view in the last three columns of the table.



Average PP of selected Projects 4181

Select	category	PI	PP	Effort
<input type="checkbox"/>	category1		2701	3.0
<input type="checkbox"/>	project1_1	3	1220	2.5
<input checked="" type="checkbox"/>	project1_2	8	4181	3.5
<input type="checkbox"/>	category2		6460	3.0
<input type="checkbox"/>	project2_1	12	10946	4.5
<input type="checkbox"/>	project2_2	5	1974	1.5
<input type="checkbox"/>	category3		42986	2.5

Click on the project in the list above to select/unselect projects to be included for average PP Calculation.

Apply PP Close

Figure 10: PI history pop-up

Use the buttons on top of the table to select or unselect all check boxes or to expand or collapse all trees. Above the buttons you will find the **average PP of the selected projects**. This is the value, which will be transferred to the PP box on the solution



assumptions screen when you press the "Apply PP" button below the table. If you don't want to apply a PP after all, just click the "Close" button next to it.

### **6.10.1.3 Phases (3)**

The **phases** section defines the life cycle and staffing profiles.

#### **Project start date**

Here you can set the **start date of the project**. You can enter a date manually or use the calendar icon to set a date using a pop-up calendar.

#### **Phases table**

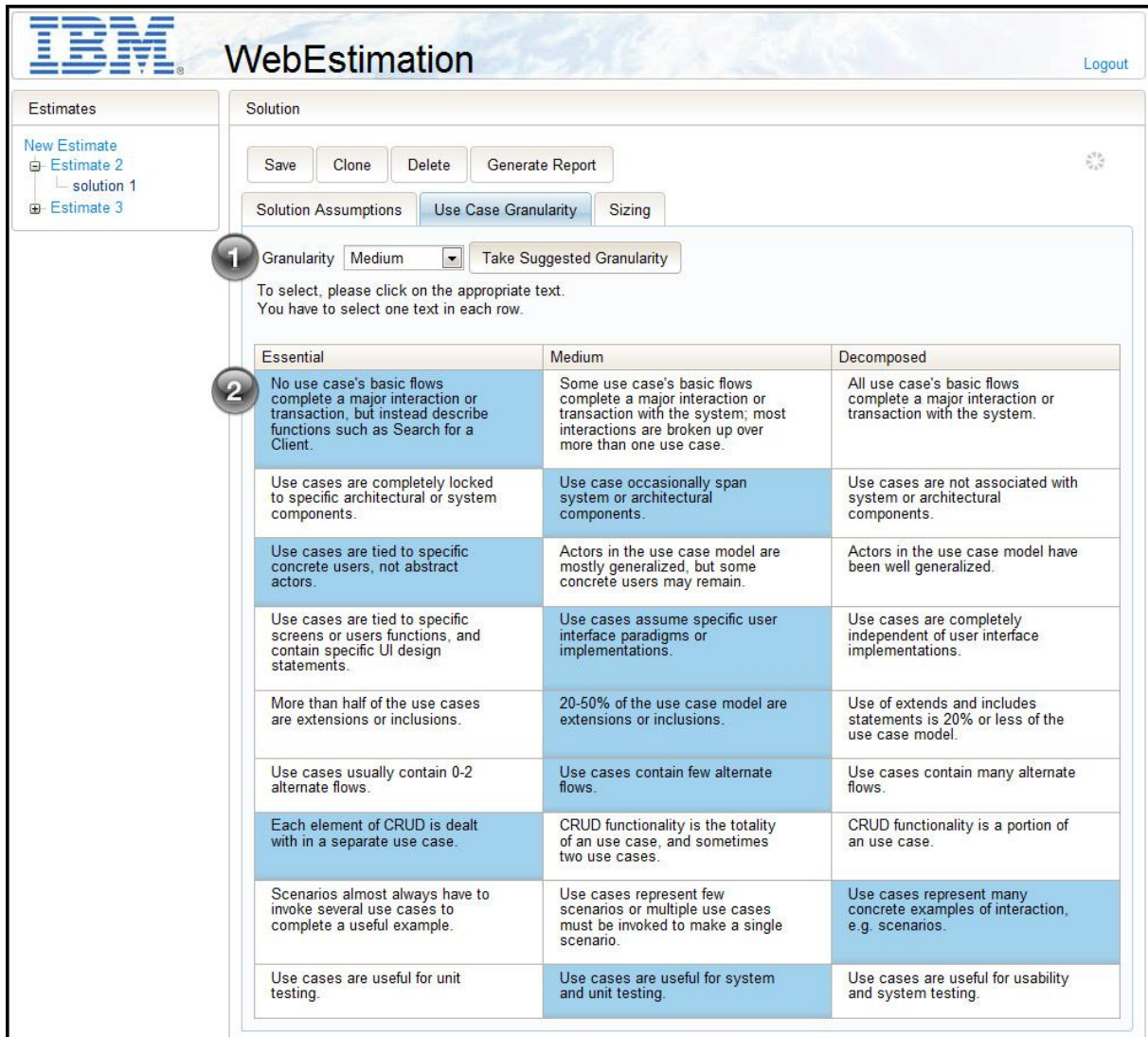
This table lists the **phases** of the project life cycle, their **acronyms** and the **staffing shape** for each phase. You can pick the phase that best matches your planned effort buildup using the drop-down menu to the right of each phase. Click the check boxes to activate or deactivate phases.

