

# SCOPE 4.0 Help User Manual

---



Copyright: Total Metrics July 2011

This text is also online:

[www.totalmetrics.com](http://www.totalmetrics.com)

<http://www.totalmetrics.com/webhelp2-2/Scope.htm>

## Table of Contents

Getting Started .....	1
Start <b>SCOPE</b> .....	1
Step by Step - your First Function Point Count.....	2
Tutorial Using Sample <b>SCOPE</b> Database .....	4
Flash Tutorials .....	8
<b>SCOPE</b> License Registration.....	10
<b>SCOPE</b> Support .....	11
Overview <b>SCOPE</b> Features .....	13
What is <b>SCOPE</b> .....	13
Why Hierarchies? .....	14
Multi-Lingual .....	15
Multi-User - <b>SCOPE</b> Corporate.....	15
Types of Hierarchy Trees .....	16
Using <b>SCOPE</b> to Support FPA .....	19
<b>SCOPE</b> Training .....	20
Mapping <b>SCOPE</b> terms to IFPUG and IT Terminology.....	20
<b>SCOPE</b> Relationships - Applications Releases Projects Counts.....	22
Managing your Function Point Counts .....	23
Start a new Measurement.....	23
Performing a Function Point Count.....	24
Setting up the Count .....	24
Types of Trees in the <b>SCOPE</b> Model .....	24
Basic Steps of an FPA Count.....	25

Recording and Counting Transactions .....	27
Quick Counting.....	28
Recording and Counting Files .....	29
Quick Counting - Template Function Groups .....	32
Function Tree - Insert Template Function Group .....	33
Data Tree - Insert Template Function Group .....	34
Documenting your Count .....	36
Detailed Analysis and Tracking using Notes and Attributes .....	36
How are Attributes different to Notes?.....	38
Linking Trees.....	40
Recording the Relationships between Functions and Data .....	44
The Notes Tree .....	47
Viewing Linked Processes, Data, Notes and Attributes.....	48
Finalising your Count .....	49
Set up a New Application .....	49
Excluding Counts from Baseline Update .....	50
Updating Baseline Counts.....	51
Setting up the Model to Count.....	52
The Data Tree .....	52
The Function Tree .....	54
Managing Applications Projects and Counts .....	57
Applications.....	57
Applications - Overview .....	57
Set up a New Application .....	58
Releases .....	58

Release Status.....	58
Releases - Overview .....	60
Set up a New Release.....	62
Count Sessions.....	63
Count Sessions - Overview .....	63
Set up a New Count Session .....	66
Projects.....	68
Link Projects to Count Sessions.....	68
Project Metrics for ISBSG .....	69
Projects - Overview .....	69
Set up a New Project.....	71
Value Adjustment Factor.....	72
Assessing the Value Adjustment Factor.....	72
Value Adjustment Factor - Overview .....	74
Managing the <b>SCOPE</b> Database.....	75
Export to SPR KnowledgePLAN® (CSV) .....	75
Export XML to a Metrics Repository .....	76
Import / Export Count Sessions.....	76
Import / Export Applications and Releases.....	79
Import / Export Trees and Parts of Trees .....	80
Import Counts from MS Excel®.....	81
Import from FPW™ All Versions .....	85
Export Single Snapshot of Count, Project, Release or Application .....	86
Auto Save Backup and Recovery.....	88
Audit Trail of History of Changes to Counts .....	89

Multi-User - SCOPE Corporate .....	90
SCOPE Reporting .....	93
SCOPE Report List .....	93
Types of Functional Size Reporting.....	99
1. Release Baseline Functional Size.....	100
2. Release Impacted Functional Size.....	100
3. Release Reworked Functional Size .....	101
4. Count Session Impacted Functional Size .....	101
Reporting the Functional Size in Function Points.....	102
Flags and Filters.....	104
Previewing Printing and Exporting Reports .....	107
Exporting SCOPE reports into MS Office® WORD and EXCEL documents.....	109
Convert SCOPE Reports to Text.....	110
Embedding SCOPE Reports into a Client Report .....	111
Merging a SCOPE PDF file into another PDF File .....	111
Merging Annotating and Searching SCOPE Reports .....	112
Sending SCOPE Reports via Email .....	112
SCOPE Viewer .....	<b>Error! Bookmark not defined.</b>
Screens and Layout and Navigation .....	115
Function Point Counting Screen Layout.....	115
Keyboard Shortcuts.....	118
Change the Count Session in the Display.....	120
Building Trees .....	121
Expanding and Collapsing Trees .....	122
Moving and Copying Nodes .....	122

Using the Mouse to Copy and Move .....	124
Search and Find and Replace .....	124
Sorting Tree Nodes .....	125
Status Line .....	126
Toolbars .....	127
Compact Database.....	128
Basic <b>SCOPE</b> Commands .....	128
Exit .....	128
New .....	128
Open .....	128
Import from FPW.....	128
Close / Close Current.....	129
Save/SaveAs.....	129
Compact Database .....	129
<b>SCOPE</b> Online HELP .....	129
Starting Up <b>SCOPE</b> .....	129
Setup Template Function Groups .....	130
Reversing the Order of the Verb and Nouns in Template Function Groups.....	132
Importing and Exporting Template Function Groups.....	132
Changing Language Screen Display and Reports .....	133
Features in Versions of <b>SCOPE</b> .....	135
Overview of New <b>SCOPE</b> 4.0 Features .....	135
1. <b>SCOPE</b> Metrics™ .....	135
2. IT Performance Reporting .....	135
3. Web Enabled Business Analytics Portal for Industry Benchmarking.....	136

4. Apply ‘numerical quantifiers’ to <b>SCOPE</b> Function Point Values .....	136
5. New User Interface.....	137
6. Other Features .....	137
Overview of New <b>SCOPE</b> 3.0 Features .....	137
Overview of New <b>SCOPE</b> 2.2 Features .....	141
Overview of New <b>SCOPE</b> 2.0 Features .....	142
Overview of New <b>SCOPE</b> 2.1 Features .....	145
Overview of New <b>SCOPE</b> 1.9 Features .....	147
Moving from FPW to <b>SCOPE</b> .....	151
Background of Comparison of <b>SCOPE</b> and FPW .....	151
Summary Gap Analysis - <b>SCOPE</b> 4.0 and FPW7 .....	152
Detailed Comparison <b>SCOPE</b> 4.0 and FPW7 .....	155
1 <b>SCOPE</b> maintains the Integrity of the Count Repository.....	155
2 <b>SCOPE</b> maintains ISBSG Compliant Metrics Repository for online Benchmarking and Trends Reporting.....	158
3 <b>SCOPE</b> maintains the Security and Confidentiality of the Data .....	158
4 <b>SCOPE</b> reduces risk of database corruption.....	159
5 <b>SCOPE</b> provides the evidence for Project Managers to charge for Rework .	159
6 <b>SCOPE</b> makes it easy to upgrade from other tools.....	160
7 <b>SCOPE</b> can be used by Novices .....	161
8 <b>SCOPE</b> is more cost effective when recording counts.....	161
9 <b>SCOPE</b> is more cost effective when Maintaining and Auditing Counts.....	163
10 <b>SCOPE</b> facilitates more Accurate and Consistent Counting .....	165
11 <b>SCOPE</b> counts are more understandable by the Business Users .....	166
12 <b>SCOPE</b> makes Count Results freely accessible .....	167



Moving from FPW to <b>SCOPE</b> - Types of Counts.....	168
Moving from FPW to <b>SCOPE</b> - File Complexity .....	170
Moving from FPW to <b>SCOPE</b> - Transaction Complexity .....	172
Moving from FPW to <b>SCOPE</b> - Adding Transactions and Data.....	174
Moving from FPW to <b>SCOPE</b> - Enhancement Counts .....	176
Moving from FPW to <b>SCOPE</b> - Profiling Results using Labels.....	178
Key Advances of <b>SCOPE</b> over FPW .....	180
Advanced Ease of Use and Time Saving Data Entry .....	180
Advanced Configuration Control .....	181
Merging Databases .....	182
Tracks Rework for Enhancement and Development Projects.....	183
Detailed Recording of Data Groups .....	183
Extended Length for Names and Descriptions.....	184
Online and Print - over 50 Different Reports .....	185
Single Database File for Ease of Administration .....	185
Background and Articles on Functional Size .....	187
Introduction to Function Point Analysis.....	187
Background.....	187
Classification of Functional Components .....	188
Identification of Functional Components .....	188
Weighting of Functional Components.....	190
What is Function Point Analysis (FPA)?.....	190
What is Functional Size Measurement? .....	192
Function Point Counting Expert System.....	193
Levels of Function Point Counting .....	193

Introduction .....	193
Level 1: Detailed Linked and Flagged Count.....	194
Level 2: Detailed Linked Count .....	196
Level 3: Detailed Count .....	197
Level 4: Default Complexity Count .....	198
Level 5: Rough Count.....	200
Level 6: Size Approximation.....	201
What is FP Outline? .....	202
Metrics for Project Governance .....	205
Background.....	205
Role of <b>SCOPE</b> Manager during Project Life Cycle .....	207
The Role of the <b>SCOPE</b> Manager in Project Governance.....	215
Uses and Benefits of Sizing.....	217
Introduction .....	217
Customising Packaged Software .....	218
FPA Uses and Benefits after Software Implementation.....	221
FPA Uses and Benefits in Project Construction .....	226
Managing Project Development .....	226
References and Recommended Reading .....	232
About <b>SCOPE</b> .....	235
Installation .....	235
Machine Requirements .....	236
Intended Audience .....	236
Versions Published.....	237
Copyright Notice.....	237

Flash Tutorials.....	239
Glossary .....	241
Index .....	243

## Getting Started



### Start SCOPE









1. Select Windows START - Programs - **SCOPE** and double click on **SCOPE.exe**
2. Enter your Contact Name, and your Company or Organization Name, and the **SCOPE** Serial Number (Note: each of these fields has been supplied with your software or by your supplier) into the dialogue boxes provided.
3. Use the example **SCOPE** databases under the **SCOPE** Directory/Databases to explore the functionality provided by **SCOPE**.


**SCOPE** records the project data entered by you within a single database consistent with a Microsoft ACCESS™ format. **SCOPE** database files are stored as **.fpa** files.






If Total Metrics provides you with an updated serial number for a new version of SCOPE software then you can update it by selecting **Change Registration Details** under Help on the main menu.

## Step by Step - your First Function Point Count

To download and print these instructions [click here](#).

1. Select to <New> under <File> and enter the File Name of your new SCOPE database, e.g. *MySCOPEdatabase.fpa*.
2. From the Application List displayed select  to add a new Application and type in the Application name of your count (e.g. *Customer Information System*). Once created, highlight the Application name, expand [+] and highlight the **Work in Progress Release** branch.
3. Counts are recorded under Releases for an Application. Select to  to add a new Release of the software application and name it. e.g. *"Release 1.0 of Customer Information System"*.
4. A new  count session called "Change Request" is inserted automatically. This is where your count information will be stored. Each release can have many count sessions.
5. Highlight the Release and select  to set up a new function point count session for this Release. To change details press F2 or select . You can rename the new Count Session e.g. *"Initial Count for Project Scoping"*. Record background details about the count
6. If the Change Request for which you are doing the count belongs to a Project. Then select the Project List tab at the top of the screen. Add the new project, highlight it and select  to link the Count Session to the Project. When you select OK you see your new Count Session listed () ready for you to highlight and [Open]. NOTE: If you do only want to record the Count Size Result for Benchmark metrics then just record the size manually on the Count Details or Project Details screens.

7. Double click to open the Count Session. The Function Point Counting Screens will display and your cursor will be positioned on the  Function Tree. Create a functional breakdown of your software by first adding Functional Groups (Function Folders) using [Alt+Ins] or selecting from the Node button on the top tool menu.
8. At the lowest level Function Folder insert the Elementary Processes/Transactions you want to add by pressing [Ins] or right clicking to display insert menu. NOTE: The Function Groups, allow you to logically hierarchically group your processes, just like MS Explorer uses a directory structure to enable you to group your files.
9. After you create a functional group, use F2 or double-click to rename it from the default name of "Function Folder" (e.g. call it *Maintain Customer Details*).
10. New elementary processes are created with a 'green', right facing arrow. Double click the Process and the Details screen displays in the right hand side screen. The direction of the arrow indicates the process has defaulted to being an INPUT. If you change the Process Type to OUTPUT you will see the arrow reverse. Green indicates that it is a new process to the application. You will see the radio button in the status bar at the bottom of the screen indicate it as an Added function for Enhancement Type. If you want to record it as 'changed' for an enhancement project then you can select the 'Changed' radio button and the arrow will change to orange.
11. Use the right hand details screen to assess the Type and Complexity of each Elementary Process.
12. To count your logical data groups (Internal and External Files) select the Data tab at the top of the LHS screen. Highlight the Data Release root node and you can begin by entering a Data Folder. Data Folders allow you to 'Group' your Logical Data.
13. Insert the Logical Data Groups {Alt+Ins}. Highlight the Data Group, and in the Details screen in the opposite window, determine the Data Group Type (ILF or EIF) using [User Select] - Data Group Type, then select the complexity. Complexity defaults to Low, to select the range of RETs and DETs select Range then the appropriate position on the matrix or you can enter the number of RETs and DETS.

14. If you want to list the actual RETs and DETS right click on the Data Group and select to insert.
15. If you want to link your processes to the Data Groups they access. Select the [Function] Tree Tab on the top LHS of the screen and the Data Tab on the top RHS of the screen. Highlight the Process you want to link, then 'click' in the box next to the Data Group name. You can also create  [Notes] for your Processes and Data Groups by selecting the [Notes] tab, creating a Note under a  Note SET and linking.  Attributes (similar to Key words) can also be assigned using the  [Attribute] Tab.
16. The function point count will automatically calculate from any position in the Function tree and displays in the status bar at the bottom of the screen. The value displayed will change depending on the position of the cursor on the function tree.
17. To see the detailed report, select  Report Icon on the main menu. Expand [+] the branch that says Function Point Count Results and select the report named *Count Session Impacted Functional Size - Detail*. Select to Preview the report and it will display online.
18. The above instructions provide the basic guidelines for creating a basic Project Development Count or Enhancement count. Record your Adds, Changes and Deletes for your Change Requests using the Impact options in the status bar in a Count Session. Baseline counts can be created from Project counts by selecting the Update to Baseline button in the Applications List. **SCOPE** has many more features that allow you to profile your count and track functional creep across project life cycles. Please view the Online Tutorials and HELP within **SCOPE** to understand all the features in **SCOPE**. Also open the Example database

## Tutorial Using Sample SCOPE Database




### [Set Up New Release](#)

This Chapter assists you to open our Sample Database provided in your **SCOPE** installation software and explore the functionality of **SCOPE**.


### Select **File – Open**


Browse to the directory where the **SCOPE** example database is stored (e.g. *SCOPE EXAMPLE DATABASE VER 4.0 205.FPA*) (Note: the example database is under the directory where **SCOPE** was installed typically C:\Program Files\Total Metrics\SCOPE). To open, either ‘double-click’ or select **Open**.


The  **Application List** is displayed. Select the [+] icon to display the releases stored for the Application with the name “*AMS - View Example Counts*”.

The **Production Releases** are the Functional Size models for the Baseline Application Releases. The Gold Open Padlock Icon indicates that this is the latest release and that there are no current project counts to update this release.


The **Work in Progress Releases** stores the functional model for the original Development Project Count “*AMS ND Rel 1.0 March 2009*” and other later Enhancement projects e.g. “*AMS Enh Rel 1.1 June 2009*”.


Expand the directories under the Release **AMS ND Rel 1.0 March 2009** by pressing the [+] next to the name, and display the three  Count Sessions for the three Change Requests that were recorded during the project. Select “*AMS #001- Daily Rate*” and double-click to open the count or select the Open Icon from the menu at the top.


The **Function** Tree which holds all the elementary processes displays. To explode the tree use the Icons on the Tools Bar at the top of the screen or select from the top menu Trees – Expand Level 4 tool button. 

Move the mouse down and highlight the first Process “*Create Assignment*”. Either double click the process or select  the **Detail** Tab along the top of the Right Hand Screen. The functional size details of the “*Create Assignment*” process displays on the right hand **Details** Screen.







The **Details** screen also displays a history of the impacts to the Process in the Session Impact dialogue box. We see that the *Create Assignment* Process was added new in the first Count Session for the Development Project and subsequently this Count Session “*AMS #001- Daily Rate*” Impact Count changed the process in response to the users change request. This is also shown to us in the Function screen where the icon for this process is coloured orange. 

The Count Session that is currently selected is displayed just above the status bar under the bottom LH screen and should be displaying “session “*AMS #001- Daily Rate*”. With the “*Create Assignment*” Process highlighted select the Enhancement Type ‘Delete’ radio button at the bottom of the screen. You will see the colour of the arrow icon next to the Process change from Orange to red , to show it is deleted. You would select this option when recording a Change Request to remove existing functionality from an application. It is marked as 'logically removed' and will be physically deleted when the release updates the baseline when the Release is completed.

To display the Data Groups accessed by the Process *Create Assignment* select the **Data** Tab along the top of the Right Hand Screen. Expand the Data Tree. The red  in the check box indicates that these Data Groups are accessed by *Create Assignment*. The Pen Icon next to Assignment indicates that this is an Internal Logical File updated by the Processes in AMS. In comparison, the Notebook Icon next to CLIENT DETAILS indicates that this is an External Interface file and only ‘read’ by the AMS Processes.



Highlight the Data Group *CLIENT DETAILS* and Right click the mouse to change the **Access Type** for the Data Group from **Read Only** to **Update**. Notice the change of the Icon. The orange colour of the *ASSIGNMENT* Pen Icon is showing that this Data Group was recorded to be ‘changed’ within this Count Session.

Highlight the *ASSIGNMENT* Data Group and double click or select the **Detail** Tab along the top of the Left Hand Screen to show the Details screen for the *ASSIGNMENT* Data group.





 Select the **Function** Tab along the top of the Left Hand Screen to show the Function tree again. Select the  **Notes** Tab along the top of the Right Hand Screen to show the Notes linked to the Create Assignment Process. Place your cursor on the top node and use the Trees- Expand Level 4 tool button  to expand the Notes trees. The red  in the check box indicates that this **Note** is accessed by Create Assignment.



Expand the Specification Cross Reference Node and select the first linked Note *Section 1.2 - Create Assignment* and double click to display the **Detail** tab for this note on the LH side to show the text describing the functional requirements for this Process.

Select the **Function** Tab along the top of the Left Hand Screen to highlight the next note linked to Create Assignment. This is under the List of Errors identified in Acceptance Testing. The error identified for this Process is. *“Data entry box for Assignment name is too small - please increase to allow 100 characters”*.

‘Flip’ the views by using the Flip Icon  (HINT: Looks like a double headed arrow or anchor) on the top menu. The **Note** is now on the LH side of the screen. Select the **Attribute** Tab on Right Hand Screen to show the  **Attribute Tree**. Explode the **Category** “Defect Severity Levels” to display the severity which has been attributed to the highlighted error.

The Attributes can also be linked to any other Tree. Select the **Function** Tab along the top of the Left Hand Screen then explode the Priority for Release 1 Category. You can see the function Create Assignment has been assigned a ‘mandatory’ priority.

To see what other functions have been determined as being Mandatory to Release 1, select the Filter Icon on the top menu. Highlight the priority “mandatory” then click the  option (OR) along the top menu. Immediately all the Processes identified as being mandatory are highlighted with red Flags. If you want to know which ones are mandatory and required then click on the  option again while required is highlighted. More Processes are Flagged . To report the Functional Size of just the ‘Flagged’ items, select the top node of the Function tree Function **AMS ND Rel 1.0 March 2009** and then Report icon  and expand [+] "Function point count result" and select report " Baseline Release Functional Size". Tick the check box for ‘Select Flagged Nodes” and then select to Preview the report. This filters the report to display only the ‘Flagged nodes’ for the Mandatory and Required Processes.

To toggle the Flags on and off use the  option to clear the Filter selection and then  option to reset. To clear the Flags select the clear Flags Icon on the top menu.

All of the four types of Trees (Function, Data, Attributes and Notes) can be displayed on this screen. Each tree type is identified by the Tab at the top of the screen and can link to any other Tree type displayed in the opposite side. To display a particular combination of trees just select the appropriate Tabs.

Continue experimenting with the different ways you can Filter the data, combining Filters across trees and within branches. Each will give you a different profiled view of your Processes and Data.

If you want to create a new Release to try out your new skills, then return to the [Software Applications List](#) (See under File on the main menu). Follow the instructions for creating a new Release, (see [Create a new Release](#) ).