At the moment, only the "Front Load Rayleigh" staffing shape is used in the calculation. Front Load Rayleigh builds to a peak at about 40% of the phase schedule, then tapers down.

### **6.10.1.4 Optional constraints (4)**

Click the check box to activate this section of the solution assumptions. You can enter a numerical value in months to set as an optional constraint. Note that at the moment WebEst only checks if such a solution is possible but does not display it in the report.

## 6.10.2 Use Case Granularity tab



**IBM WebEstimation** Logout

**Estimates**

- New Estimate
- Estimate 2
  - solution 1
- Estimate 3

**Solution**

Save Clone Delete Generate Report

Solution Assumptions **Use Case Granularity** Sizing

1 Granularity: Medium Take Suggested Granularity

To select, please click on the appropriate text.  
You have to select one text in each row.

Essential	Medium	Decomposed
No use case's basic flows complete a major interaction or transaction, but instead describe functions such as Search for a Client.	Some use case's basic flows complete a major interaction or transaction with the system; most interactions are broken up over more than one use case.	All use case's basic flows complete a major interaction or transaction with the system.
Use cases are completely locked to specific architectural or system components.	Use case occasionally span system or architectural components.	Use cases are not associated with system or architectural components.
Use cases are tied to specific concrete users, not abstract actors.	Actors in the use case model are mostly generalized, but some concrete users may remain.	Actors in the use case model have been well generalized.
Use cases are tied to specific screens or users functions, and contain specific UI design statements.	Use cases assume specific user interface paradigms or implementations.	Use cases are completely independent of user interface implementations.
More than half of the use cases are extensions or inclusions.	20-50% of the use case model are extensions or inclusions.	Use of extends and includes statements is 20% or less of the use case model.
Use cases usually contain 0-2 alternate flows.	Use cases contain few alternate flows.	Use cases contain many alternate flows.
Each element of CRUD is dealt with in a separate use case.	CRUD functionality is the totality of an use case, and sometimes two use cases.	CRUD functionality is a portion of an use case.
Scenarios almost always have to invoke several use cases to complete a useful example.	Use cases represent few scenarios or multiple use cases must be invoked to make a single scenario.	Use cases represent many concrete examples of interaction, e.g. scenarios.
Use cases are useful for unit testing.	Use cases are useful for system and unit testing.	Use cases are useful for usability and system testing.

Figure 11: Use case granularity tab

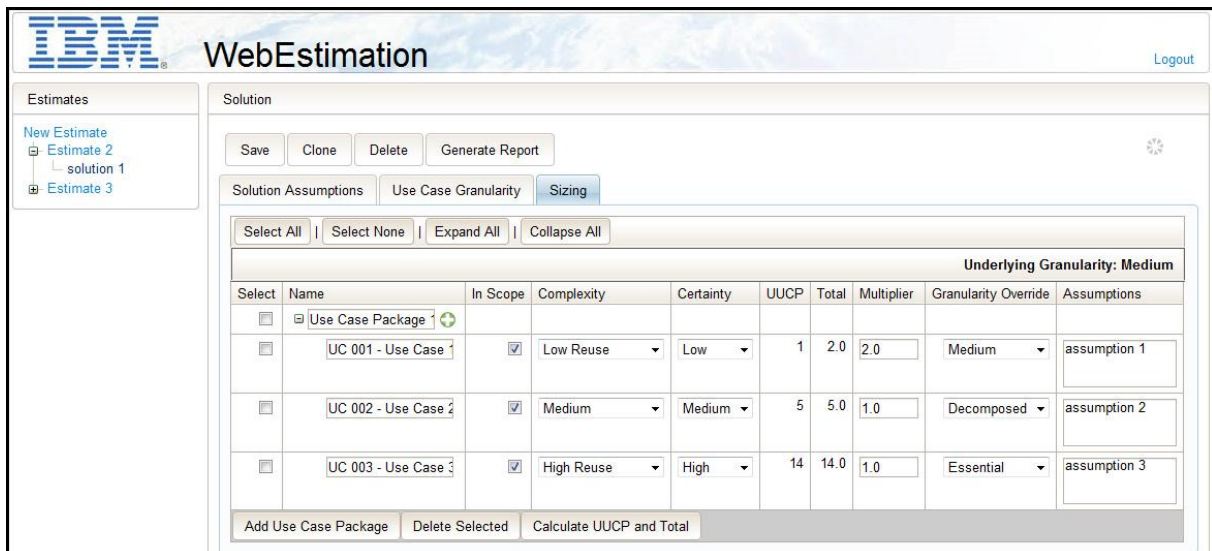
With the help of the use case granularity sheet you can set the underlying granularity for your specific solution to be used in the sizing tab. The three levels of granularity are "essential", "medium" and "decomposed".

There are two different ways to set the granularity level. Either you can pick a granularity from the **drop-down box on top of the page (1)**, or answer a set of **questions on the table below to get a recommendation (2)**.

If you want to set the granularity manually, just choose it from the drop-down box. If you want to get a recommendation, click that description in each row of the table that best describes the properties of your solution. In each row you have to select exactly one phrase. After you have selected one phrase in each row, click the "Take Suggested Granularity" button to adopt the suggested granularity to the selection box.

### 6.10.3 Sizing tab

Sizing is useful for breaking a system down into components. The individual components are then used to calculate the full system size. On this page you can define use case packages, each one containing a number of use cases with specific complexities, certainties etc.



IBM WebEstimation

Logout

Estimates

New Estimate

Estimate 2

solution 1

Estimate 3

Solution

Save Clone Delete Generate Report

Solution Assumptions Use Case Granularity Sizing

Select All Select None Expand All Collapse All

Underlying Granularity: Medium

Select	Name	In Scope	Complexity	Certainty	UUCP	Total	Multiplier	Granularity Override	Assumptions
<input type="checkbox"/>	Use Case Package 1	<input checked="" type="checkbox"/>	Low Reuse	Low	1	2.0	2.0	Medium	assumption 1
<input type="checkbox"/>	UC 001 - Use Case 1	<input checked="" type="checkbox"/>	Medium	Medium	5	5.0	1.0	Decomposed	assumption 2
<input type="checkbox"/>	UC 002 - Use Case 2	<input checked="" type="checkbox"/>	High Reuse	High	14	14.0	1.0	Essential	assumption 3
<input type="checkbox"/>	UC 003 - Use Case 3	<input checked="" type="checkbox"/>							

Add Use Case Package Delete Selected Calculate UUCP and Total

Figure 12: Sizing

Above of the table you will find buttons letting you select or unselect all check boxes and expand or collapse all trees for better navigation. Also on top of the table on the right side you will find the "Underlying Use Case Granularity", which was defined using the "Use Case Granularity" tab.