## Flash Tutorials

Most of the major functions and features within **SCOPE** are fully explained via a Flash Tutorial on the topic. Please go to

<http://www.totalmetrics.com/function-point-software/SCOPE-project-sizing-software/flash-tutorials>

For Tutorials on how to do the following functions:

- Set Up a New Application
- Set Up a New Release
- Set Up a New Baseline Count
- Set Up an Enhancement Count
- Set Up Multiple Counts on the Same Release
- Import Export Release Counts
- Building Hierarchical Trees
- Counting An Elementary Process
- Counting a Logical File
- Import Count Sessions from other Databases into a Release
- Import a Count from EXCEL
- Import and Export Trees or Parts of Trees
- Documenting Your Count - Notes
- Enhancement Count - Existing Baseline
- Excel Benchmarking Metrics Charts
- Enhancement Count - No Baseline Data Groups
- Enhancement Count - No Baseline Transactions
- Exporting data to ISBSG
- Linking Counts to Projects
- Linking Data to Transactions
- Metrics Reporting - Tabular Data
- NESMA Enhancement Counts

- Quick Early Counting - Template Groups
- Recording Application M and S Metrics
- Recording Project Development and Enhancement Metrics
- Recording Project Metrics
- Reporting Counts
- Set Up New Count - Development Count
- Set Up Project
- Setting up Numerical Attributes
- Setting up User Defaults for Function Point Counting
- Snapshot Applications Releases and Counts
- Update to Baseline
- User Options - Set Defaults for **SCOPE**
- Using the Count for Earned Value Reporting
- Using the Count for Project Estimation
- What is a Benchmark Period
- Assigning Project Metrics to Benchmark Periods
- Import Export Releases

## SCOPE License Registration

Once **SCOPE** is [installed](#), you will be prompted to register your license details. When you purchase **SCOPE** or are supplied with an Evaluation copy of **SCOPE**, Total Metrics will provide you with your License Registration details. These include three fields:

**Organisation Name** - as supplied by you on your purchase

**Contact Name** - name of **SCOPE** user

**Serial Number** - encrypted number that is validated against the Organisation Name and Contact Name

When provided with these three fields you must enter them into the **SCOPE** License Registration Window when prompted. The three fields need to be entered **EXACTLY** as sent (we suggest using copy & paste from the email message from Total Metrics for simplicity and accuracy)

E.g.:

Contact Name:           **Thomas Vajda**  
Organisation Name:   **Medlit**  
Serial Number:         **7o9& 4g9\* em9& fx9\***

When a new Release of **SCOPE** is issued you will be sent an updated Serial Number. You may also be issued with a new Serial Number if your type of **SCOPE** license changes. For example: from an Evaluation Version to a full production version or from **SCOPE Professional** to **SCOPE Corporate**. To update the Registration Details of an installed version of **SCOPE**, select Help / Change License Details from under the main menu.

## SCOPE Support

Support for **SCOPE Project Sizing Software**™ (**SCOPE**) is available free:

- for the first year after purchase
- for any **SCOPE** users with a current maintenance agreement

However experience has shown us that our users require very little support since **SCOPE** is very easy to learn and use. Please read all the hints in the HELP text and do the **SCOPE** tutorials to fully understand the full flexibility of the product.

We welcome feedback from **SCOPE** users and many of the new features and functions we have implemented in **SCOPE** are the direct result of Users having a need and letting us know. If you think of a feature that would help you in recording, managing, validating, reporting your counts, please let us know and we will review the potential for other users also needing it and prioritise it accordingly.

To register any suggestions or give us feedback about **SCOPE** contact us using our online Feedback form:

© Copyright Total Metrics Pty Ltd  
2003 – 2011

<http://www.totalmetrics.com/function-points-forms/feedback-form>

# Overview SCOPE Features

## What is SCOPE

**SCOPE** is a software Project Management , Software Metrics Repository and Functional Size Measurement tool that supports the IFPUG 4.3 [Function Point Analysis](#) (FPA) methodology and ISBSG Metrics recording and Benchmarking. It is a powerful combination of easy to use features and comprehensive functionality.

**SCOPE** makes it easy to measure the Functional Size of software applications and software projects.

**SCOPE** enables logical groups of Functions and Processes to be visually mapped out as nodes on a hierarchical tree, providing a detailed view of a project's functionality and the relative size of each functional area. This capability to expand or collapse functional branches allows you to see as little or as much detail on one screen as you wish.

- You can find out the size of any functional area within an application by clicking on a branch node and checking the Function Point count in the status bar.
- You can quickly and easily gain an overview of an application's functionality by expanding or collapsing the relevant part of the tree.

If you need to measure the Functional Size of an existing software application or project, then **SCOPE** allows you to simply record the type and complexity of Processes and Data Groups and calculate the functional size. Simple FPA counts like these may be all that is required, but **SCOPE** is designed to do much more towards providing an audit trail to monitor and control your project's progress and the growth of an application over multiple releases during its lifetime.

By using **SCOPE** in the initial stages of project development, you can model your planned software's functionality in higher level Functions, and easily evaluate the impact of a particular decision to include or exclude functions. As a project evolves, **SCOPE** supports you as you add detail and decompose the Functions down into



Processes. Additionally, **SCOPE** supports complex development cycles with multiple change requests within the same release it acts as a software asset register and by keeping a history of multiple software versions in production. **SCOPE** enables you to keep a 'functional' history of each application by providing a documented audit trail of changes to the software throughout its life. Traceability and being able to quantify changes is particularly important for contract negotiations of pricing variations in outsourced development.

During a software development project, uninformed decisions can lead to inconsistent and incorrect resource allocation that can ultimately jeopardize the project's outcome. For example, a project's success in terms of remaining within budget and time constraints can sometimes mean sacrificing functionality. These trade-off decisions are made more difficult without some way to measure and compare functionality across different parts of the application being developed. **SCOPE** allows you to easily do this "what-if" analysis, and thus make informed management decisions on the impact of **SCOPE** changes; plus you will have a record that enables those decisions to be justified, if required later.

## Why Hierarchies?

**SCOPE** uses Tree Hierarchies as a means of modelling the functional requirements of the software. Hierarchies are a powerful organisational technique to break large problems down into manageable tasks. The human race itself is a hierarchy; we have parents, grandparents, great-grandparents, and so on, in an extended hierarchy that graphically describes our inter-relationships and forms our family trees.

Whenever we face the need to introduce a system of classification to describe relationships, it is the hierarchy that we naturally choose. Phylum, class, order, etc. for plants and animals, Dewey decimal notation for library books, domain names on the Internet, directory classifications in Microsoft® Windows Explorer; these are all examples of hierarchical arrangements.

Hierarchies are powerful precisely because they are natural to us. They enable us to get around our built-in limitations and sort complex information in a structured and comprehensible manner.

**SCOPE** supports this natural way of thinking by visually arranging information in a way that makes sense. It reduces hundreds of pages of functional specifications to a graphical model that can be used to quickly communicate and negotiate software content and project **SCOPE** with the business user.

See also [Types of Hierarchy Trees](#) in **SCOPE**

## Multi-Lingual

**SCOPE** allows you to dynamically select your own language for its screen displays, messages; menus and reports (see - Main Menu [View] [User Options])

Languages include:

- English
- Portuguese
- Dutch
- German
- Italian
- Spanish
- Japanese
- Chinese
- Korean
- French

See [Changing Language Screen Display and Reports](#)

## Multi-User - SCOPE Corporate

**SCOPE Corporate** License Type is designed for large organisations that require concurrent access by multiple users to a **SCOPE** database. It enables storage of all

your function point counts in a central repository that can be updated and /or viewed simultaneously by any number of **SCOPE Corporate** and **SCOPE Viewer** users.


To avoid the issues of two users working on the same hierarchy at the same time and moving and changing components, **SCOPE** will lock a Release once it has been opened. I.e. As soon as a User opens a Count for a Release, that Release is locked by the User and no other Users will have access to it until the first User selects to exit the count or opens another Release in the same database. **SCOPE** displays the name of the User currently working on a count. Other Users can open and access any other Release in the Database that is not specifically Locked.

•**SCOPE Professional** – has all the features of **SCOPE Corporate** but operates in the same mode as previous versions of **SCOPE** and is ideal for organisations that prefer to store their **SCOPE** counts locally and only need single user access at any one time to the database.


Users can upgrade current licenses from **SCOPE Professional** to **SCOPE Corporate** to take advantage of having global accessibility to your counts.





## Types of Hierarchy Trees

**SCOPE** has four types of **Hierarchy Trees**: two of which model the functionality to be delivered by the software and must be created in order to measure functional size: these two are:


**[Function Hierarchy Tree](#)** -  - models what the software does. It has two levels of nodes.



1. **Functions**: record the functional areas into which the software's functionality can be decomposed.
2. **Processes**: record the lowest elementary work task that the software is required to complete. This is the node level that is assessed for its function point weighting.


**Data Hierarchy Tree** -  – models the data that the software is required to store and access. It has four levels of nodes.



1. **Data Group Folders:** -  - allows the cataloguing of Data Groups into folders for documentation purposes. This level of grouping corresponds to the Function Groups on the Function Tree; it is just used for modelling purposes and not considered for the function point count.
2. **Data Groups:** -  - record the logical groupings of data at the level of an 'entity' or 'object'. This is the node level which is assessed for its function point weighting.
3. **Record Element Types (RETs)** -  - record the sub-groupings of the fields to be stored within the Data Group.
4. **Data Element Types (DETs):** -  - record the fields to be stored within the data group. If there are no sub-groupings of fields (i.e. no RETs) then they may be recorded directly under Data Groups, if they belong to a sub-grouping then they are recorded under their related RET.

The other two Hierarchy Trees do not contribute to functional size, instead they enable the functionality within the Function Hierarchy and Data Hierarchy to be annotated and dynamically grouped for analysis. These other two trees are:

**Notes Hierarchy Tree** -  - models related textual information that needs to be cross-referenced to the software's functional and data nodes or attribute nodes. Notes act in a similar way to a 'footnote' or 'comment' and provide annotation to other tree nodes. The Notes Hierarchy has two levels of nodes.

1. **Note Sets:** -  - record the names of the groupings of textual information such as 'Specifications Documents'.
2. **Notes:** -  - record the textual information to be cross-referenced, e.g. under the Note Set 'Specification Documents' each Note would map functions and data groups to specific sections within the functional specification document.

**Attribute Hierarchy Tree** -  – enables categories to be set up that can be used to selectively identify, characterise and group either software Functions, Data Groups or Notes. It has two levels of nodes.

1. **Categories:** -  - record the names of the groups of characteristics, e.g. “Implementation Priority Ratings”, “Specification Quality”.
2. **Attributes:** -  - record the different types of characteristics you may want to assign to your software Functions, Data Groups or Notes. Attributes can be of two types: Standard attributes and Numerical attributes. Numerical Attributes enable you to quantify your functional model e.g. selectively apply productivity rates so you can estimate hours to develop, apply NESMA impact factors, do earned value reporting etc.

E.g. if at the group level the Category was “Implementation Priority Ratings” then the Attributes could be:

- “Mandatory – High Priority”
- “Required – Medium Priority” and
- “Optional – Low Priority”.

E.g. the ‘Specification Quality’ Category could have Attributes such as:

- “Complete”
- “Incomplete” or
- “Not Specified”

Each software Process could be selectively characterised for priority and Specification Quality and then the relative size of each attribute grouping or the combined attribute grouping determined using the Filter Mode function. E.g. “Mandatory – High Priority” functionality can be selected and analysed separately and found to be 100 function points of a total of 150 function points. If the Attribute “Complete” is also included in the Filter then the selection is reduced to be only 75 function points. That is, of the Mandatory – High Priority functions only 75 functions points of the total 100 functions points have a “Complete” specification.

**SCOPE** enables more than one attribute within any Category to be Linked to any single node on another tree. E.g. a Process may exhibit the characteristics of more than one Attribute in the same Category and Linked to them all. For example if you


had a category called *Country* Installed and it had attributes called *USA, Europe, Australia, Japan*. If a process was planned to be implemented in all countries then it could be linked to all attributes. A process can be linked to attributes on one or many categories. For example this allows you to report the Functional Size of the 'Mandatory- High Priority' functions and data that had been 'Completely' specified and installed in Australia and Japan.

[How are Attributes different to Notes?](#)

All nodes in any of the four **SCOPE Hierarchy Trees** can be **Linked** to another node in any of the other three trees, thus providing a multi-dimensional documented model of your software.

## Using SCOPE to Support FPA

Using **SCOPE** to support the [FPA methodology](#) makes it easy to make changes as a project's requirements inevitably evolve, and to analyse an application in many different ways. **SCOPE** enables you to track an application's functions from its initial development release, into production and through all subsequent releases.

Once the application is delivered, **SCOPE** records it as a [Production Release](#). If an enhancement to the functionality is requested, then **SCOPE** enables you to take a  copy of the **Production Release** as a size model base on which to record the impact of the changes required for the next Release (e.g. Release 2.0).

**SCOPE** allows you to record planned work or current work on software as "[Work in Progress Releases](#)". These changes to the same release of software may be the result of multiple change requests from a variety of users, each with their different priorities. The impact of *each* change request can be separately recorded and functionally sized by associating each enhancement with a [Count Session](#). The net cumulative impact on the release can be quantitatively assessed, as can the rework.

Functions can be prioritised and different scenarios can be sized to assist with making decisions on which changes are included or excluded.

The activity of performing a Function Point count proceeds through a series of prescribed procedural steps. When this methodology is applied consistently, the Function Point size result is repeatable and the software size can be universally compared with the size of other software projects or applications.

## SCOPE Training

- 1 hour free online interactive training in **SCOPE** features - book your session now with Total Metrics (admin@totalmetrics.com)
- In-house half day training sessions in all the features and functions of **SCOPE** with practical exercises to complete.
- 1 day full **SCOPE** training integrated into the FPA Process - so you know how to use which features of **SCOPE** for each FPA counting step
- 3 day intensive IFPUG certified training course in applied IFPUG function point analysis and using **SCOPE**.

For details on Locations and times for training sessions contact admin@totalmetrics.com or your local **SCOPE** distributor.

For full details of Training content visit: <http://www.totalmetrics.com/training-software-metrics>

## Mapping SCOPE terms to IFPUG and IT Terminology

The terminology differences between how **SCOPE** works and how clients describe their Application and Maintenance environment sometimes results in the same word being used to mean different concepts.

To assist the reader and avoid confusion we have provided some guidance to the terminology below. E.g. Clients typically use the following terms: 'Count' to mean a 'Project Count' (Project Size in **SCOPE**). Whereas, in the real world, a business initiative resulting in a software development Project can impact one or many applications and each application may have one or more counts of the impact of that Project on the application.



**SCOPE** implements these concepts but its terminology is slightly different. **SCOPE** has been developed to be compliant with the IFPUG ISO standard 20976 and the new IFPUG CPM version 4.3.

### **SCOPE Terminology:**

- **SCOPE** refers to a 'Project Size' for the equivalent concept of the typical client term 'Project Count'. Where the Project Size is the aggregate functional size of all the impact counts for each the application boundary impacted by the Project. Within **SCOPE** 'Count' is reserved for the Work Package impact by the Project on a particular Application Boundary (**SCOPE** calls this a 'Count Session').
- **SCOPE** assumes that a project may impact transactions and Files in one or more Application Boundaries
- **SCOPE** assumes that an Application Boundary may incorporate one or more Physical Systems, each of which will need to record and report its impact
- **SCOPE** allows for each Physical System to have its own Work Package for the Project. This Work Package is measured in a Count Session
- **SCOPE** therefore allows the user to record one or more 'Count Sessions' for each Physical System impacted by the Project in the Boundary. Or if the User wanted they could combine all impacts for the Project into one count session
- Each 'count session' records the impact within a single Application Boundary and is linked to a single project. However a Project, may have assigned to it many count sessions impacting many application Boundaries. A project can also have more than one count session for a single Application Boundary. E.g. One for each work package or one or more for each Physical system impacted
- **SCOPE** recognises that Logical Applications from a User View has an Application Boundary. Therefore the Count Session for an Application will only include functions (transactions and data groups) that are accessed by transactions within that Application boundary. Physical Systems can be recorded within the Logical Application Model as belonging to the Application Boundary
- **SCOPE** recognises and incorporates the concept that Logical Applications from a User View may incorporate one or more 'physical systems' and that one or more Projects may impact these systems concurrently

See: **SCOPE** Architecture



## **SCOPE Relationships - Applications Releases Projects Counts**

The following model maps the **SCOPE** concepts of Applications, Projects, Releases, and Count Sessions to the terms commonly used in Software Development.

See Also **SCOPE** Architecture

# Managing your Function Point Counts

## Start a new Measurement

To start your first Function Point count - under File select to open a new or an existing **SCOPE** database file.

**SCOPE** will open with the Software Applications List. Before starting to actually function point count you need to:

1. [Set up a New Application](#)
2. [Set up a New Release](#)
3. [Set up a New Project](#)
4. [Set up a new Count Session](#)

See also [Basic Steps of an FPA Count](#) and [Count Using Function and Data Trees](#)

If you have an existing counts in:

- An MS Excel<sup>®</sup> spreadsheets then import the spreadsheet into an existing database. (see [Import Counts from MS Excel](#) )
- FPW database then select to import it (see [Import from FPW](#))

You may decide to create a new **SCOPE** database file for each application depending on how you want your Function Point Counters to manage their counts.

If your applications are very large and you have many of them, then we would suggest that you create a **SCOPE** database file for each Application. This avoids contention of multiple counters wanting to access the same **SCOPE** database file, at the same time.

In order to have Reporting of Size across your Software Portfolio you have to have a central Repository of Counts. We would recommend that you set up a Master **SCOPE** database file and have an administrator manage its configuration, such that

on a regular basis it is updated by the completed approved Releases and their Count Session.

## Performing a Function Point Count

### Setting up the Count

## Types of Trees in the SCOPE Model

### The four types of Trees in SCOPE

- **Function** trees display Functions and Processes that can be performed by the software applications. This is where you hierarchically functionally decompose an application's functionality.
- **Data** trees display data groups, RETs and DETs. This is where you map out the projects data
- Structures in hierarchical form.
- **Attribute** trees represent the characteristics of the Functions, Data and Notes and are the conditions that are used for selective analysis.
- **Notes** trees hold text information related to nodes in the other trees.

**Function** and **Data** trees contribute to the functional size; whilst **Attribute** and **Notes** trees do not directly contribute, but add valuable documentation and demographic information during profiling and analysis.

## Basic Steps of an FPA Count



[Set Up New Count-Baseline Count](#)



[Set Up New Count-Enhancement Count](#)

When you first open a Count Session the Function Hierarchy Tree is displayed. This is where your software is modelled as a hierarchical structure. Your first step is to determine the main functional areas within the software application to be measured and enter them into **SCOPE** as **Functions** (use Alt INS Key) in the **Function Tree Hierarchy**. Continue breaking down each Function until you get to the lowest elementary **Process** to be performed within the software application. Enter each **Process** (use Ins Key) into **SCOPE**.

Working from the application's functional specification, in the Detail screen classify each elementary **Process** as either an:

- Input i.e. something that enables the user to input data into the software to be stored
- Output i.e. something that enables the user to extract derived information from the software
- Inquiry i.e. something that enables the user to query stored data

Select to display the **Data Tree Hierarchy** by selecting the **Data** Tab at the top of the screen on the RHS window. Determine the categories of logical files in your software and create some File Folders. Under each **Data Group Folder** identify the logical groups of data in your software and enter each **Data Group (ILF or EIF)** into **SCOPE** under the appropriate Folder the **Data Tree Hierarchy**. **Data groups** may be further decomposed into sub-groupings of **Record Element Types (RETs)**. You can also enter the fields (**Data Element Types-DETs**) under each RET sub-grouping.

Working from the application's functional specification, in the Detail Screen classify each Data Group as either an:

- Internal File (ILF) i.e. something that stores data input from the user's transactions, i.e. Processes on the Function Tree update ILFs
- External File (EIF) i.e. something that stores data accessed by the user's transactions. i.e. Processes on the Function Tree only read EIFs

Use the detail screen to classify Processes and data groups as either low, average or high complexity.

**SCOPE** will assign a weighting in function point units to the software's functional and data components using a set of prescribed formula's, based on the type and complexity you have selected.

*NOTE: **SCOPE** defaults Processes to be Inputs of average complexity and data groups to be of a type undefined and low complexity. You can change these defaults by selecting VIEW, Function Point Count Default Values, from the Main Menu.*

After the assessment of each Process and Data Group is complete, the **Functional Size** in *Unadjusted* Function Points can be reported for the whole application, or any selected part of it or just for those functions and data impacted by a change request.

The size is reported in the status bar at the bottom of the screen or can be seen in detail by selecting the Reporting Selection option under the Main Menu.

**SCOPE:**

- Can be used to measure the size of a functional branch of the hierarchy by selecting a node at any level
- Can use Flags to select sets of function and or Process nodes, for selective measurement
- Can be used to selectively record and report functions impacted by a project using an impact Count Session

**SCOPE** allows you to perform the optional step of evaluating an application's General Systems Characteristics to calculate the **Value Adjustment Factor** for the application for that Release. The Functional Size can then be combined with a

**Value Adjustment Factor** to take into account quality and technical characteristics, which will then give a product size in **Adjusted Function Points**.

## Recording and Counting Transactions



### [Counting Transactions](#)

The **Function Tree** and the **Data Tree** are used to model the functionality delivered by the software that will be function point counted. The Function Tree is where the Transactions (Elementary Processes) are recorded. The Data Tree is where the Data Groups or logical files (ILFs and EIFs) are counted. The **Attributes Tree** and **Notes Tree** are used for selective profiling and documenting the functionality, (see [Types of Hierarchy Trees](#)).

*HINT: The lowest level of the function tree (process level) is the level at which function points are assigned. If you do not wish to take the time to model your software then create a single Function node and just list your processes below.*

### Recording Processes on the [Function Tree](#)

- Press **Alt+Ins** to insert **Function Folder** nodes. These represent the major functional areas of the software. Insert the name of the node on the RH side Detail view or double click the node name or press F2 to rename.
- Continue decomposing the software hierarchically by inserting functions until you reach a stage where you identify individual elementary Processes.
- Press **Ins** to insert an elementary **Process**.
- Use the detail view (select the Details Tab at the top of the screen or double click the node) to enter the Functional Size details of **Process Type** and **Complexity**. The Process type defaults to Input and the complexity to **Average**.
- Select any of the following options from Result Source to override the default complexity:

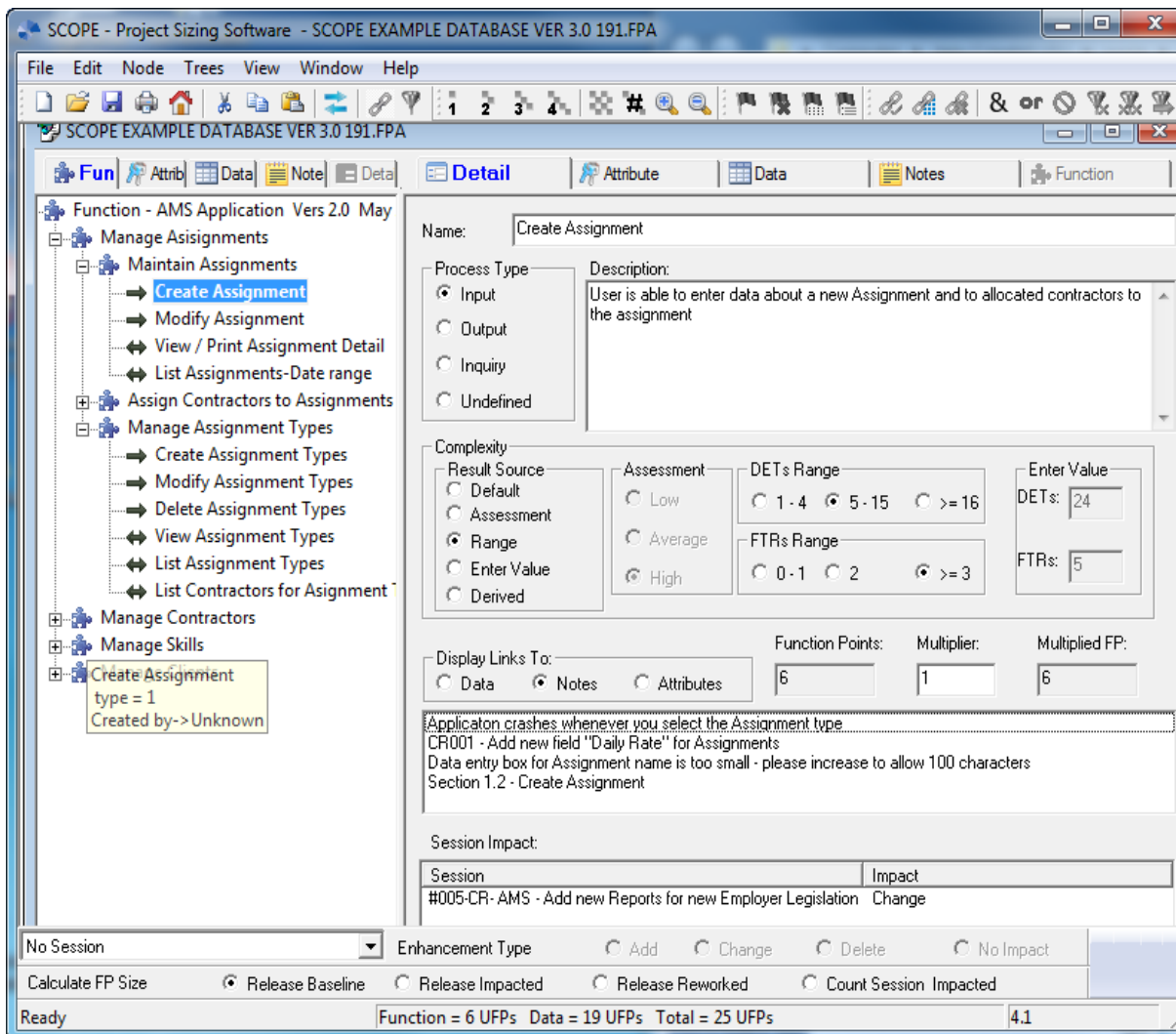
- **Range:** select the appropriate range of **DETs** (unique fields entering or exiting the Process) and **FTRs** (unique Data Groups accessed by the Process)
- **Assessment:** select **Low, Average** or **High**
- **Enter Value:** insert the actual number of **DETs** and **FTRs**
- **Default:** accept the industry default value of **Average**
- **Derived:** calculates complexity from the number of **Data Groups (FTRs)** and **DETs** linked to the process

## Quick Counting

If you want to group the details of multiple Processes into one Process node then enter the number of Processes in the **Multiplier** field. E.g. where you know there are 4 Maintenance functions for a Customer of average complexity (each 4 function points), name the Process 'Maintain Customer' and enter 4 into the multiplier. The function points calculated for the Process are multiplied by 4 to total 16. **SCOPE** will display the calculated function points for the Process at the bottom right of the **Detail** screen.

If you want to quickly generate many maintenance, and reporting processes for an object e.g. Create Customer, Modify Customer, View Customer, then all you need to do is insert the Object Name in the [Insert Function Group Dialogue Box](#). **SCOPE** will generate whole branches of processes with their type and complexity defaulted, to enable you to hundreds of function points of count standard functionality in minutes.

*NOTE: If you do not want a node to be counted then set the multiplier to zero and the nodes will be excluded from the count results and display in 'blue' text on the screen. Alternatively you can make the node type "undefined" and **SCOPE** will assign zero function points.*



## Recording and Counting Files

The **Function Tree** and the **Data Tree** are used to model the functionality delivered by the software that will be function point counted. The Function Tree is where the Transactions (Elementary Processes) are recorded. The Data Tree is where the Data Groups or logical files (ILFs and EIFs) are counted. The **Attributes Tree** and **Notes Tree** are used for selective profiling and documenting the functionality, (see [Types of Hierarchy Trees](#)).

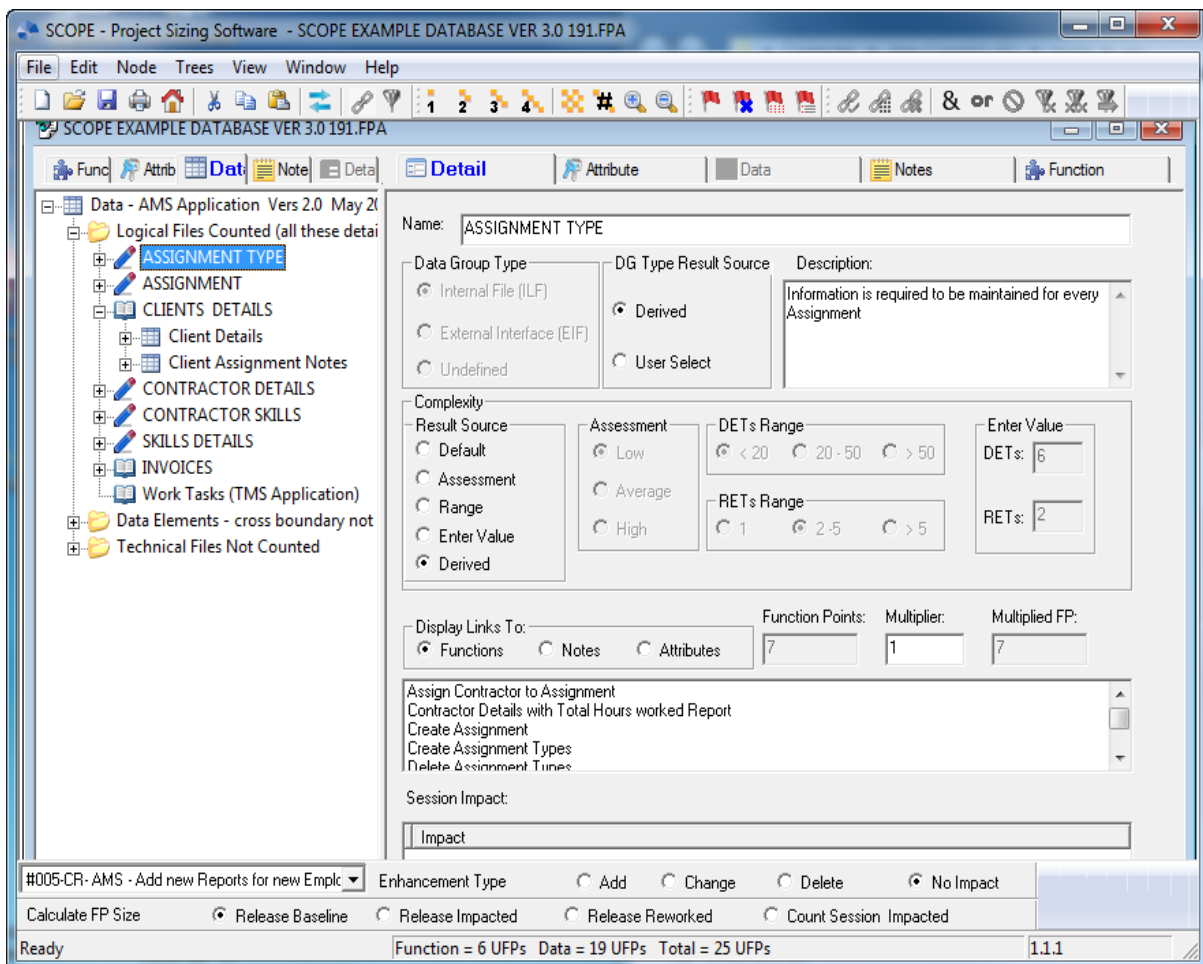


*HINT: The second level of the Data Tree (Data Group Level) is the level at which Logical Files are inserted and function points are assigned to each Logical File. If you do not wish to take the time to model your software then create a single Data Group Folder and just list your Data Groups (Logical Files) below it.*

### Recording Data Groups on the [Data Tree](#)

- Select the **Data** tab at the top of the screen to view the **Data Tree**. Highlight the top node and Right Click the mouse and select Insert Data Group Folder to create a Folder in which to group your list of logical files. Creating Folders enables you to group logical files that are related for ease of finding and easy understanding of your count. E.g. Accounts Related Files, Customer Related Files. Press F2 to rename the folder.
- Highlight the top node or the Data Group Folder and press **Alt+Ins** to insert **Data Group** nodes. These represent the major data entities or classes of objects accessed by the software. Insert the name of the Data Group on the opposite side by selecting the **Detail** or double click the Data Group name or press F2 to rename.
- Use the detail view (select Details Tab above the status bar) to enter the Functional Size details of **Data Group** Type and **Complexity**.
- The **Data Group** type defaults to **Undefined** and the complexity to **Low**. Override the default **Data Group** type using the **User Select** option under **DG Type Result Source**. By default the **Data Group** is **Derived** from how it is accessed by Processes **Linked** to it.
- If functions or Processes that **Update** the **Data Group** are **Linked** to the **Data Group** then the Data Group Type derived is an **Internal Logical File (ILF)**.
- When you select to link a process to a Data Group, the access type defaults to **READ ONLY**, indicating that the process only reads the Data Group and does not update it. The READ ONLY access type is identified by a **RED TICK** . If you the process actually updates the data group then click on the link box a second time and the second mouse click changes the link to a **blue**  to designate the data group is **UPDATED**. The next click resets the status to **UNLINKED** status to the UNLINKED state of a blank box1 .
- As you move down the Function Tree and highlight each process, **SCOPE** dynamically displays the list of data groups linked to that process and the colour of the link (tick colour) indicates the access type for each data group
- Alternatively you can elect to change the access type of the link by right clicking the mouse button when located on the data group and selecting the access type from a drop down list (UPDATE or READ ONLY)

- Select any of the following options from **Complexity Result Source** to override the default complexity :
  - **Range:** select the appropriate range of DETs (unique fields stored by the data group) and RETs (unique sub-groups of DETs)
  - **Assessment:** select **Low**, **Average** or **High**
  - **Enter Value:** insert the actual number of **DET**s and **RET**s
  - **Default:** accept the default value of **Low**
  - **Derived:** calculates complexity from the number of **RET**s and **DET**s recorded as child nodes under the data group



**SCOPE** enables you to record individual RETs and DETs and their details by inserting child nodes under each Data Group. These are only used to calculate complexity when the Derived option is selected. For very detailed documented

counts **SCOPE** allows you to link processes to the DETs that they use. This is useful when a DET is impacted by a Change Request; **SCOPE** will highlight all the processes that use that DET.

If you want to group the details of multiple data groups into one Data Group node then enter the number of data groups in the Multiplier field. E.g. where you know there are 6 Tax Rates Reference Files of low complexity (each 7 function points), name the Data Group 'Tax Reference Files' and enter 6 into the multiplier. The function points calculated for the Data Group are multiplied by 6 to total 42. **SCOPE** will display the calculated function points for the Data Group at the bottom right of the Detail screen.

## Quick Counting - Template Function Groups

Often software that is being counted has groups of similar functionality e.g. groups of similar types of elementary processes for a group of data. For example an Employee System would have the following functionality such as:

- *Manage Department Information*
  - *Add New Department - Input - Average Complexity*
  - *Modify Department Details - Input - Average Complexity*
  - *Delete Department Details - Input - Low Complexity*
  - *View Department Details - Enquiry- Average Complexity*
  - *Browse Departments Details- Enquiry- Average Complexity*
  - *Report Department Details - Output - Average Complexity*
- *Manage Division Information*
  - *Add New Division - Input - Average Complexity*
  - *Modify Division Details - Input - Average Complexity*
  - *Delete Division Details - Input - Low Complexity*
  - *View Division Details - Enquiry- Average Complexity*
  - *Browse Divisions Details- Enquiry- Average Complexity*
  - *Report Division Details - Output - Average Complexity*

**SCOPE** allows you to quickly count 'standard' functionality by generating function blocks of transactions that have their name, type and complexity automatically assigned to previously defined default values. This is particularly useful in early counting.

For example: Often a logical file will have one or all of the following transactions - Create, Modify, Delete, View, Browse/List and, or Report. To generate all of these transactions and their file links, just locate your cursor on the logical file and select to insert a 'Template Function Group' and **SCOPE** will automatically generate all the transactions for you. You can create multiple [Template Function Groups](#) and set up their default name, type and complexity and whether they update or only read a file.

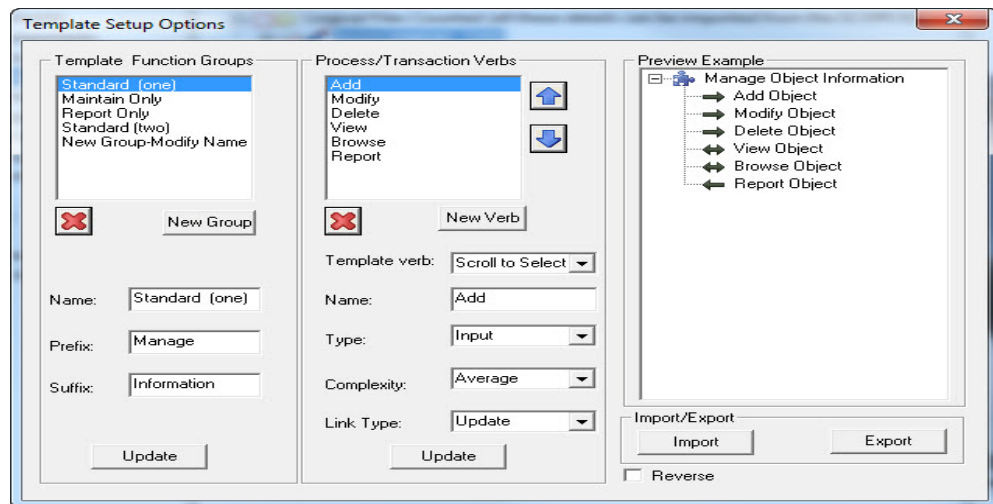
Once you have [set up your default templates](#) **SCOPE** allows you to import and export them for future use by yourself or your colleagues.

In the screen below the User has selected to Insert Template Function Group to quickly insert the maintenance processes for a new set of functionality around a "Loyalty Member". By selecting the Template "Standard (one)" from the list and typing in the words "Loyalty Member" as the object name , **SCOPE** has automatically created the 6 elementary processes on the tree using the 'object' and assigning the correct 'type' and 'complexity' e.g. *Add Loyalty Member* is an External Input of Average complexity.

## Function Tree - Insert Template Function Group

On the Function Tree, right click and select to **Insert Template Function Group**.

**SCOPE** will display the following dialogue box to allow you to select which type of Template Group you want to generate.



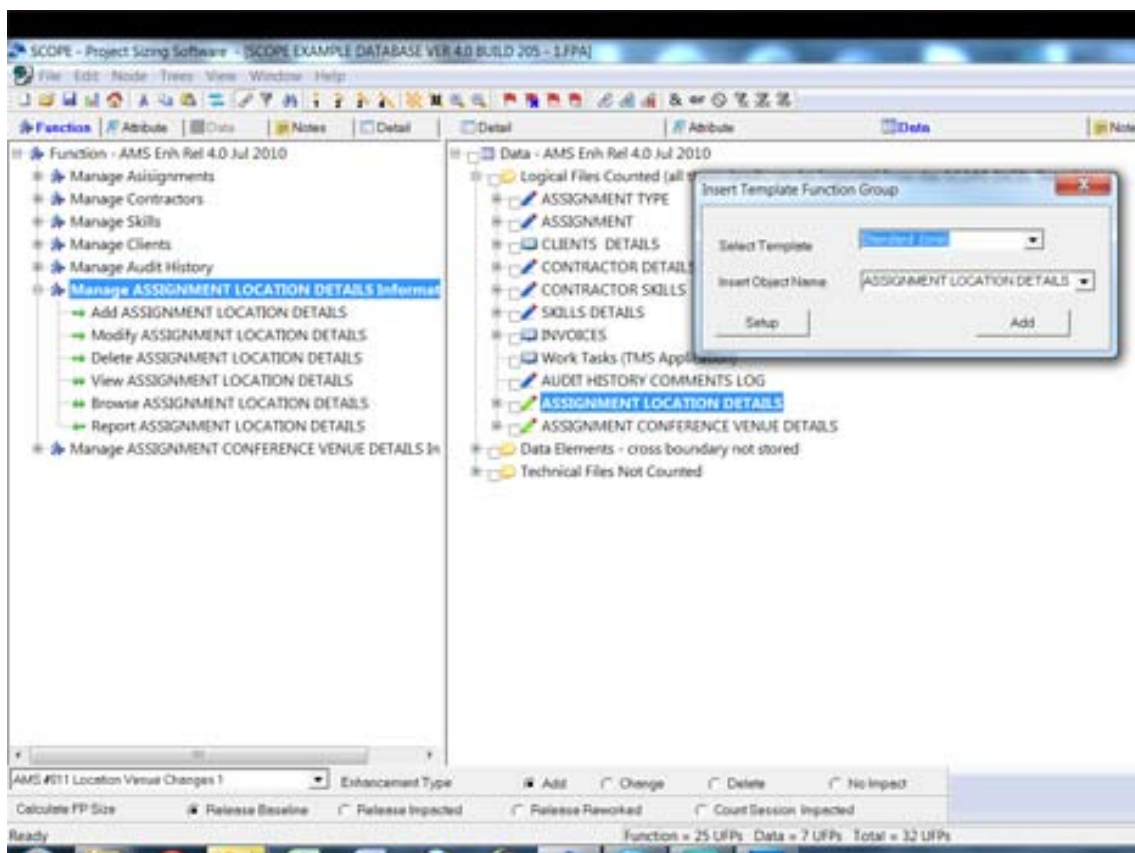
- **Select Template** is where you select from the list of existing Template Groups on your **SCOPE** database.
- **Insert Object Name** is where you insert the name of the 'object' of the functionality. For example in an accounts system an 'object' could be Invoices and we would want to generate processes that 'Create an Invoice', 'Delete an Invoice', 'Cancel and Invoice' etc. In the following example Loyalty Member was the Object and we created a list of processes for that object using our Template Function Group - Standard (one).
- **Add** will generate the Elementary Processes defined by the Verbs in the selected Template. These will be generated as a new branch on your function tree. Just keep changing the Object Name and pressing Add to generate multiple Function Groups.
- **Setup** allows you to create your own Template Function Groups in addition to the default Templates installed with **SCOPE**.