Below the table you will find the "Add Use Case Package" button, which adds new use case packages as rows, the "Delete" button, which deletes selected lines and the "Calculate UUCP and Total" button, which recalculates the values of the "total" and "UUCP" columns after you have made changes to the "multiplier" column.

Each use case takes up one line of the table and is part of exactly one use case package. You can add either one or more new use cases by clicking the green plus icon next to the corresponding use case package. Each use case consists of following columns.

#### Name

You can enter an **individual name** for each use case in the name field. Please note that use case packages have only a name field.

#### In Scope

By clicking this check box you can define if this use case **is in scope or not**. Use cases out of scope will not be counted.

**Complexity**

Defines the **complexity level** of the use case. There are eight levels available.

**Certainty**

Here you can define the **level of the certainty** for this use case. A certainty level of medium means that the estimator is about 80% sure that the estimate is right.

**UUCP**

Stands for "Unadjusted Use Case Points". This is the **result** of the calculation and cannot be edited manually.

**Total**

Multiplying the UUCP with the multiplier results in **the total UUCP value**. This field is a result of the calculation and cannot be edited manually.

**Multiplier**

The **multiplier which UUCP are multiplied with** to get the amount of total UUCP. This can be used as a weighing factor.

**Granularity Override**

The default granularity for this sizing sheet was defined on the "Use Case Granularity" tab and is used as a default value for all use cases. If you want to **change the granularity for single use cases**, you can set it using the drop-down box.

**Assumptions**

The Assumptions field is a text field which allows you to **enter notes or comments** for each use case, so you (or other users) can follow why certain decisions regarding this use case have been made.

**6.11 Saving a solution**

If you want to save a solution, click the "Save" button from the options bar above the solution tabs. There will be a confirmation on the "Message Box" that the solution has successfully been saved.

**6.12 Deleting a solution**

If you want to delete a solution, click the "Delete" button from the options bar above the solution tabs. You will have to confirm this choice by clicking yes on a pop-up window.

**6.13 Cloning a solution**

If you want to clone a solution, click the "Clone" button from the options bar above the estimate tabs. This makes a copy of the current solution. After clicking this, you are now automatically viewing the newly created copy. Please note that the copy has not been automatically saved. You still have to change the solution name on the solution assumptions tab and use the save button to save the copy.