### Data Tree - Insert Template Function Group

- Locate the cursor on the **Function Tree** either on the Root node or on a Function Folder Node.
- Click on the **Data Tree** and highlight a Data Group which is the 'object' for which you want to generate functionality
- Right click and select to **Insert Template Function Group**. **SCOPE** will display the dialogue box to allow you to select which type of Template Group you want to generate.

- Follow instructions as per the Function Tree
- When the Function branch is created you will see that all the processes have automatically linked to the selected Data Group with the Link Type (Update or Read-Only) that was pre-assigned for the Process verb in the template.

In the example below the Function Group "*Manage ASSIGNMENT LOCATION DETAILS Information*" was automatically generated when the cursor was located on *ASSIGNMENT LOCATION DETAILS ILF*. All the Inputs have been assigned Update links to the *ASSIGNMENT LOCATION DETAILS File*.



## Documenting your Count

# Detailed Analysis and Tracking using Notes and Attributes



### [Profiling and Filtering Counts-Filters and Flags](#)

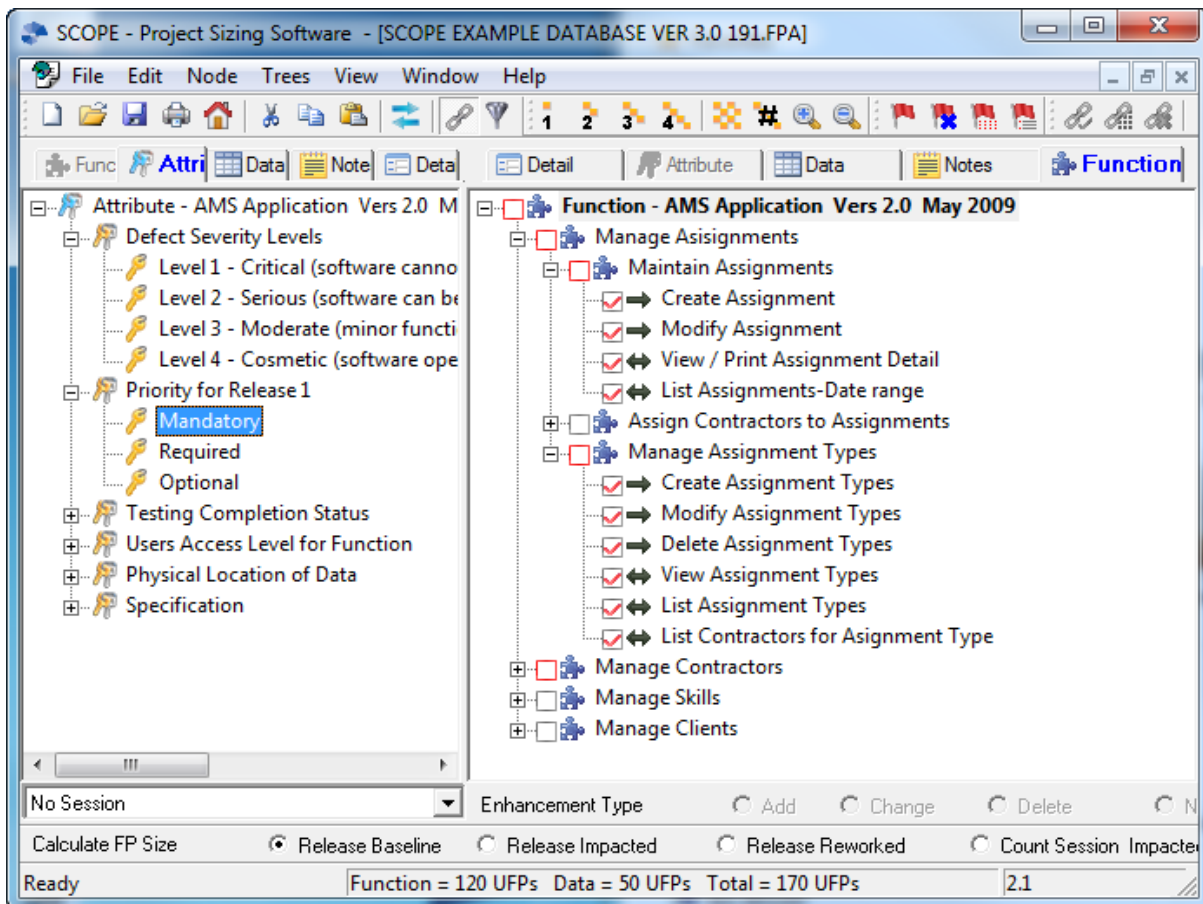
If you need to further document the functionality of your software then you can create **Notes**, and then link the Notes to one or many nodes on the other trees.

You can selectively report on all Process and Data nodes linked to a particular Note or group of Notes.

*(see Flags and Filters)*

Functionality can be selectively reported based on its characteristics. You can set up any number of types of characteristics or **Attributes** on which you would like to profile the software. Once you have created a Note or an Attribute they can be linked to any node on any other Tree but their own.





Select the Notes tab at the top of the screen to open the Notes Tree. Similar types of Notes can be grouped into Note **Sets** for easy access and selective reporting.

First insert a Note **Set** (Alt+Ins) and give it a collective name. For example you may want to use the Notes to record function point counting assumptions. Name the Note Set “FPA Assumptions” and then insert a Note (Ins) to record each assumption. You may want to further group these assumptions into ones that you have checked and ones that need checking. In that case create a **Set** called “Checked” and “Not Checked” under the **Set** called “FPA Assumptions”. Then insert your Notes under the appropriate parent **Set**. When you have created your Note, select Link mode to Link the Note to the Processes or Data Groups about which the assumption has been made. Notes may also be linked to Attributes.

Other suggestions for Notes Sets could be:

- Questions – to record questions you need to clarify with the application’s experts



- Specification – to record your specifications for change requests, business rules etc in a note which could be linked to the relevant Process
- Errors – to record software bugs noted for each Process and data group. The severity level could be further classified using an Attribute called Severity Level
- List of Physical Files - to cross reference to logical files. This is particularly useful when validating someone else's counts or when the users identify a physical file they need changed for an enhancement, it allows easy identification of the corresponding Logical File.

*Hint: it is easier to locate the Note Tree on the LH side if you want to link a single Note to many Processes, Data Groups or Attributes. Right click on the parent node of the group you want link on the RH screen, select Link, Set All and all child nodes will be automatically linked.*


[How are Attributes different to Notes?](#)

## How are Attributes different to Notes?

**SCOPE** has methods ways of further documenting your functional model of your software:

- Attributes
- Notes


The difference between these two types of trees is that:

 **Attributes** are set up as 'key words' that are used to profile your software model to selectively report only those Processes or Data Groups that have that particular key word as their Attribute. Since there may be several options of available **SCOPE** allows you to group your Attributes into Categories. An example of a common Attribute Category could be "Business Area"; this could be further broken down into specific business areas responsible for specifying the functionality. Each of these

Business Areas would be listed as an Attribute e.g. HR, Accounts, Marketing etc.

Processes specific to that business area could then be associated by linking to that node on the Attribute Tree. Usually every process would be linked to one or more attributes in a Category. Typically an organisation would have a standard set of Attribute Categories defined so that they can profile the reporting in a standardised way.

Attributes can have values assigned to them so they can be used to selectively quantify your functionality (Processes and Data Groups). See Numerical Attributes

 **Notes** in comparison are usually created to be specific to one Process or Data Group but they may be linked to more than one node in the case of a generic Note. Notes are designed to be used for textual descriptions about a Process or Data Group, rather than for using as a means of profiling the model. Typically Notes are specific to a particular Application, Release or Count Session, rather than being applicable for all Applications within an organisation.

**SCOPE** has multiple hierarchy trees that provide a multi-dimensional map of the software application's functionality. This map enables you to develop 'what if' scenarios for measuring different sets of functions, based upon selected nodes in other Trees.

For example, you might choose to map specific functions against a particular **Category of Attributes** such as different developers, implementation priorities or user types. Mappings may be made between any other **SCOPE** tree to the **Attributes Tree**. Once these mappings (or **Links**) have been set-up, they can be recalled at any time and used to selectively profile the application's size for a particular attribute. For example linking to a high priority attribute enables you to measure the application's projected size based on the 'what-if' scenario that only the high priority functions would be implemented.

**Numerical Attributes** are a special class of Attribute Category that allow your count to be profiled quantitatively for project governance , project monitoring etc.

For example, different sets of Notes can be used to record assumptions about the specification background for counting decisions, references to project or other related documentation, bug reports, test cases etc. Individual **Notes** can be written under each of these **Note Sets** and, if desired, **Linked** to nodes in one or more other trees.

## Linking Trees



[Building Hierarchy Trees](#)



[Counting Transactions](#)




[Counting Logical Files](#)

A **Link** joins two nodes on different trees. It records the relationship between the nodes and enables you to later analysis the application based on selected nodes and their **Links**, using criteria that you define. Examples of the types of analysis are:

- Report the Functional Size of all Processes that access (are Linked to) the Invoice Data Group.
- Report the Functional Size of all Processes and data groups that are to be developed in the first version of the software (i.e. are Linked to the Mandatory attribute).
- Report all the errors for the Invoice Processes that have been allocated a severity 1 rating. (All Notes Linked to the invoice Processes that have been Linked to the severity 1 attribute.)

To set **Links**:

- Display two trees by clicking the appropriate tabs (they must be different trees, you cannot set Links within the same tree).
- Choose Link mode from the menu (Trees–Link) or the Link Mode icon at the top of the screen (HINT: icon looks like a bent paperclip) .

- On the left side select the node you wish to Link from, on the right side highlight the node you wish to Link to and click on the checkbox next to the node (or nodes) or press the space bar to set the Link. A red tick is displayed in the linked node.

To display the trees on the opposite sides, use the 'flip' icon along the top of the screen and display the converse view. Alternatively select **Trees – Flip Views**



menu or press **CTRL+Tab**.

*Hint: If you are linking the same node to many nodes on other trees it is easier to locate the tree with the node to be linked on the Left side tree and use the Set All option found by Right clicking the mouse and selecting Links from the Pop-up menu.*

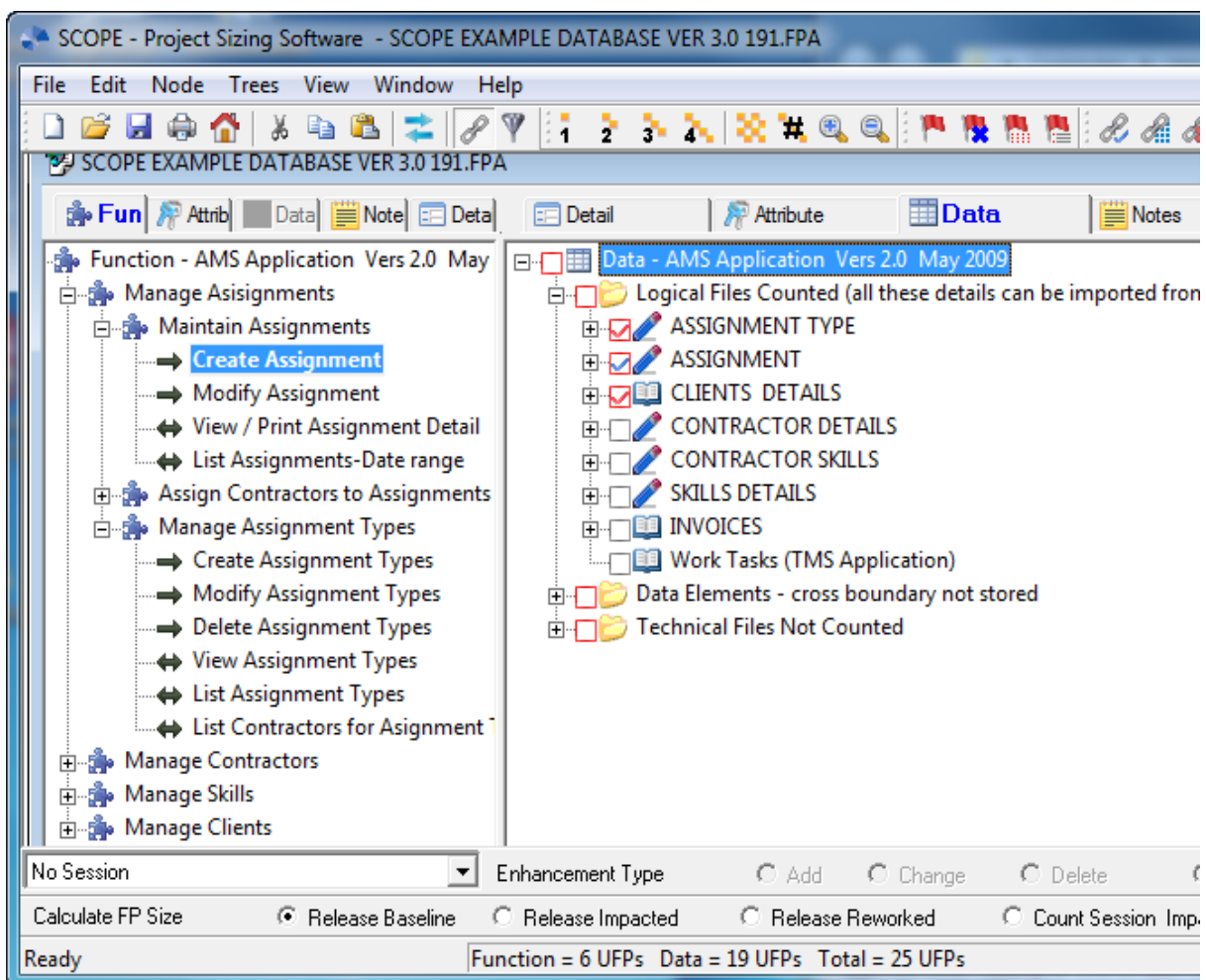
Hint: The flip icon can also be used to refresh the screen.

To Set and Clear Links quickly:

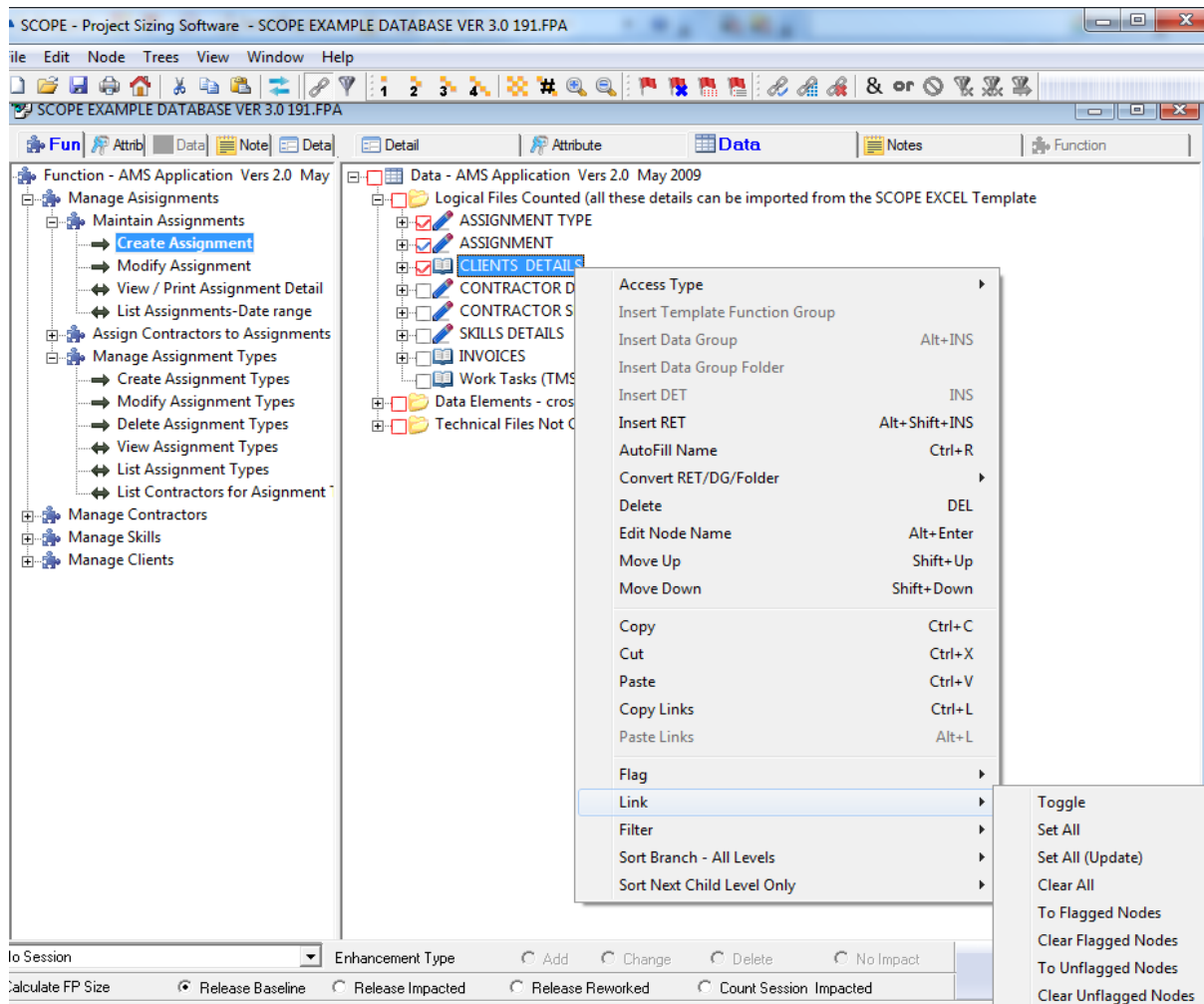
- Select the node you want to link to on the LHS Tree. Highlight the Parent Node on the RHS Tree. Right Click the mouse and select **Link – Set All** and **SCOPE** will set links to all the children of the Parent Node. Select **Link - Clear All**, to unlink all child nodes.
- Use the **Search and Replace** function to find and **Flag** all nodes that satisfy specific search criteria. Then use the **Link –To Flagged Nodes** to automatically link the currently selected LHS node to all the flagged nodes on the RHS Tree. To link to everything that is not currently flagged select the **Link – To Un-flagged Nodes** option. You can selectively clear current links by selecting either the Link – Clear **Un-flagged Nodes** or **Clear Flagged Nodes** options.
- If an existing node already has all the links that you would like a new node to inherit, then they can be cloned to one or many other nodes. Select Edit – Copy Links (CNTL-L) to copy the links on the source node, highlight your target node and select to Paste the links (Edit – Paste Links ALT-L). You can select to paste the links to the just the target node or to all of its descendents.

## Linking Processes to the Data Groups they access is a special case of cross-reference linking in SCOPE

The colour of the link (tick box) can be changed to provide a dynamic display of the way each process accesses the data group. I.e. As you link a Data Group / RET or DET to a process, the screen dynamically displays the access type. The first mouse click to set up the link defaults to a red  to indicate the Data is **READ ONLY** by the process, a second mouse click changes the link to a blue  to designate the data group is **UPDATED** and the next click resets the status to the Unlinked state of a blank box . As you move down the Function Tree and highlight each process, **SCOPE** dynamically displays the type of access using different coloured text.



To **Quickly Link Process and Data Groups, RETs and DETs** right click on a Parent node or the Root node either on the Function Tree or the Data Tree and select to Link – Set All (Read Only) or Set All (Update). **SCOPE** will link to all Child nodes but will NOT overwrite existing links. If you want to change the existing links then select to Clear All, then select to Link as Update or Read Only.