## 6.14 Generating a report

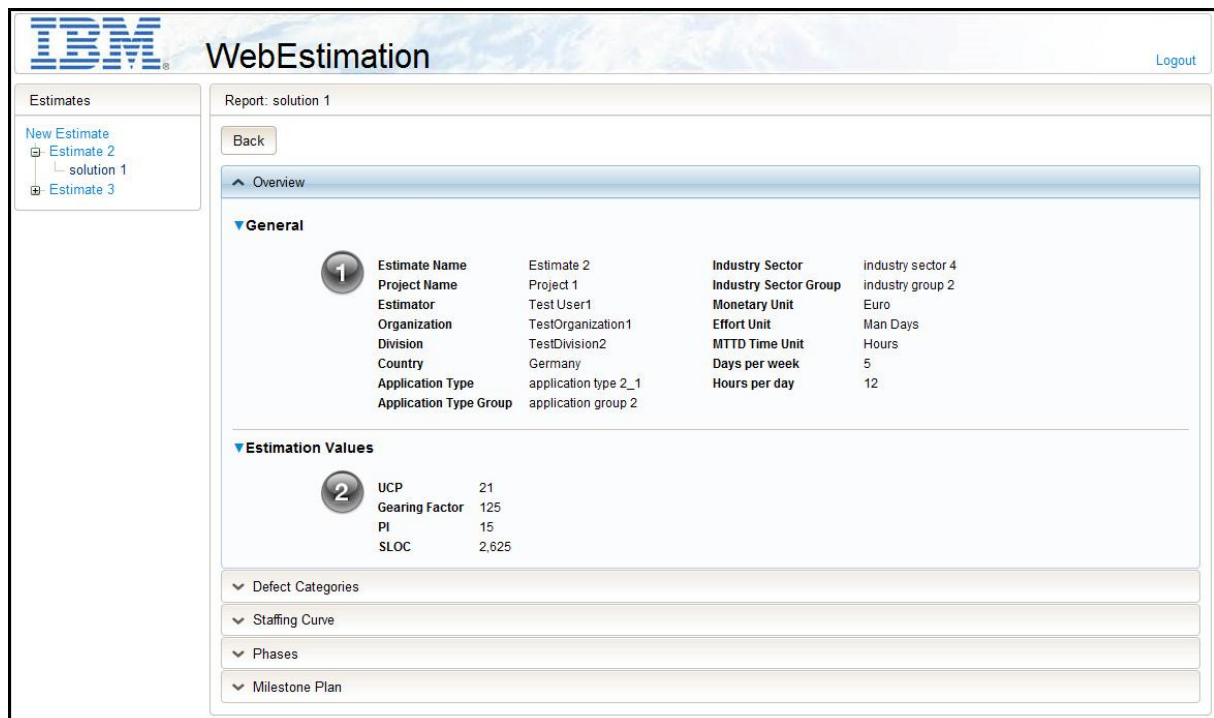
After setting up all preferences in the solution, you have to save it. After successfully saving the solution you can generate a report by using the "Generate Report" button on the options toolbar above the tabs. A report using data from the current solution is created. You will immediately be taken to the report screen. A report is divided into five sections: "Overview", "Defect Categories", "Staffing Curve", "Phases" and "Milestone Plan".

Click the horizontal panel bars to expand or collapse each section of the report. When you first view the report, the overview section will be expanded by default. Use the "Back" button at the top to go back to your solution.

### 6.14.1 Overview

Clicking on the overview tab will expand the overview.

The overview is divided into two parts, "General" and "estimation values".



The screenshot displays the WebEstimation report interface. On the left, a sidebar shows a tree view under 'Estimates' with 'New Estimate', 'Estimate 2', 'solution 1', and 'Estimate 3'. The main content area is titled 'Report: solution 1' and includes a 'Back' button. The 'Overview' section is expanded, showing two sub-sections: 'General' and 'Estimation Values'.

**General**

Estimate Name	Estimate 2	Industry Sector	industry sector 4
Project Name	Project 1	Industry Sector Group	industry group 2
Estimator	Test User1	Monetary Unit	Euro
Organization	TestOrganization1	Effort Unit	Man Days
Division	TestDivision2	MTTD Time Unit	Hours
Country	Germany	Days per week	5
Application Type	application type 2_1	Hours per day	12
Application Type Group	application group 2		

**Estimation Values**

UCP	21
Gearing Factor	125
PI	15
SLOC	2,625

Below the 'Estimation Values' section, there are five collapsed sections: 'Defect Categories', 'Staffing Curve', 'Phases', and 'Milestone Plan'.

Figure 13: Overview

#### 6.14.1.1 General (1)

Here you will find the **general description of the project** including all the information you have defined using the estimate screen.

#### 6.14.1.2 Estimation Values

This section contains **important estimation data** like the use case points, the gearing factor you provided, PI or PP and SLOC (single lines of code). This helps you to get a quick overview over the project.