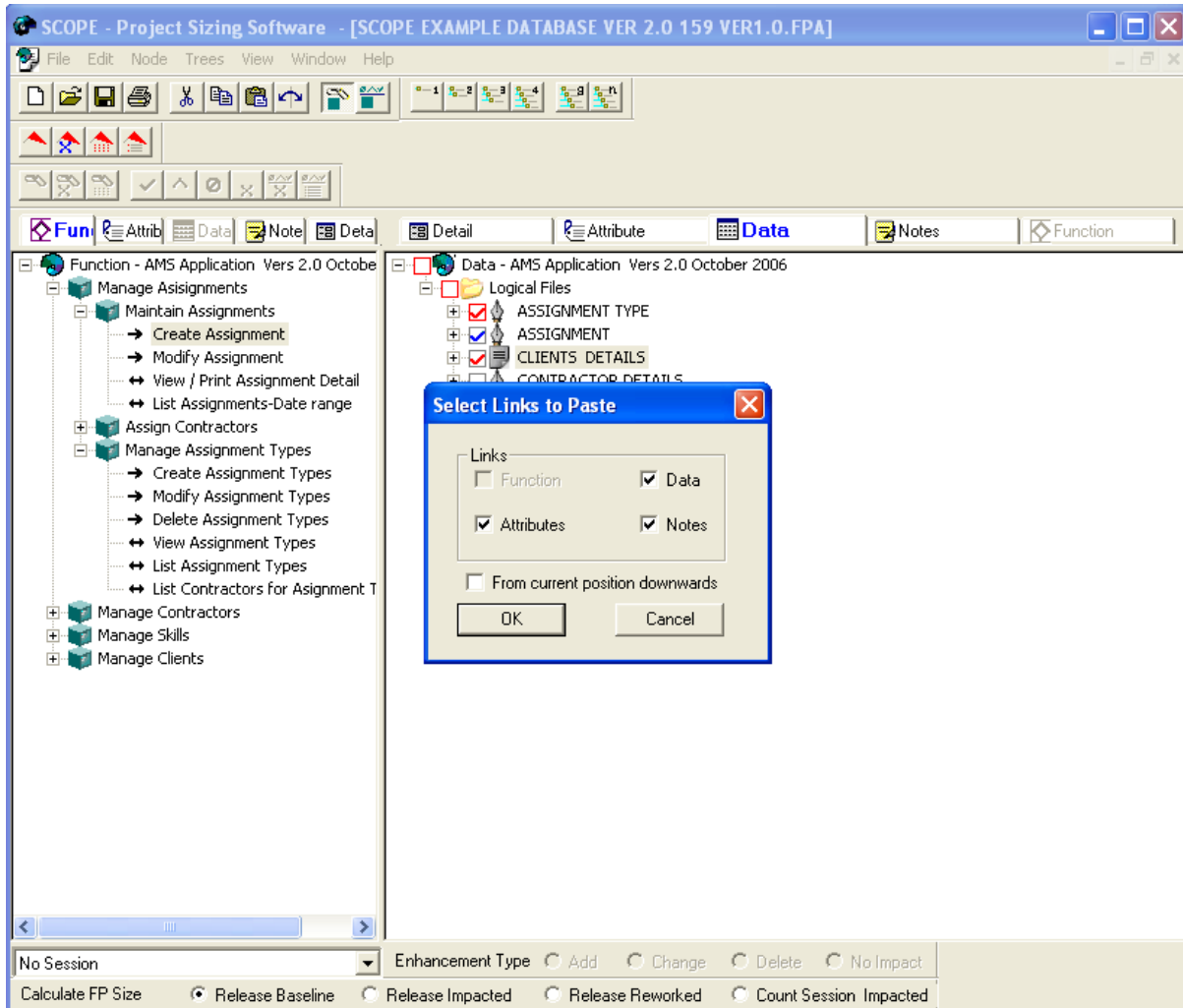


### Copy 'Links Only' from another Node

If you have already set up the links for a node and then realise that other nodes need the same links, you can selectively copy just the links so that the other nodes can inherit some or all the links.

To do this - highlight the source node (i.e. it has the links you want to copy) then select < **Copy Links**> from Edit under the Main Menu (or use **CNTR L**). Highlight the target node and select < **Paste Links**> from the Main Menu (or use **ALT L**).

A dialogue box displays to allow you to paste selected link types (process, attribute, notes and data) and to restrict the paste to the just the highlighted target node or choose to paste links to all its children (i.e. from current position down). The default <OK> pastes all link types just to the target node.



## Recording the Relationships between Functions and Data

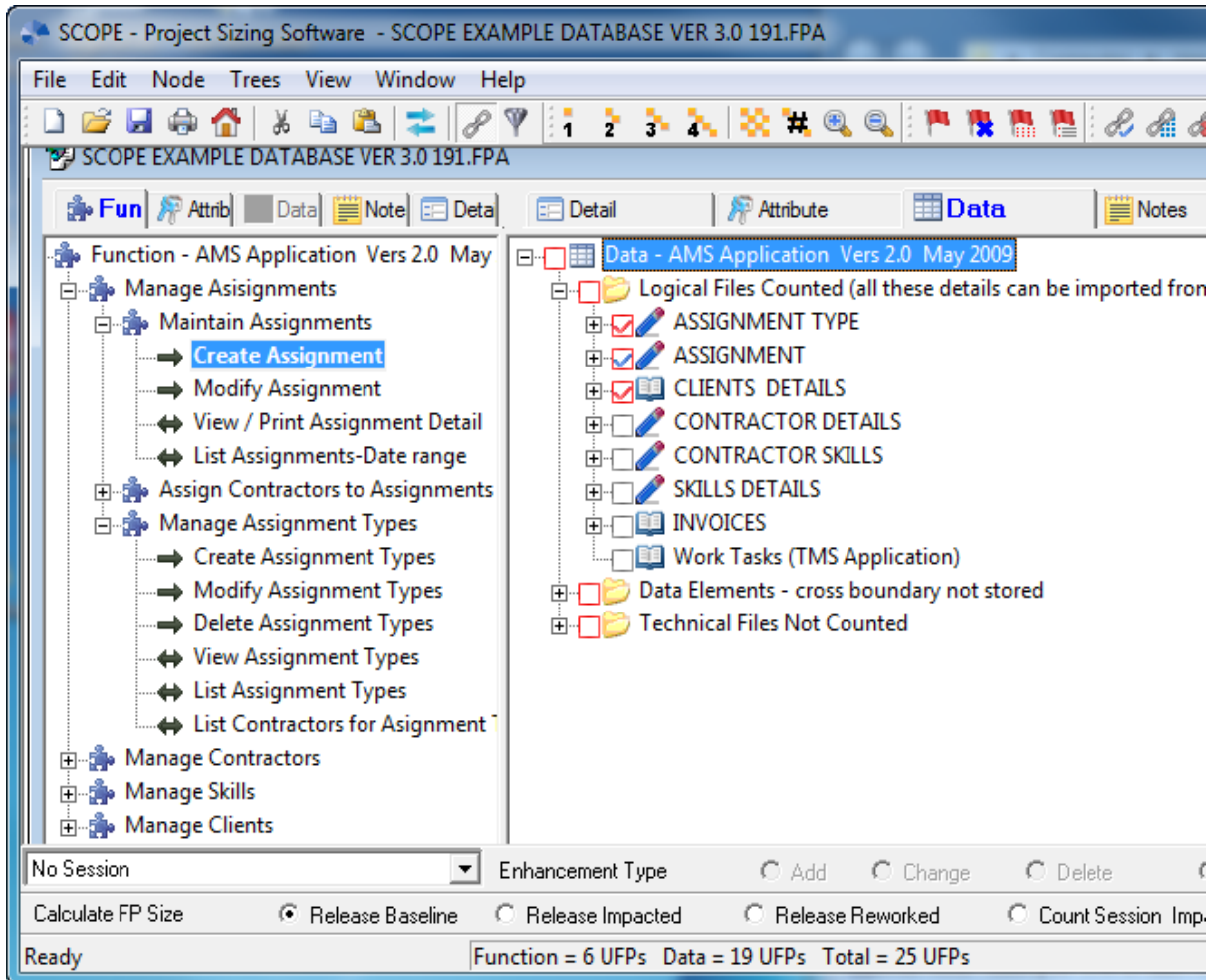



### [Counting Logical Files](#)





## [Counting Transactions](#)



To record how each Function or Process uses the data groups, display the **Function Tree** on the LH screen and select **Link Mode**. (See Linking Trees.) Display the **Data Tree** on the RH side and click on the box next to the Data Node name. A  displays to record that you have set the **Link**. **SCOPE** assumes by default that the Access Type is **Read Only** (Red tick). To change the Access Type of a Linked Data **Node** display the **Data Tree** on the RH side, select the data node and click the tick will change colour from **Red** for **Read Only** to **Blue** for **Update**, a second click will remove the link. Alternatively you can view the access type and change it by right clicking the mouse, when located on the Data Node and select **Access Type**, then

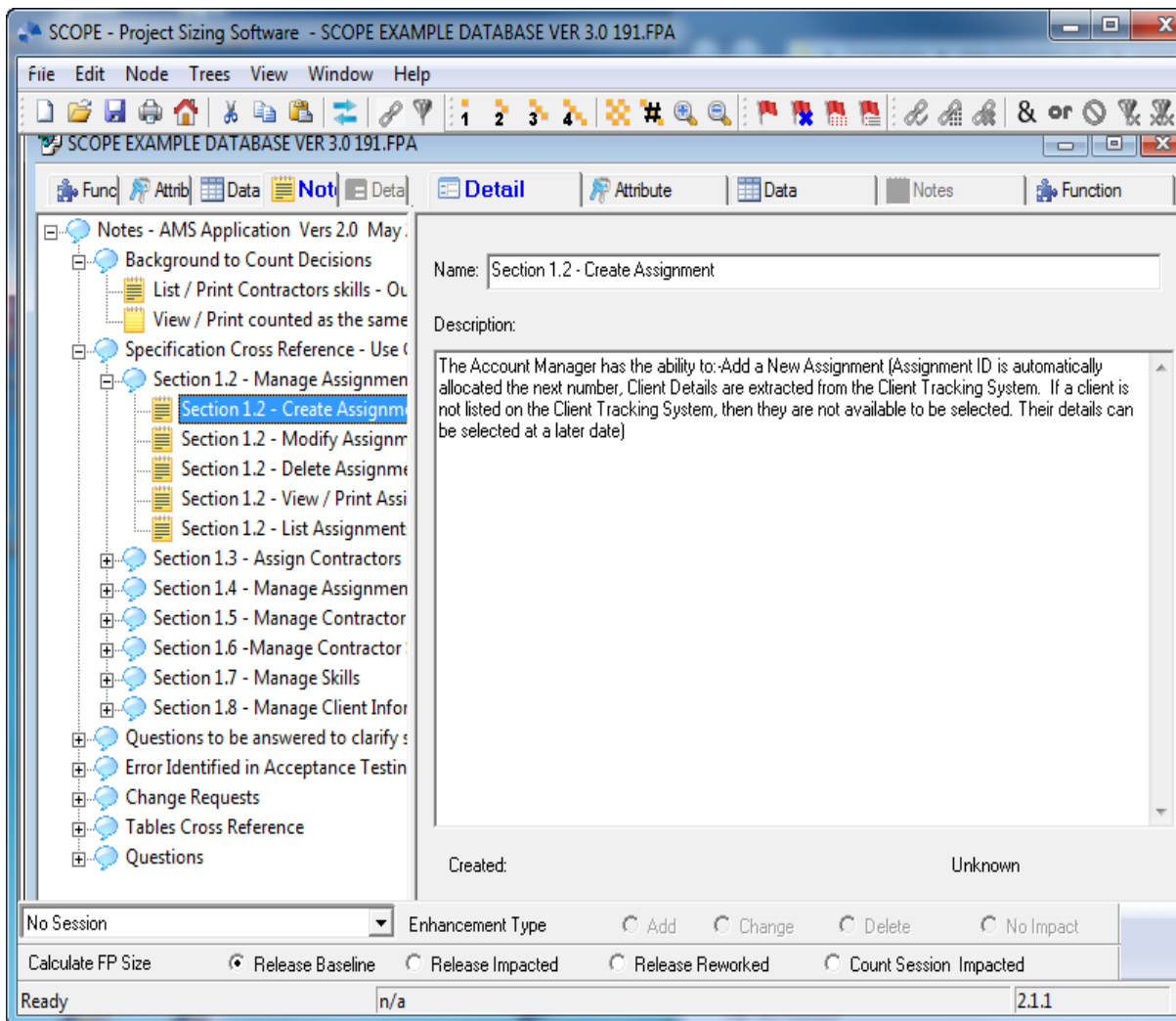


select **Update** or **Read Only**. **Access Type** can only be set if the data node is already **Linked** to a function or Process node.

**SCOPE** allows linking of individual processes to DETs listed in the Data Groups Tree. If a DET is linked then the link is automatically assumed also by the parent RET and the Data Group. If you link at this level then **SCOPE** will count the linked DETs when it derives the number of DETs and FTRs for the Process.

*HINT: If you want to include additional DETs, that are not stored on a Logical File, in the DETs counted for a linked process, then create a **File Folder** in the Data Groups Tree to store these DETs and then link them. Examples of DETs that cross the boundary but are not stored are Messages, Action Control DETs, Calculated totals etc.*



# The Notes Tree



This tree holds text information that can be Linked to nodes in any other tree. Typical usages could be to record as Notes to be linked to processes or data:

- Any counting assumptions
- Queries against the specification
- Identified bugs during acceptance testing
- Cross-reference to the specification
- Physical tables, screens or programs etc.

**Notes** are organised into **Sets**. You can nest **Sets** to any depth

If your NOTE has additional text in the description then the Icon changes from  to 

# Viewing Linked Processes, Data, Notes and Attributes



[Counting Transactions](#)



[Profiling and Filtering Counts-Filters and Flags](#)

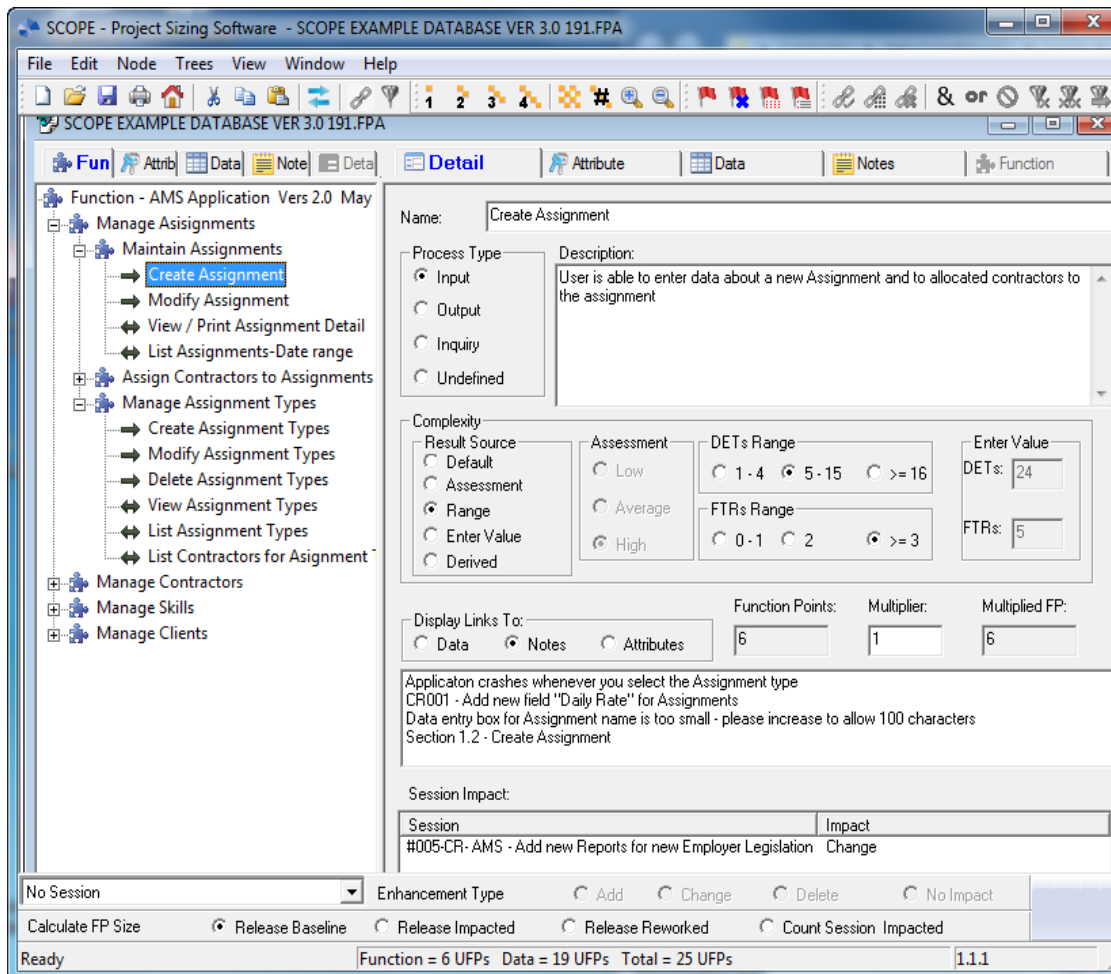
**SCOPE** provides the function point counter with the ability to document their function point count to the highest level of accuracy such that all processes can be linked to:

- **Data Groups** - i.e. the process is linked to the DETs, RETs and FTRs that the accesses and the type of access (Read or Update) can also be assigned.
- **Notes** - any textual comments relevant to the process
- **Attributes** - any key words relevant to the profile the process

Similar linking to Processes, Notes and Attributes can be done by any node on the Data Tree.

These links for a particular process or data node can be viewed via two different methods, in Links Mode, highlight the process:

- Select the tab for the tree type on the opposing window for the tree that you want to view the nodes linked to this process. The links for selected process display as a red tick against the nodes in the opposite Tree.
- Double clicking on the process to display the details screen and then select '**Display Links to**' option in the Details screen to select which tree you want to see the linked nodes. The linked nodes then display as a list, rather than a tree, thus enabling all links to be viewed in one screen




## Finalising your Count

# Set up a New Application




[Set Up a New Application](#)

## Create a new Software Application


Select menu  home option to view the Application List or select File - **Project and Application List** from the main menu. Locate your cursor at the top of the tree on



**Applications Portfolio** and select  to create a new Application. Enter the new


software application name and descriptive details. Expand the **Release** trees for your new application name by clicking on the [+] beside the application name.

### Modify Software Application Details

Highlight the Application you want to modify. Select the Details  icon to modify its descriptive and metrics details.

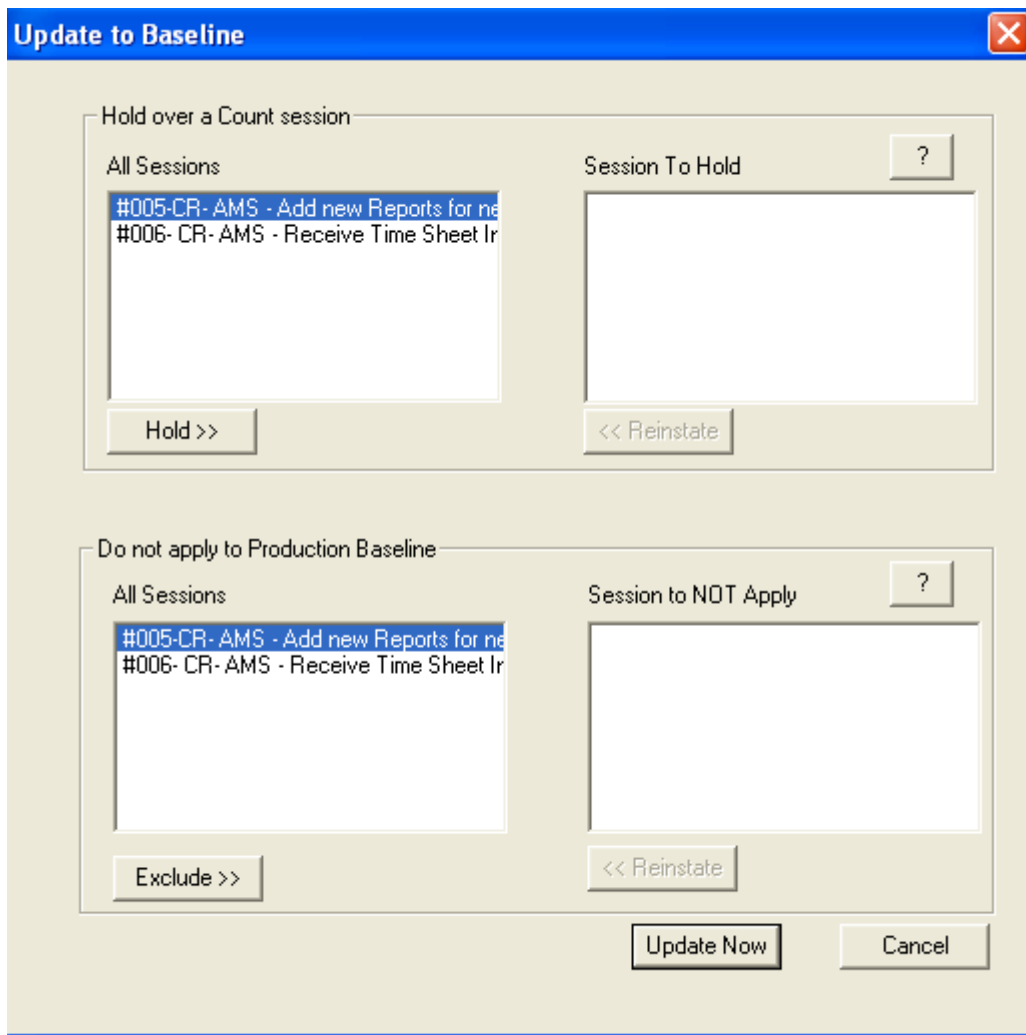
Then [Create a New Release](#) and [Create a new Count Session](#) in order to start your measurement

## Excluding Counts from Baseline Update

The Count Sessions for a Release can be selectively used to  [update the Production Baseline Release](#). If a change request for some reason was not implemented or you do not want the Count to reflect its outcome in the baseline then **SCOPE** will let you decided how you want it handled.

Situations when this may occur are when the **Count Session** was:

- **Not approved** and the project did not proceed, then the Count Session can be deleted and the integrity of the Release is retained.
- **Not actually implemented** but the project is still in progress or is planned to be implemented at some time in the future. In this case **SCOPE** allows you to selectively exclude that Count Session from the Update to Baseline i.e. puts the Count Session on **Hold** and **SCOPE** will create a new WIP Release, based on the new Baseline Count but also includes the 'Held Over' Count Session so that is now part of the Latest Release Count. It will be removed from the previous WIP Release where it was originally created.
- **Conversion functionality** or any functionality delivered by the project but not in the Production Release. **SCOPE** allows you to select to **NOT Apply** the Count Session to the particular Baseline Update. The Count Session will remain in the Work in Progress Release where it was created but its impacts will not be considered in the Update to Baseline.




## Updating Baseline Counts



### [Update to Baseline](#)

**SCOPE** allows you to record all your project counts as Count Sessions on a copy of the Production Baseline that you have created in the Work in Progress Release Group. Once all the project counts are complete and the Release has been put into production by the development team, you need to update you baseline count so it reflects the size of the implemented software.

In order to Update your Baseline Count for the Application you need to locate your

cursor on the Latest Release in WIP (open green padlock), and then select the  Icon **Update to Baseline**. **SCOPE** will create a new Baseline Count under the Production Release Branch under the Application. When you select to Update to Baseline, you will be prompted to select to [Hold Over or Exclude Counts](#) from the Update.

In the new Baseline Count, **SCOPE** automatically

- removes any processes or Data Groups that have been identified as being **Deleted**
- includes in the new Baseline size the **New** processes and Data Groups
- includes in the new Baseline size the final result of the **Changed** processes and Data Groups.

During the updating process **SCOPE** removes all the history of the Count Sessions i.e. which Count Sessions impacted which processes and Data Groups and just creates a Baseline Count that represents the Net Result after all of the Count Sessions for the selected WIP Release have been applied.

The new Baseline Count in Production now has a gold padlock and it is locked. This indicates that it represents the very latest Production Release Count and that there are no WIP Releases currently making changes to it.

*Note: The Update to Baseline works in a similar way to MS WORD when the User selects to "Accept all Changes", the resulting document now has the net result of all the editing performed on the working draft.*

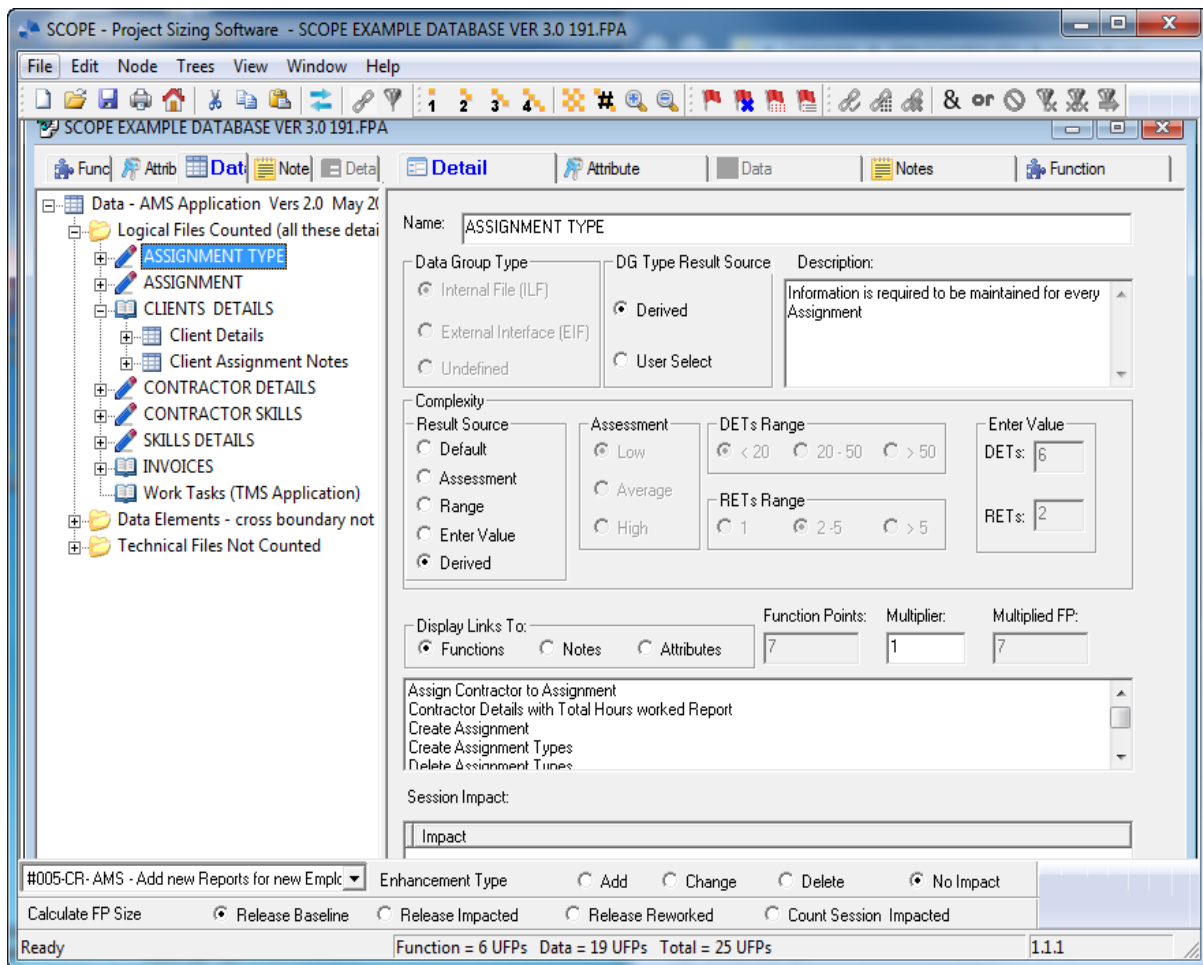
## Setting up the Model to Count

### Counting Data

## The Data Tree



[Counting Logical Files](#)



This tree represents the data storage and data retrieval functionality of your software application.

Functional size derived from the data tree is based on the type of Data Group and the combined effect of the number of Record Element Types (RETs) and Data Element Types (DETs) it contains. Where a:

- **RET** is a unique user recognisable sub-group of DETs within a data group.
- **DET** is a unique user recognisable field.

The data tree is the only tree with Four types of nodes instead of two.

The Four node types are:

- **Data Group Folder**, is the parent level 1 node, that can exist by itself (i.e. without any nested child nodes), or can optionally contain a collection of Data Groups, or DETs (but not a mixture of both). E.g. *CRM System Reference*



*Files = Customer Discount Rules, Customer Billing Rules, Files from other Applications.* You can create a hierarchy of Data Group Folders to assist you in grouping your Logical Files.

- **Data Group**, is the parent level 2 node, that can exist by itself (i.e. without any nested child nodes), or can optionally contain a collection of RETs, or a collection of DETs (but not a mixture of both). E.g. *Invoice File = Data Group.*
- **RET**, is a child node of a Data Group and may optionally contain a collection of DETs. E.g. *Invoice Header, Invoice Item Details are sub-groups of the Invoice Data Group.*
- **DET** is the lowest level node and may be a child of a Data Group or RET. E.g. *Invoice Number, Invoice Date are fields within the Invoice File Data Group and are child nodes of the Invoice Header RET.*

As with the Function Tree, you can choose the level of detail you wish to enter.

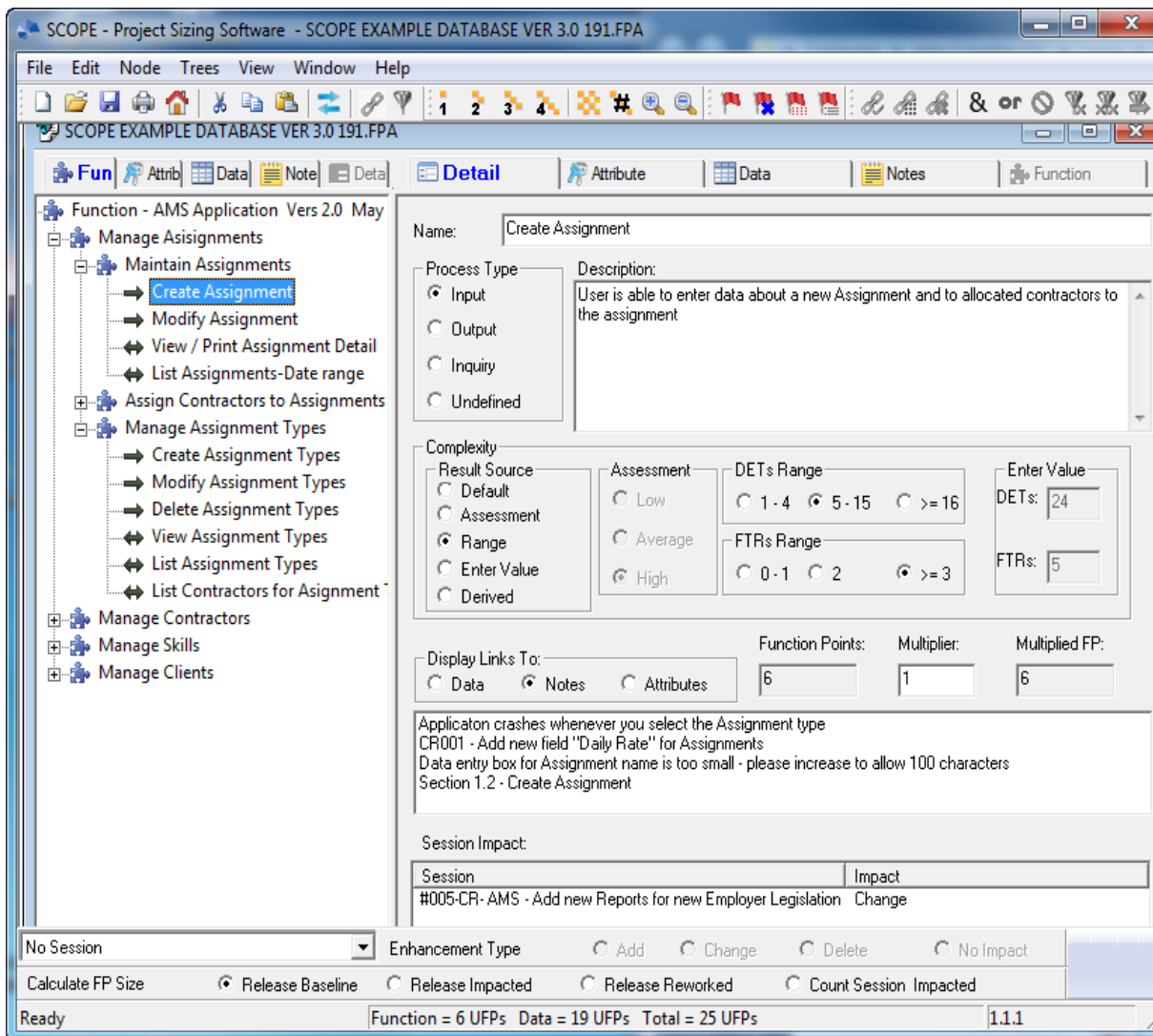
*HINT: It is good function point counting practice to map your Logical Data Groups listed in the Data Tree to the name of their corresponding Physical File in the [Notes Tree](#). Create a Notes SET called "Physical Tables" and insert the name of each physical table as a Note. Link each table to their corresponding Logical File. This assists with impact analysis of future Change Requests and provides useful documentation for anyone auditing your function point count.*

## Counting Transactions

# The Function Tree



[Counting Transactions](#)



This is where you build a representation of the software application's functionality.

The name at the root node of the **Function Tree** is the name of the **Release** model displayed. You can edit the Release name by selecting to Edit the Release from the List of Software Applications.

As you understand more about your software application's requirements, you construct a more detailed hierarchical model of Functions and Processes within your software. Functions can be nested within other Functions to any depth, like branches in a tree. Processes are the leaves of the tree and represent the lowest level of Process decomposition and cannot be nested.

**Functions** represent chunks of functionality. You choose to fill in as much detail as you want by inserting nested functions, which are then divided into Processes at a finite level. Examples of typical Functions would be: *Maintain Customer Information, Manage Invoicing.*

**A Process** is considered by IFPUG 4.3 to be the smallest unit of work that is meaningful to the end user and on completion leaves the application in a consistent state.

Examples: *Add a new Customer, Modify Customer Details, Delete a Customer, View Customer Details, List Outstanding Invoices, Print Customer Invoice.*

*HINT: Processes are equivalent to the IFPUG Elementary Processes. For those users not familiar with IFPUG CPM 4.3 rules, Elementary Processes roughly equate to 'USE CASES' which have been decomposed to the level of a single user function.*

Functional size derived from the Function tree is based on the type of Process (Input, Output or Enquiry) and the combined effect of the number of Data Groups accessed (File Types Referenced (FTRs)) and the number of fields (Data Element Types (DETs)) the Process needs to share with the User. Where a:

- **FTR** is a Data Group listed on the Data Group Tree.
- **DET** is a unique user recognisable field that may or may not be stored on a Data Group.

You can choose the level of detail you to decompose your functional hierarchy. If you do not want to go down to each individual process level then insert a number into the Multiplier field within the Process Details screen and **SCOPE** will multiply the function points for the identified process by the value of the multiplier. E.g. If you know that there are 25 Sales Reports and they are all of Average Complexity then put a 25 into the Multiplier field within the Process named Sales Reports. The function points calculated will be  $25 * 5 = 125$ .

*Note : If you have identified a user function that is not counted in IFPUG function points e.g. Menu but you want to record that you have found it but not counted it, then you can still include it in the Function Tree but assign it a Multiplier of zero so that it does not contribute to functional size. We would recommend that you assign a NOTE to provide your reasons for*

*not counting it, or put the reasons in the Description field. You may also want to create an Attribute called "Technical/Quality Feature" and assign it to the node you do not want counted.*

## Managing Applications Projects and Counts

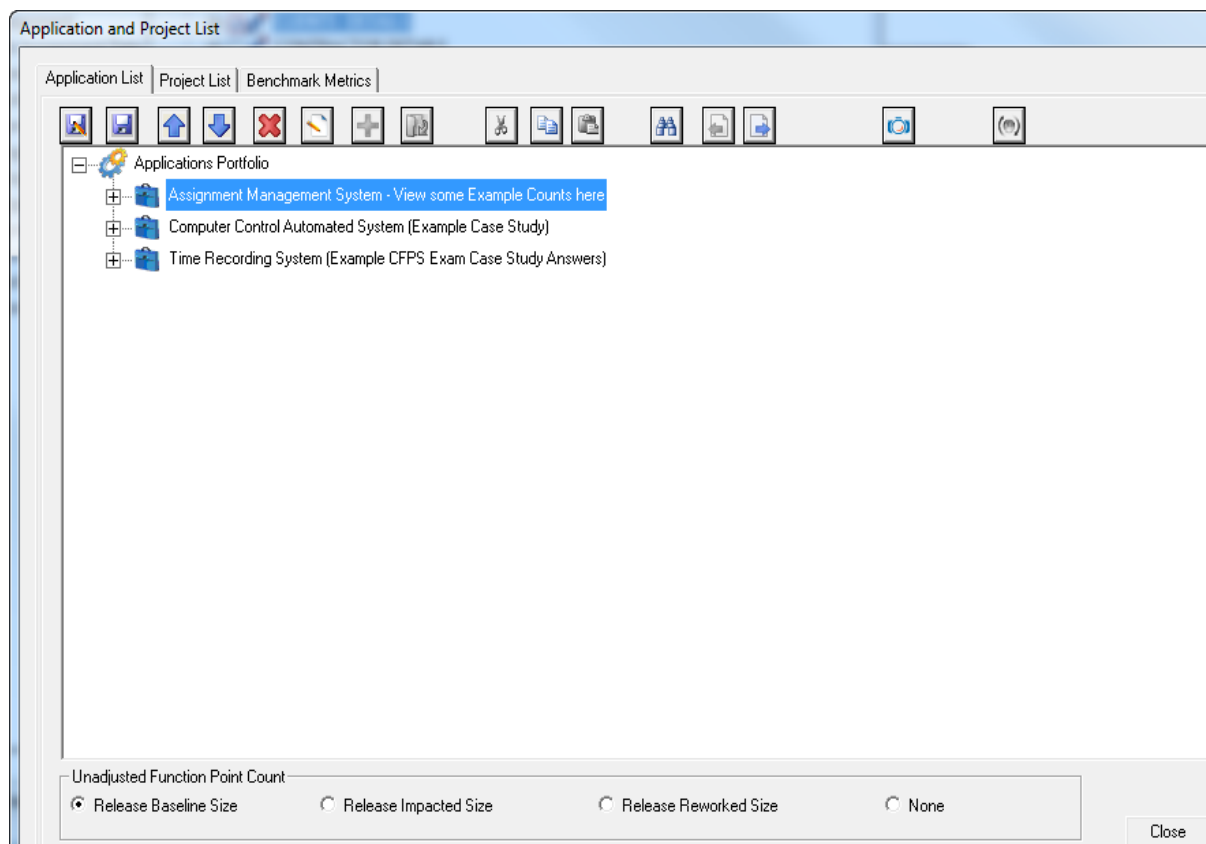
### Applications

## Applications - Overview



### [Software Applications List](#)

The List of Software Applications screen displays when you first open a **SCOPE** database. It can also be selected from under the main menu home option or **File - Project and Application List**. When selected it displays a dialog box listing the various software applications for which you have function point counts stored in the **SCOPE** database file.






**SCOPE** can store the functional models of different versions of a software application known as **Releases**. **Releases** are listed under each application in one of three predefined groups depending on the status of the **Release**. See [Releases - Overview](#)

## Set up a New Application




[Set Up a New Application](#)

### Create a new Software Application

Select menu  home option to view the Application List or select **File - Project and Application List** from the main menu. Locate your cursor at the top of the tree on  **Applications Portfolio** and select  to create a new Application. Enter the new software application name and descriptive details. Expand the **Release** trees for your new application name by clicking on the [+] beside the application name.

### Modify Software Application Details

Highlight the Application you want to modify. Select the **Details**  icon to modify its descriptive and metrics details.

Then [Create a New Release](#) and [Create a new Count Session](#) in order to start your measurement


## Releases



## Release Status



[Software Applications List](#)

### Release Status

 A padlock icon beside each Release denotes the status of the Release. The colour and state of the padlock identifies each type of Release and which Release is the Latest Release of the software. The Latest Release is the one to select when changes to its functionality need to be recorded. The Icon can be either Green or Gold and will be in one of two possible states, Locked or Unlocked:


- **Gold Padlock Icon** -  - Is only assigned to the "Latest" **Production Releases**
- **Green Padlock Icon** -  - Is only assigned to all other Releases


### Unlocked

If the padlock is green then this indicates that the functional model for this Release has the "Update Rights" to be used to update the baseline Production Release, i.e. this is the functional model on which any changes to the functionality should be recorded. Only an Unlocked **Work in Progress Release** can be used to update the baseline Production Release. Once the update is complete the Work in Progress Release is Locked and the update rights have been passed over to the new baseline Latest Release (its icon is set as a gold **unlocked** padlock).

If the padlock is gold then this is the latest Release and holds the baseline count for the application. This is the Master count which is used as the base for creating the next Work in Progress Release to record future changes to the application.

### Locked:

If the padlock is Gold  and locked it indicates that this Release has been copied to create a **Work in Progress Release** and has most likely changed since it was copied.

If the padlock is Green  and locked it indicates that this **Release** will not be able to update the baseline **Production Release** since it does not have 'update rights'.

*NOTE: The User can override the status of a **Release** (i.e. colour and status of padlock) by editing the fields called **Update Rights** and **Latest Release** when editing the **Release** details. (See [Set up a New Release](#) for more details.)*

# Releases - Overview



[Set Up New Count- Baseline Count](#)

**SCOPE** records function point counts for both Baseline Counts and Projects Counts and stores them under either:

## Production Releases

This is the Baseline count of the version of the application that is currently in production. Baseline Counts for past Production Releases are also stored in this group in the order in which they were recorded in **SCOPE**. The very latest Baseline Count is the last on the List and is called the "Latest Release" in **SCOPE** and is designated a (🔒 Gold Lock Icon). It is this Release that provides the baseline release on which future modifications are made.

## Work In Progress Releases



This is a copy of a functional model of the version of the software that is being worked on by the project team. If the software is new, then it may be the functional model of the first version of the software during its development. If the software exists, i.e. the application is in production, then it may be a model copied from the Latest Production Release and being worked on by the project team for an enhancement project. If the software to be counted is a new development project then record the count session by first setting up the Release as the first Release under Work in Progress Releases. When the development project is complete use the **Update to Baseline** option to create the new baseline count in the Production Releases. **SCOPE** creates a copy of the functional model for the Development project as a **Production Release**.