### 6.14.2 Defect categories

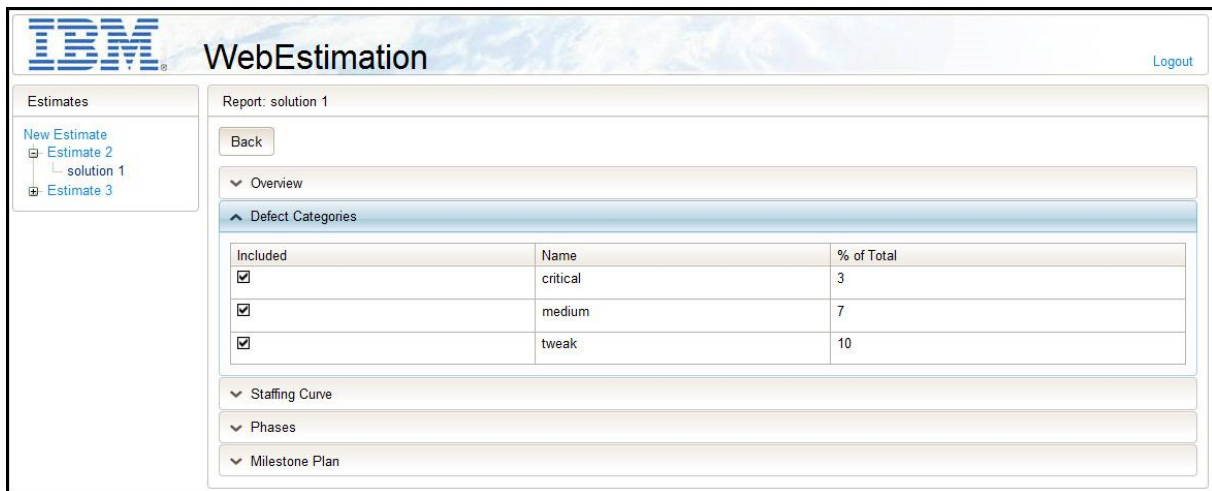


Figure 14: Defect categories

Shows the **names** and **percentages** of all defect categories you have defined on the reliability tab of the estimate screen as well as if they are included or not.