If you want to record the function point count for modifications (i.e., changes in functionality) to the software application by the project, then [set up a Count Session](#)




under the Work In Progress Release.



If the Work in Progress Release is impacted by multiple change requests and each of these need to be separately recorded and functionally sized, then select to [Add a Count Session](#) for each Change Request. You can associate each Count Session with a  Project. Open the Count Session () to record the impact of the changes to the Release specific to the Change Request. Each Work in Progress Release can have multiple Count Sessions recording their impact concurrently. I.e., a Process or Data Group can be recorded as being impacted (added, changed or deleted) by multiple Count Sessions.

When all changes to the functionality from the projects within a Release have been recorded on the Work in Progress Release model then it can be used to [Update to Baseline](#). If you highlight a Release that has update rights (green open padlock) and

select  Update to Baseline then all 'impacts' recorded on the work in progress model are accepted and the net result is the new baseline version which is automatically copied into the Production Releases. This is now the new Latest Release and it has the Update Rights, where 'update rights' are assigned to the Release that was the last to be changed. i.e. the current version of the model against which changes can be made and these changes can be used to update the baseline. (Note: you can manually select a Release to have the Update Rights by

selecting it under  Release Details Screen)

### Other Releases

This is an archive area for releases. Any version of the application stored here is also editable, and can be based upon any other release version (including a Work In Progress Release). Typical usage would be to store a 'snapshot' of a release at any point in time. Versions within **Other Releases** cannot be used to update the baseline. If you want to use a release in Other Releases to update the baseline then create a New Work in Progress Release based on the selected Other Release, then ensure it has Update Rights.








(See also [Set Up a New Release](#))

## Set up a New Release




### [Set up New Release](#)

In the Application List screen () , select the type of **Release** you want to measure.

- If your software already exists and you want to develop a baseline model (Application Baseline Count) then select **Production Releases** and  a **new Release** and its details. The **Icon** for this new release is an open gold padlock indicating that it is the **latest release** and can be edited (has **update rights**), (see Software Applications).
- If the software application model is already recorded in **SCOPE** and you want to measure the impact of a user Change Request on the software (Enhancement Project Count) then select **Work in Progress Releases** branch under the Application.
- If any Work in Progress Release has the update rights (i.e. its Icon is an open  padlock) then this is the release that is currently being sized for different change requests. Select this release to make your changes.
- If there are no Work in Progress Releases or none of them has the update rights then you will need to create a new release. If a Production Release exists then copy the Latest Production Release that has update rights (gold open padlock icon) by highlighting it and using CTRL C or select  copy icon. Locate your cursor on the Work in Progress Node and select the paste icon or CTRL V.
- If there are no production releases you can use a previous Work in Progress Release and delete the counts or just select the option  a **new Release** and start your functional model again.

Only a Work in Progress Release with an Open Padlock can be selected to update


the Baseline in the Production Releases by selecting the  icon "**Update to Baseline**" button in the **Application List**. The default in **SCOPE** is to have the last

Release in the Release List as being the one that is being edited and therefore selected as the 'Latest Release' with 'Update Rights'. If you want to transfer 'Update Rights' to another Release then highlight the Release and select the Details Button.


In the Details screen de-select Update Rights. Highlight the Release you wish to transfer these rights to and in the Details screen select to give it Update Rights.



## Count Sessions



# Count Sessions - Overview

An important concept of working with **SCOPE** is that of the  **Count Session (Session)** tracks the changes (impacts) of the User Requirements for the software within a particular release. **A Count Session** would typically be set up for a **Change Request** or a group of Change Requests. It corresponds to an Enhancement Count in the IFPUG Terminology if the change is to an existing application. For a planned application, then the Count Session would correspond to a Development Count.

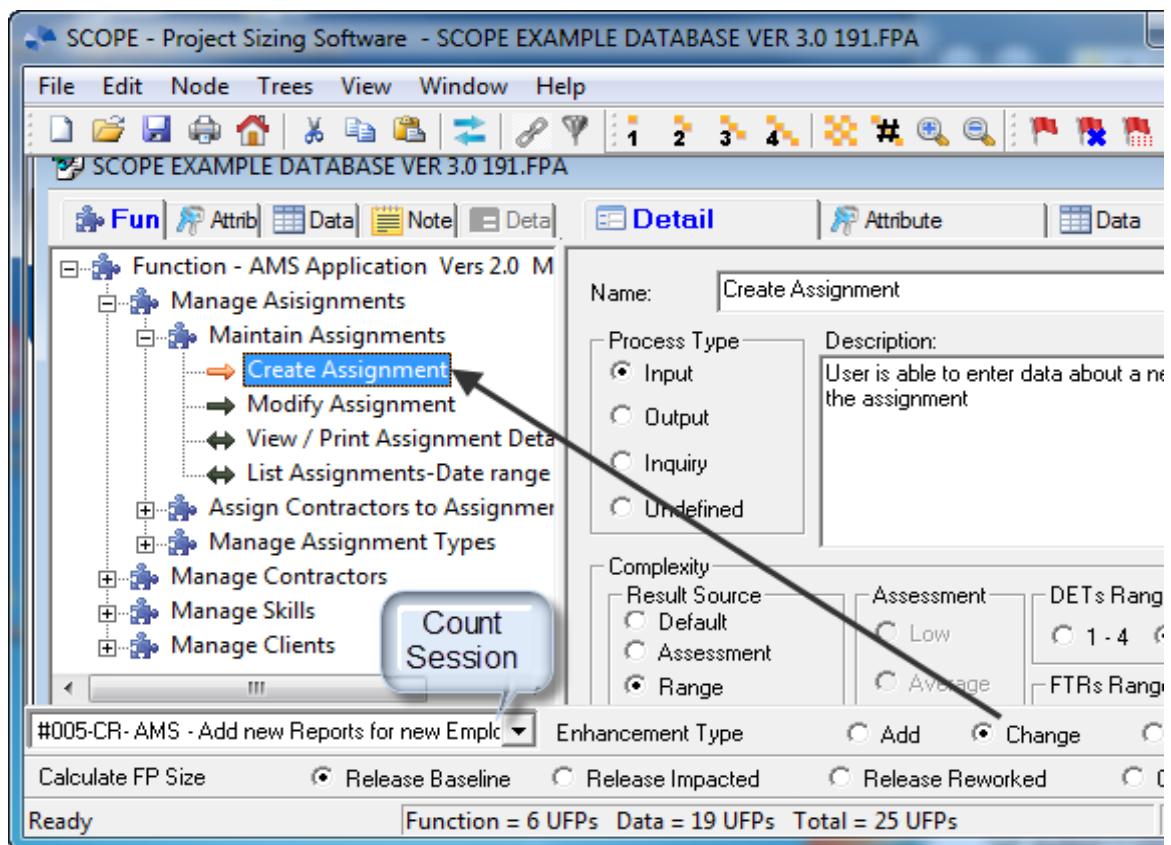
The Project implementing the Change Requests can be created in the Project list along with the type of project selected when entering the **Count Session** Details. As a special case a **Count Session** can also be set up to record the background of a functional sizing activity for a Baseline **Production Release**.

*Hint: A  **Project** can be linked to many different Count Sessions within many different Applications. This enables you to size the **SCOPE** of change of a Business Requirement which has a project that impacts multiple applications. The total project size (sum of all the counts for all the applications linked to the project) is reported in the **Project Details Report** or online for each project in the Project List by selecting the radio button "Project Impacted Size".*

One  **Release** may have many **Count Sessions**. The Releases are displayed in the list in '**bolded typeface**' with a padlock icon whilst the Count Sessions are displayed under a Release as 'regular typeface' and have a  calliper icon. (See [Create a new Count Session](#) )

To start a new **Count Session**, to record the size of a Change Request, highlight the name of the latest **Work in Progress Release** in the list of Software Applications. (Select  Home on main menu), and click the  button to add a new **Count Session**. Enter details about the Count Session. To record functional changes associated with the **Count Session** highlight the **Count Session** name under the Release and double click or select **Open**. See [Starting your First Function Point Count](#)

**SCOPE** keeps track of the modifications required by a Change Request by recording the changes as 'impacts' on the Function Tree and Data Tree. Each impact is associated with a **Count Session**. . To start your count, locate the Function Tree or Data Tree on which you want to record the changes on the LHS window.



The impact on a Process or Data Group is recorded by highlighting the node on its tree (on the LHS screen) and registering the **Type of Impact** using the radio button on the status bar at the base of the LHS hierarchy. The Type of Impact options you have to choose from are:

- **Add**
- **Change**
- **Delete**
- **No Impact**

Any *new* functions added whilst you are in a **Count Session** will be automatically allocated an impact type of '**Add**'. **SCOPE** displays the 'tracking' of impact type within a **Session** by highlighting the impacted Process and Data Group Icons with a different colour depending on the impact type allocated.

### Node Icons – Impact Type

- **Green** = Add
- **Orange** = Change
- **Red** = Delete
- **Black** = No Impact

To view the name of the **Count Session** for which the impacts are being recorded, see the drop-down list of **Sessions** for this release, which is displayed next to the **Impact Type** on the status bar at the bottom of the screen. To record the impact for any other **Session** for this release, first select that **Session** name from the list. If any single Process or Data Group has been impacted by multiple **Sessions** then the names of these multiple **Sessions** and their impact types are displayed in a window within the 'details' view for the Process or Data Group.

For example a new Process (**Add** impact type) may be changed during the development life-cycle by two additional change requests. Each change request will be associated with a **Count Session** and the impact type of '**Change**' will be recorded. The details screen will display the names of the three Sessions and their '**Add**' and '**Change**' impacts types. The 'rework' factor will record the three impacts and report the cumulative effect in the **Release Rework Report** (i.e. multiply the function points for the Process (=4) by the rework factor (=3) and give a total of (12).

**NOTE** : Tracking **Impact Type** for each Change Request (**Session**) with a colour is similar to the Microsoft WORD 'tracking option' used in document editing sessions, where a different colour is used to highlight new added words, or existing changed words or deleted words. Whereas Microsoft WORD changes the font colour for the different types of modifications and for different Users, **SCOPE** keeps the colour allocated to the impact type, the same, but only displays one "User's changes", i.e. on one **Sessions** modifications, at any one time and only the modifications for the selected Session are indicated by the icon colour. However, as in Microsoft WORD, **SCOPE** records all the impacts of all the **Count Sessions** on the *same Release* model so their cumulative effect can be displayed and reported. Reporting the cumulative effect or 'rework' is similar to displaying all the current changes on the screen in Microsoft WORD, whereas the **Baseline Release Report** is equivalent to Microsoft WORD's option of leaving Tracking on but 'not displayed on the screen'. I.e., it gives the net result and does not include the deleted functions. Updating to Baseline, is the same as "Accepting all Changes" where the NET effect of the additions, changes and deletions is the resultant model in the Production Release.

The ability to record concurrent impacts from more than one count **Session** facilitates configuration control of change requests within a particular release. It ensures that modifications from concurrent projects do not overwrite each other when the production baseline release is updated with the result of the latest impact.

## Set up a New Count Session

The following video tutorials explain in detail how to Set up New Count Sessions. *If the video display does not fit your screen, then please adjust the resolution to the highest settings.*



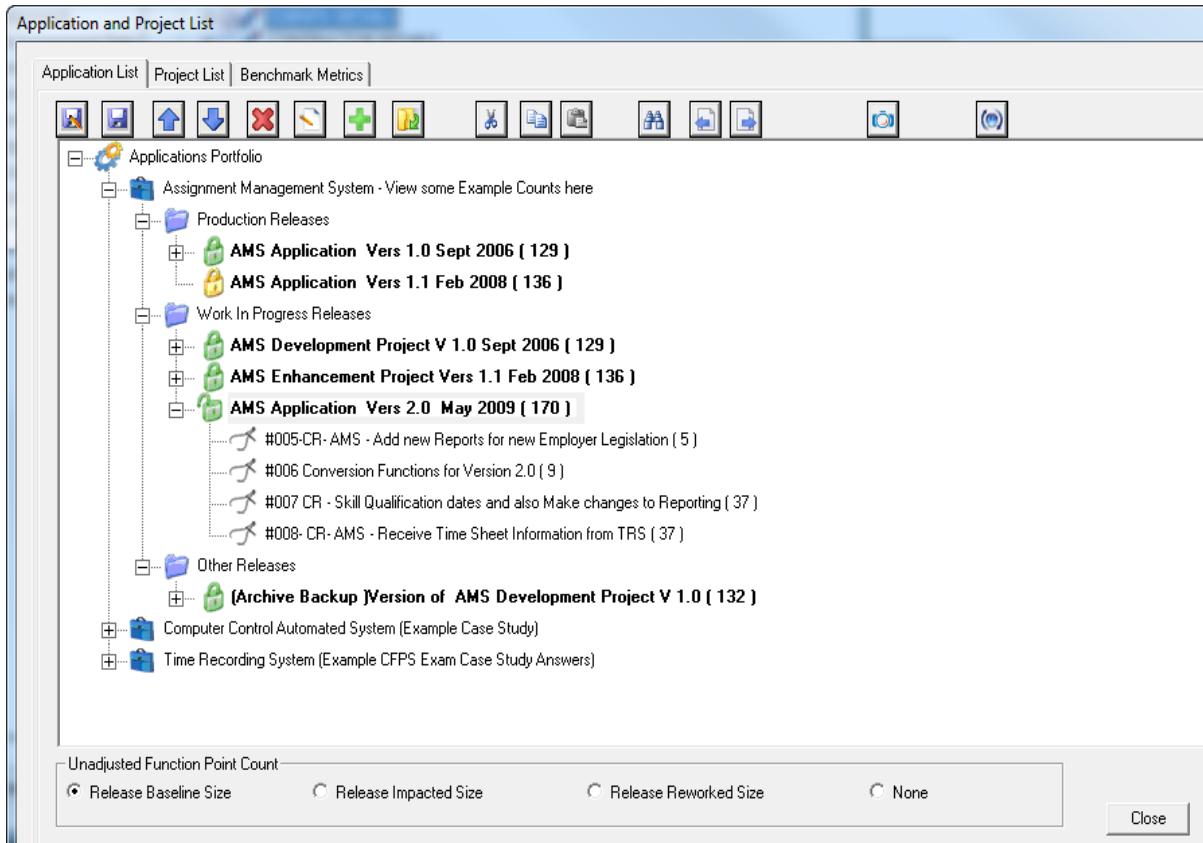
[Set Up New Count-Baseline Count](#)





[Set Up Multiple Counts for Same Release](#)



## [Set Up New Count - Enhancement Count](#)





Highlight the **Release** and select to  a new **Count Session**. In the  details screen for the **Count Session**, if the **Count Session** is associated with a particular project then select the project name from the list. (See Project List.) When you have completed the details highlight the name of the **Count Session** and **Open** either by double-click or selecting the Open Icon.

**Count Sessions** are used to record:

- the functions delivered by a new Development project, or
- if the software exists to register the impact of an Enhancement project's Change Requests on a Release of your software application

The **Function Tree** displays on the main screen when you **Open** a **Session**.

You can display the **main screen** with the Function Tree at any time by selecting Home  or under **File-Project and Application List** menu and then selecting the  **Session**.

*HINT: If you want to track the impact of a Change Request (Development or Enhancement Project Function Point Count) then highlight your selected Release and Add a Count Session and its details. If you just want to make changes without the changes being tracked then when you open the count on the Tree Screen bottom left hand side and select "No Session" from the drop down list of the names of available Sessions in the Release. When in "No Session" changes are not tracked.*

See Also [Count Sessions](#)

## Projects

# Link Projects to Count Sessions



Linking Counts to Projects



Set Up New Count-Enhancement Count

A project can be associated with one or more Count Sessions for one or more Applications. Select to link a Count Session to a particular Project either by:

- Selecting the Project List Tab on the Project and Application List Screen, highlight the Project and select **Add Count Session**, the Applications List will display all the available Count Sessions. Highlight the Count Session you want associated with the Project and **Select**.
- When editing the Details for a Count Session, in the Count Session Details screen, select the Project from the **Project List** option




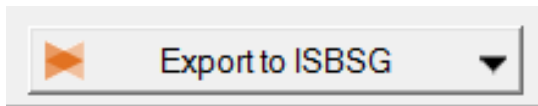
## Project Metrics for ISBSG




### [Exporting Data to ISBSG](#)

The project characteristics and metrics data (effort, cost, duration etc) can be entered into **SCOPE** for later use in productivity analysis. These characteristics and metrics are consistent with those required by the International Software Benchmarking Standards Group (ISBSG see [WWW.ISBSG.org](http://WWW.ISBSG.org)) for input into their repository.

To Print Project Details, Highlight the Project, select  Report - Benchmark Marking Details - Project Details



Under the Benchmark Metrics Tab, select  to export Project Details and all the function point metrics to ISBSG see: Benchmark Metrics

Note: ISBSG can accept XML input since January 2011.

## Projects - Overview

The Project List, lists the software development or enhancement projects that have had User Requirements that change the functionality delivered by the software applications in your **SCOPE** database.

-

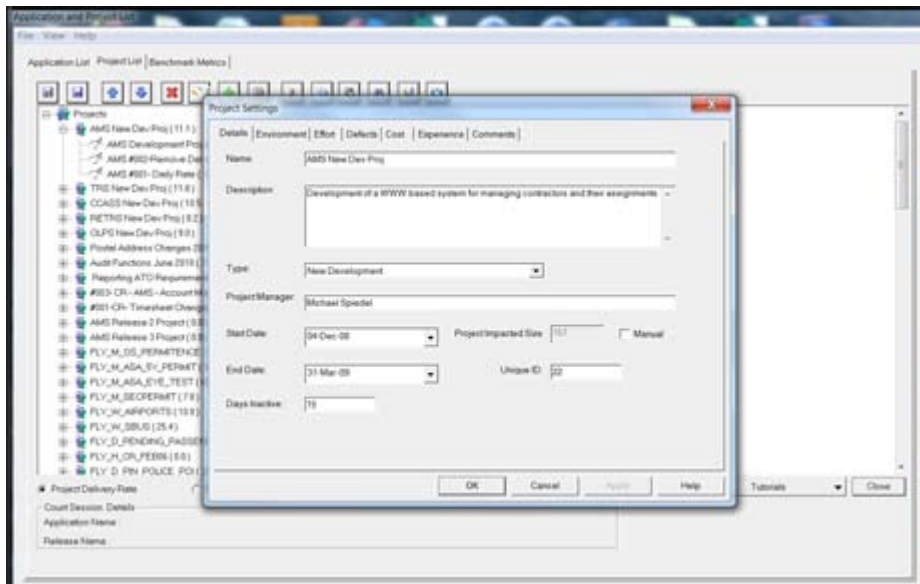
See [Link Projects to Count Sessions](#)



### [Linking Counts to Projects](#)

-





The **Project Details Report** includes the size of each of the Count Sessions that are linked to the Project and a total functional size for the project. It also reports the Project Delivery Rate (PDR) in hours per function point and the dollar cost per function point for the Project. This information is also reported online in the Project List by selecting either *Project Delivery Rate* or *Project Impact Size* radio button.

Project Settings

Details | Environment | Effort | Defects | Cost | Experience | Comments

Effort

Effort includes Development team  
 Effort includes Development support  
 Effort includes Planning  
 Effort includes Computer Operations  
 Effort includes End Users  
 Effort includes Unpaid Time:

Derived	Activities Included in Total Hours
<input type="checkbox"/> Plan Hours:	450 <input checked="" type="checkbox"/>
<input type="checkbox"/> Specify Hours:	600 <input checked="" type="checkbox"/>
<input type="checkbox"/> Design Hours:	0 <input type="checkbox"/>
<input type="checkbox"/> Build Hours:	2240 <input checked="" type="checkbox"/>
<input type="checkbox"/> Test Hours:	750 <input checked="" type="checkbox"/>
<input type="checkbox"/> Implement Hours:	400 <input checked="" type="checkbox"/>
<input type="checkbox"/> Total Hours:	4440

OK Cancel Apply Help

## Set up a New Project



### [Set Up Project](#)

Set up a **New Project** from under home or select File / **Project and Application List** and selecting the **Project List** Tab or when in the Count Session Details screen select the Project List Button.

A Project Corresponds to a Business Initiative. As such it may have requirements that impact many applications within an Organisations Software Portfolio.

A Project may be a New Development or a set of Requirements for Changes to one or more existing applications i.e. an Enhancement Project

**SCOPE** allows you to set up a Project and then [link the project to the Count Sessions](#) for each Application Impacted. Total Project size and productivity can then be determined by running the **Project Details Report** or online in the **Project List** screen.

*HINT: To just work on the counts relevant to your own Project, highlight a Project and press the Snapshot Project Icon on the Project List to select all the linked Count Sessions for a Project to be exported to a new **SCOPE** database.*

## Value Adjustment Factor

# Assessing the Value Adjustment Factor

NOTE: Assessing the VAF and using Adjusted function points is no longer recommended in IFPUG CPM 4.3 , nor is it used by the ISBSG group when reporting functional size. It is highly recommended that if your organisation is using Adjusted Function Points for size that they review this strategy to comply with the ISO standards on functional size.