### 6.14.3 Staffing curve

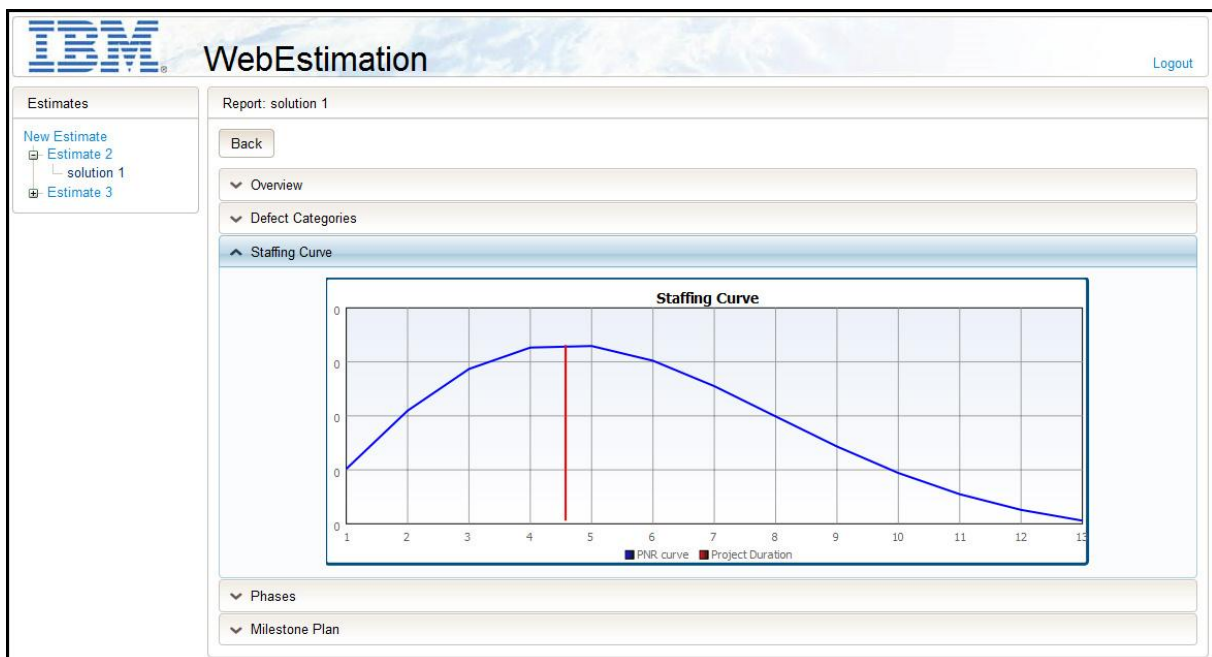


Figure 15: Staffing curve

The staffing curve is a **graphical presentation of the data you have provided** for this solution. The x-axis shows the project duration in months while the y-axis shows the effort. The red line represents the point in time when development is finished and maintenance starts. Please refer to the research paper for additional information regarding the staffing curve.



### 6.14.4 Phases

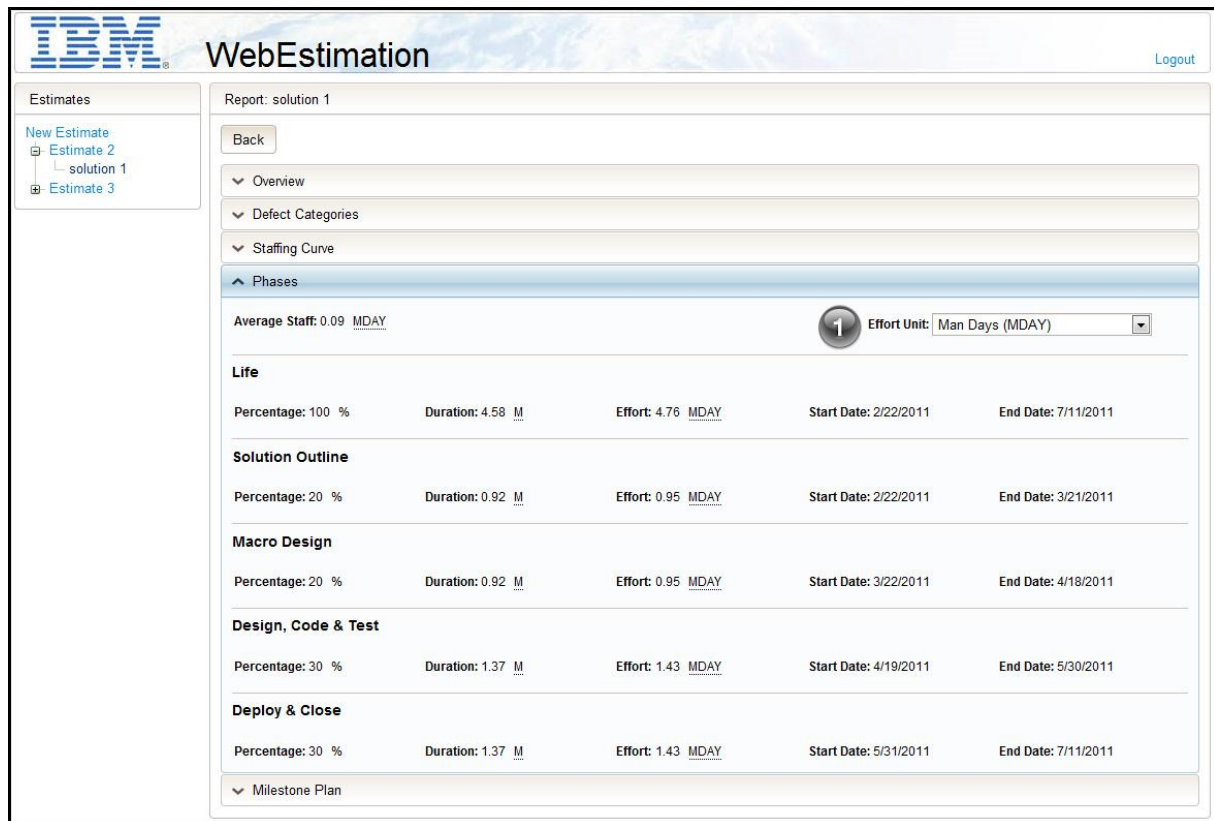


Figure 16: Phases

The phases section shows you the total project life as well as all four of the defined phases. Each phase is described by its **percentage of the total project life**, its **duration**, **effort** as well as **start and end dates**.

The effort unit used is by default the unit you have chosen on the project description tab of the estimation screen, but you can change it using the **drop-down menu in the top right corner (1)**. The displayed units will change accordingly.

### 6.14.5 Milestone plan

A different representation of the phases including milestones can be found in this section. On top of the table you find buttons to expand or collapse all phases. Alternatively you can click the small plus icons left of each phase name to show the milestones occurring during that phase.

For each phase and milestone you may view the corresponding **start and end dates**, **duration** and **effort**.

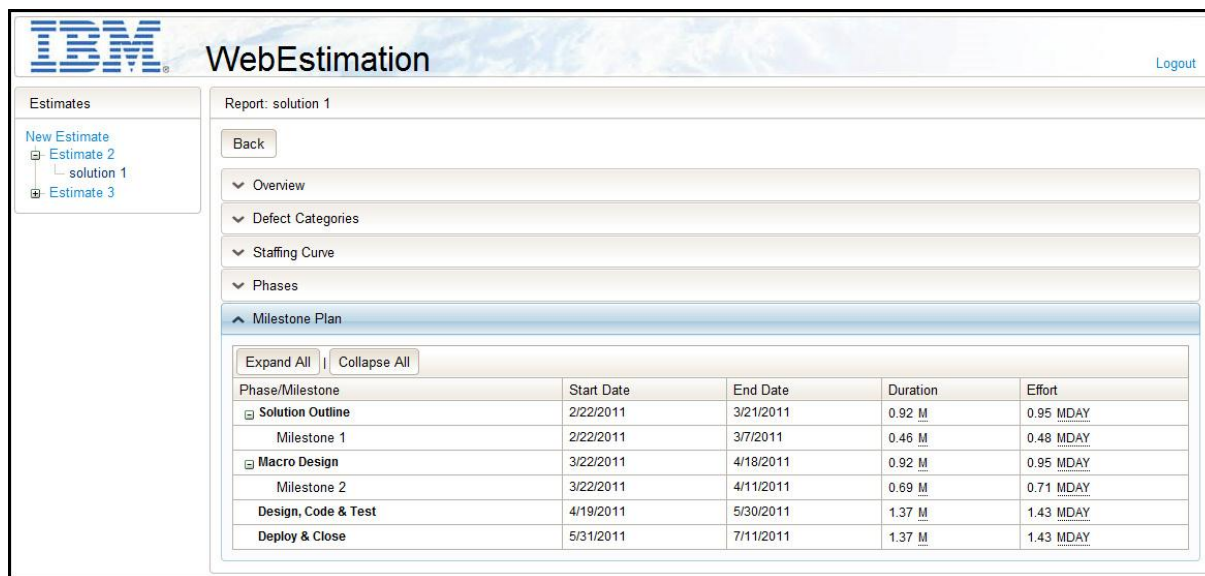


Figure 17: Milestones



## 7 Additional information

We hope that this manual helped you to understand the principles of using WebEst and successfully creating your first estimate. Due to the complex nature of the software and its installation not all of the information has been included in this user manual.

If you are in need for further information regarding the mathematical background of the calculations, please refer to the accompanying **research paper**.

For more information on server installation, logging and other useful information for administrators, please refer to the accompanying **administration guide**.