The screenshot shows the 'Value Adjustment Factor' dialog box. It is divided into several sections:

- General System Characteristic:** A list box containing 'Data Communications', 'Distributed Processing', 'Performance', 'Heavily Used Configuration', 'Transaction Rates', 'On-line Data Entry', 'Design for End-user Efficiency', 'On-line Update', 'Complex Processing', 'Reusability', and 'Installation'. 'Data Communications' is selected.
- GSC Description:** A text area containing the description: 'Data Communications describes the degree to which the application communicates directly with the processor. The data and control information used in the application are sent or received over communication facilities. Devices connected locally to the control unit are considered to use communication facilities. Protocol is a set of conventions that permit the transfer or exchange of information between two systems or devices. All data communication links require some type of protocol.'
- Rating:** A dropdown menu with options 0, 1, 2, 3, 4, and 5. '4' is selected.
- Rating Description:** A text area containing the description for rating 4: 'Application is more than a front-end, but supports only one type of TP communications'.
- Rated:** A checked checkbox.
- Notes:** A text area containing the note: 'WWW based application - requires data communication'.
- VAF:** A text field containing the value '1.10'.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom.

This can be optionally used to record the features of the software and adjusts the Functional Size to a delivered product size.

When the main screen is displaying the hierarchy trees for a particular Release select File – **Adjustment Factor** from the main menu. The **General Characteristics (GSCs)** will display as defined in IFPUG 4.3. These have a default rating of '3' (for average influence) and the **Rating** check box will be empty.

Highlight the General Systems Characteristic that you want to rate and select the appropriate rating number from 0 to 5. As soon as you move the rating from 3 to another value the GSC is recorded as having been rated and the check box will be ticked.

If you rate any single GSC then the VAF will be calculated assuming the other non-rated GSCs to have a value of '3'.

If you do not select to rate any GSC then the VAF will default to the Industry average default value of 1.00.

**Value Adjustment Factor** reports will highlight when the VAF or GSCs have assumed a default value.

To Report the **Value Adjustment Factor** - From the main menu select File – Report Selection – Others – Value Adjustment Factor. (see Other Reports).

The **Value Adjustment Factor** can be imported and exported between Releases within the same or different Applications and/ or **SCOPE** databases.

*Note: The Value Adjustment Factor is an optional step in the IFPUG 4.3 and the IFPUG ISO standard for Functional Sizing. The Unadjusted function point count is the ISO/IEC 14143-1 compliant functional size.*

## Value Adjustment Factor - Overview

Select **Value Adjustment Factor (VAF)** to record the degree of influence a set (14) of quality and technical characteristics **General System Characteristics (GSCs)** have on the application.

The degrees of influence range on a scale of zero (being no influence) to five (being strong influence).

The types of **GSCs** are listed, together with the IFPUG description. Select the appropriate number to rate the **GSC** and optionally enter a descriptive note to support your choice.

Any **GSC** that you have not rated will assume the average rating of '3'. If you do not rate any of the **GSCs**, then the default Industry VAF (value =1.0) will be used in calculations. The VAF is used to calculate the **Product Size** for the selected release in Adjusted **Function Points**.

To Report the Value Adjustment Factor – from the main menu choose - File – Report Selection Description - Release Value Adjustment Factor.

You can Import and Export the Value Adjustment Factor between Releases within the same **SCOPE** database or different **SCOPE** databases. See [Assessing the Value Adjustment Factor](#)

**Value Adjustment Factor**

General System Characteristic:

- Data Communications
- Distributed Processing
- Performance
- Heavily Used Configuration
- Transaction Rates
- On-line Data Entry
- Design for End-user Efficiency
- On-line Update
- Complex Processing
- Reusability
- Installation

GSC Description:

Data Communications describes the degree to which the application communicates directly with the processor. The data and control information used in the application are sent or received over communication facilities. Devices connected locally to the control unit are considered to use communication facilities. Protocol is a set of conventions that permit the transfer or exchange of information between two systems or devices. All data communication links require some type of protocol.

Rating: 4

Rating Description:

Application is more than a front-end, but supports only one type of TP communications

Notes:

WWW based application - requires data communication

VAF: 1.10

OK Cancel

## Managing the SCOPE Database

### Export to SPR KnowledgePLAN® (CSV)

**SCOPE** exports a summary of the currently selected Release or Count Session's Functional Size Results and Value Adjustment factor into a CSV format compatible for import into SPR KnowledgePLAN®.

Open the selected Release or Count Session you want to estimate in KnowledgePLAN® and select **Export to SPR KnowledgePLAN®** under Edit / Export.

**SCOPE** prompts the user to name the file and the directory to save the Exported \*.CSV file format.

This CSV format is a very generic layout and this function may also be used to create Function Point Results for import into other software of your choice.

## Export XML to a Metrics Repository

Select **Export to Metrics Repository** (XML) from under Edit / Export when you have a Release open. **SCOPE** prompts you to name the directory and the exported XML file. This export has been designed to export all the associated attributes and metrics calculated and stored within **SCOPE** for example it exports all the fields identified as being mandatory by the International Software Benchmarking Standards Group's (ISBSGs) project data repository.

**SCOPE** exports *all the fields* that are in the **SCOPE** Description and Summary Reports for the associated:

- Application
- Release
- Project
- Count Session(s)

If you are located at Release Level (i.e. No Sessions are Open), then Count Sessions' Details will be exported.

If you have a Count Session Open within the Release then only that Count Session's Details will be exported.



## Import / Export Count Sessions



### [Import Export Counts within a Release](#)



### [Merging Counts within a Release](#)

**SCOPE** will allow you to  export a selected Count Session to be imported later into another Release within either the same **SCOPE** database file or a different one. This is essentially a 'merge' option where **SCOPE** merges the  imported Count Session into the Release, so the Release now reflects the latest impacts and the imported Count Session becomes one of the Counts for the Release. Use this option to 'merge' counts from one database to another, if you just want to 'extract' a count to work on it then to merge it back into the original database, then use the [Export](#)

[Single Snapshot of Count Session](#) or Release option by selecting 'Snapshot' when highlighting the count.

This feature is useful under the following circumstances:

- **Administrative Control of Your Counts** i.e. you have a 'master' database of **SCOPE** counts which is controlled by an administrator, who wants to quality check all counts prior to them being applied to the master version of the Release.

*HINT: To do this Export the latest **Release** from Master into another temporary **SCOPE** database where a counter can create and work on their Count Session. When the administrator approves the count it is then Exported from the temporary database and Imported back into the latest Release within the Master database.*

- **Multiple Counts to be completed Concurrently** - you have many Change Requests for Applications on the same database that need to be counted by multiple counters at the same time.

*HINT: To do this Export the latest **Release** from the Master Database to one or many temporary **SCOPE** databases where each counter will then create and work on their own Count Sessions. When each count is approved, they are then individually Exported from their temporary databases and Imported back into the latest Release in the Master database.*

- **A count on an Old baseline needs to be applied to the Latest Version** - i.e. You have completed a count for a project some time ago on an old version of the baseline and now the user wants to go ahead with the project and you do not want to have to spend the time to recount it based on the latest Release baseline structure.

*HINT: To do this Export the count from the older version of the baseline and then Import it back into the latest Release in the Master database.*



Note: Counts can be imported and exported between Releases for the same application, different applications, or the same or different **SCOPE** databases.

### **Setting up a Count Session to be Imported / Exported**

1. Set up the target Release Structure where you where you want to create your new count session. This can be done several ways e.g.:
  - copy the whole **SCOPE** Master Database which has the Release count into which you want to create your new Count Session. Leave any existing counts in the Release
  - create a new **SCOPE** Database and create a new application node and then export the selected Release from the source **SCOPE** Master Database into the Work in Progress Releases branch under the new application in the temporary database
  - create a new Release, based on an existing Release using the New Release function on the Software Applications List
2. In the new target Release create your New Count Session. (See [Create a new Count Session](#) )
3. Open the new Count Session and make your changes and Save.

### **Export Count Session**

1. Select **Export Count Session** either :
  - under Edit / Export on the main menu while you have the Count Session open
  - from the Software Applications List while you have the Count Session highlighted
2. **SCOPE** prompts you to name the Count Session file (\*.SCS) and select the target directory for where it is saved.

### **Import Count Session**

1. Open the **SCOPE** Master Database and Import the Count Session into the Latest Release by selecting **Import Count Session** either :
  - under Edit / Import on the main menu while you have the Latest Release open
  - from the Software Applications List while you have the Release highlighted
2. **SCOPE** prompts you to select the Count Session file (\*.SCS) and select the directory where it is saved.

See also [Import / Export Release](#) and Export Single Snapshot of Count Session or Release

## Import / Export Applications and Releases



### [Import Export Counts within a Release](#)






### [Import Export Releases](#)

**SCOPE** will allow you to export a whole Application and all its Releases and all its counts and all their details or just a node, branch or whole tree to an XML file of your choice. The XML file can then be saved for later import. You can import into the same or different Count, Release or Application within the same **SCOPE** database file or a different one. This option is useful when you want to merge the Application or Release counts into another **SCOPE** database. If you just want to extract the Application and its Releases to a clean empty **SCOPE** database then use the [Snapshot](#) option.


### **Import /Export a Whole Application or Single Release**

This function allows you to merge Release counts performed off-line or stored in another **SCOPE** database into a common master **SCOPE** Database.



To  **Import** or  **Export** an Application or Release and all its count details, select Home  and open the Applications List Tab. Highlight the Application node or expand and highlight a single Release for the Import /Export of the Release.

-


### **Export Application / Release**

Highlight the Application or Release name and select the  Export Icon. **SCOPE** will prompt you to name the XML file where your exported count will be saved.

### **Import Release**

Highlight the  Application Portfolio Group or Release Group (i.e. Production Release, Work in Progress or Other Releases) and select the  Import Icon.

**SCOPE** will prompt you to select the XML file where your count to be imported was saved. The Application or Release will be then imported and inserted as the last Application or the last Release in the Release Group.

Use the  down and up arrows to shift the imported Application or Release to your preferred position.

## **Import / Export Trees and Parts of Trees**



### **[Import and Exports Trees or Parts of Trees](#)**

#### **Import /Export Whole Trees or Parts of Trees**

This feature allows you to import and export whole trees or parts of trees which make up your functional model of your software. This is useful when you have:

- counted similar functionality in another application and you want to copy it over to this Release count to avoid re-typing

- made a generic list of assumptions in another count and you want to have access to them in this count
- added in functionality in a previous Release but removed it as part of a de-scoping activity and you want to put it back in again
- created a generic attribute list and you want the common set of attributes applied to all your counts
- had several different counters counting the same application and you want to merge their counts into a single functional hierarchy and data list

### **Export a Whole Tree or Part of a Tree**

Locate your cursor on the branch to be exported and select **Export Tree** from under the Edit menu. **SCOPE** will prompt you with the XML file name where your exported branch will be saved.

### **Import a Whole Tree or Part of a Tree**

Locate your cursor on the branch where you want the imported nodes to be pasted and select **Import Tree** from under Edit/Import on the main menu. **SCOPE** will prompt to check if you want to import Count Session Impacts and / or links to other Trees.

If the nodes you are importing have been impacted by a Count Session then you will be prompted to select to import a Count Session. In this case, **SCOPE** will add that Count Session to the List of Sessions for the current target Release.

See also [Using the Mouse to Copy and Move](#)

## **Import Counts from MS Excel®**



### **Import a Count from Excel**

Your counts previously performed in Excel can be imported directly into **SCOPE** by selecting the function Import from EXCEL Template under Edit/Import on the main menu. In order to import your counts you first need to extract all the count details into the **SCOPE** EXCEL template. **SCOPE** will only import from this template.

You can import 4 different sets of size related information I.e. **Transactions**, **Files**, **Notes** and **Attributes** from an MS EXCEL<sup>®</sup> file and saved in comma delimited file format (\*.CSV).

**Steps:**

1. Open the EXCEL<sup>®</sup> workbook “*Master SCOPE EXCEL Import Template.XLS*” which was installed in the same Directory as **SCOPE**
2. Save a copy of the workbook under a working directory
3. If you already have your count stored in an EXCEL<sup>®</sup> spreadsheet then you will need to copy it into the Transactions - Processes and Files - Data Groups spreadsheets in the “*Master SCOPE EXCEL Import Template*” Workbook. These worksheets have a specific content required for each column. You may want to convert your existing spreadsheet data to that required by the “*Master SCOPE EXCEL Import Template*” Workbook, before copying it.
4. Once you believe the data is in the correct format, select to copy the data from your count. Use the Option “**Paste Special**”, and select to Paste “**Values**” to paste your count data into your working copy of the “*Master SCOPE EXCEL Import Template*” Workbook. The validation rules in the template will check your data prior to importing it into **SCOPE** and highlight any errors in your content as **Red text**.
5. If you are pasting **text** stored in **software other than EXCEL**, (e.g. MS WORD), then copy the text into a temporary EXCEL spreadsheet. Select to copy the text from the temporary sheet, and using the option “Paste Special”, and selecting to Paste “Values”, paste into the “*Master SCOPE EXCEL Import Template*” Workbook. This ensures that the pasted values are validated prior to importing into **SCOPE**.
6. Check the count spreadsheets (Transaction - Processes and Files -Data Groups) for any **invalid data** which will be highlighted **in Red**. Check for any additional error messages are in the column after the last input column. Correct any erroneous data using the data entry input message as a guide for the correct values required. Enter data directly into the template for any additional rows you require to be imported into **SCOPE**.

7. The only **mandatory column** in any of the four spreadsheets is the first Column **A**. If you want your function point count details transferred to **SCOPE** then you will need to complete columns **C** and **D** and either **E, F, G+H**, to record the complexity or alternatively use Column **I** to just record the FPs awarded to your elementary processes or Data Groups and **SCOPE** will derive the complexity. Use Column **J** to record the enhancement impact type (add, change, delete).
8. **Do not leave any blank lines** in your list to be imported. As soon as **SCOPE** encounters a blank line it assumes the end of the list of data to be imported.
9. If you have a set of Notes or Attributes you would like recorded for the count in **SCOPE** then insert the list in the Notes List or Categories / Attributes worksheets. These items can be linked to their relevant functions once imported.
10. Once you have completed your data entry select to save your workbook as an \*.XLS file.
11. For each worksheet you want to import select to save as a Comma Delimited File (CSV), using the SAVE AS option under Files and selecting **CSV** (Comma delimited) (\*.CSV) when selecting the "**Save As Type**". Select OK and YES when prompted about saving and losing the formatting.
12. Save your file with relevant name and a CSV extension. You will need to save each worksheet (Transactions, Data, Notes) you want imported as its own CSV file name. For ease of importing, save related count files you want imported as a set in the same directory. When you close MS EXCEL you will be asked again to confirm to save the file. Only answer Yes if you have made changes since you last saved.
13. Open **SCOPE** and select under Files on the main menu select to import your function point count (Import from CSV) by selecting the relevant CSV for your Transactions, Files and Notes.
14. If you want to import a list of Functions / Processes or Data Groups into an existing **SCOPE** count then open the Release, highlight the tree you want to import into. Highlight the node under which you want the list to be inserted and select to Import Tree from **SCOPE EXCEL** template under Edit on the

main menu. From the browsed list select the relevant CSV file for that Tree Type.

## Import from FPW™ All Versions

**SCOPE** imports all the detailed count data from function point counting tools such as Function Point Workbench to the **SCOPE** format without losing any transaction, data, labels or note details. It also imports all links. The **IMPORT** from FPW option enables you to import your earlier counts created by Version 4 (1994) up to the Version 7 (2009) of the Function Point WORKBENCH™ (FPW) software.

**IMPORTANT - If you experience any difficulty with the import - With Microsoft Explorer™ copy the FPW database directory (i.e. all .db and .px files) to a directory under your local root directory or to your desktop.** (Note: Reducing the pathname of the source directory **assists earlier** operating systems (e.g. MS XP) to access to the paradox files)

### Converting FPW 4 to FPW 7 Databases

**SCOPE** will automatically convert FPW 4 to FPW 7 databases by first locating your FPW database only one level from the Root node on your computer then selecting the **Import from FPW** function on the main menu.

On selecting **Import**, **SCOPE** prompts you for the full pathname:

- of the source directory currently storing all the FPW .db and .px files (e.g. c:/FPW\_Source\_database)
- of the destination directory for the **SCOPE** database. Requires you to input a new file name for the **SCOPE** .FPA database in which to store the converted FPW data

After you have input the new file name, press **Import** and **SCOPE** will display a message asking you to be patient for very large databases as they may take several minutes to import. **SCOPE** converts all the .db and .px files from the FPW database into a single **SCOPE** \*.FPA database file, saved under the new file name you input.




Please contact Total Metrics [admin@totalmetrics.com](mailto:admin@totalmetrics.com) if you experience any difficulty and our support team will assist you.

## Export Single Snapshot of Count, Project, Release or Application

SCOPE allows you 'extract' via a snapshot  and save into a new database a:


- **Application** with all its Releases and Count Sessions
- **Release** with all its Count Sessions
- **Count Session** for a Release - has all the nodes in the Release but with only the selected Count Session impacts highlighted
- **Project** within a SCOPE database - exports ALL Count Sessions across all Applications impacted by the Project. For each Count Session in the project it exports all the nodes in the Release but with only the selected Count Session impacts highlighted

All  Snap Shot files include all the relevant details about the Application, Release, Project and Count Session, SCOPE saves these details in a new SCOPE Database. This provides an added level of security of your portfolio data in that it allows you to extract only the Counts relevant to the counter or the person who is viewing the count results. Once the extracted counts are updated or reviewed then the counts for the [whole Release](#) or just the Count Session can then be [exported and imported](#) back into the master Repository in SCOPE.

*SCOPE "SNAPSHOT" allows the Count administrator to control access to sensitive counts in the Master Repository, by extracting on the relevant count information for counters to work on. It allows counters to count remotely on a small database for additional speed and then merge their count back into the current baseline at a later date. It also allows a counter to SNAPSHOT their count to distribute for review with [SCOPE Viewer™](#)*

Note: The 'snapshot' database created is a standard SCOPE database but only has one Application or one Release and its Count Sessions stored.

To create a Snapshot database in the Project and Applications List, highlight the Release, Project or the Count Session you want to be extracted to the new database

and select the  Snapshot icon. **SCOPE** will prompt you to name the new database. This new database can be opened with either **SCOPE** or [SCOPE Viewer™](#).

This feature is useful under the following circumstances:

- **Send a count to a non-SCOPE user for review** - the administrator just 'snapshots' the relevant count and sends the database to the user with instructions on how to download [SCOPE Viewer™](#). The user can view all aspects of the count, all links, notes, attributes, details and descriptions without needing to have a licence for **SCOPE**.
- **Extract all the Count Sessions for a Project into a single SCOPE database and send these to a counter to complete the Project Count** - the administrator just 'snapshots' the relevant Project in the Project List and sends the database to the counter. When the counter has finished counting the Project they can 'export' the Count Sessions for Import by the Administrator.
- **Administrative Control of Your Counts** i.e. you have a 'master' database of **SCOPE** counts which is controlled by an administrator, who wants to quality check all counts prior to them being applied to the master version of the Release. Each time a counter wants to count on the current Release, the Administrator takes a snapshot of the current Release and sends it to the counter. When they have finished counting they [export their count](#) for import into the Administrators master database after it has been verified.

*HINT: To do this select to Export the latest **Release** from the Master into another temporary **SCOPE** database where a counter can create and work on their Count Session. When the administrator approves the count it is then Exported from the temporary database and Imported back into the latest Release within the Master database.*

- **Multiple Counts to be completed Concurrently** - you have many Change Requests for Applications on the same database that need to be counted by multiple counters at the same time.

*HINT: To do this select to Snapshot the latest **Release** from the Master Database to one or many temporary **SCOPE** databases where each counter will then create and work on their own Count Sessions. When each count is approved, they are then individually Exported from their temporary databases and Imported back into the latest Release in the Master database.*

- **Retain Security for highly sensitive counts** - the administrator just 'snapshots' the count that is relevant to the counter so that they cannot view other project counts.

## Auto Save Backup and Recovery

**SCOPE** will automatically save your database at prescribed time intervals. The default interval is 15 minutes but it can be modified or disabled completely by the User (View/User Options/ Auto Save). It is highly recommended that you do not disable Auto Save, however if you are planning major changes to your data then we suggest that you copy the database as a backup prior to making the changes, just in case you make a mistake. If your **SCOPE** database is very large then it may be more efficient to just 'snap shot' the Release you are working on to a new database as your backup. Then if you want to 'roll back' back your changes to the start then you can just import from the backup snap shot version.

Be aware that if you are using the multi-user **SCOPE Corporate** version of **SCOPE** that if another user selects to save the database then all your changes will automatically be saved by their command.

If for some reason **SCOPE** is terminated unexpectedly while you have an open **SCOPE** database, the next time you open **SCOPE** it will ask if you want to recover your unsaved file. If you confirm then your previous set of changes will be saved and your database re-instated.

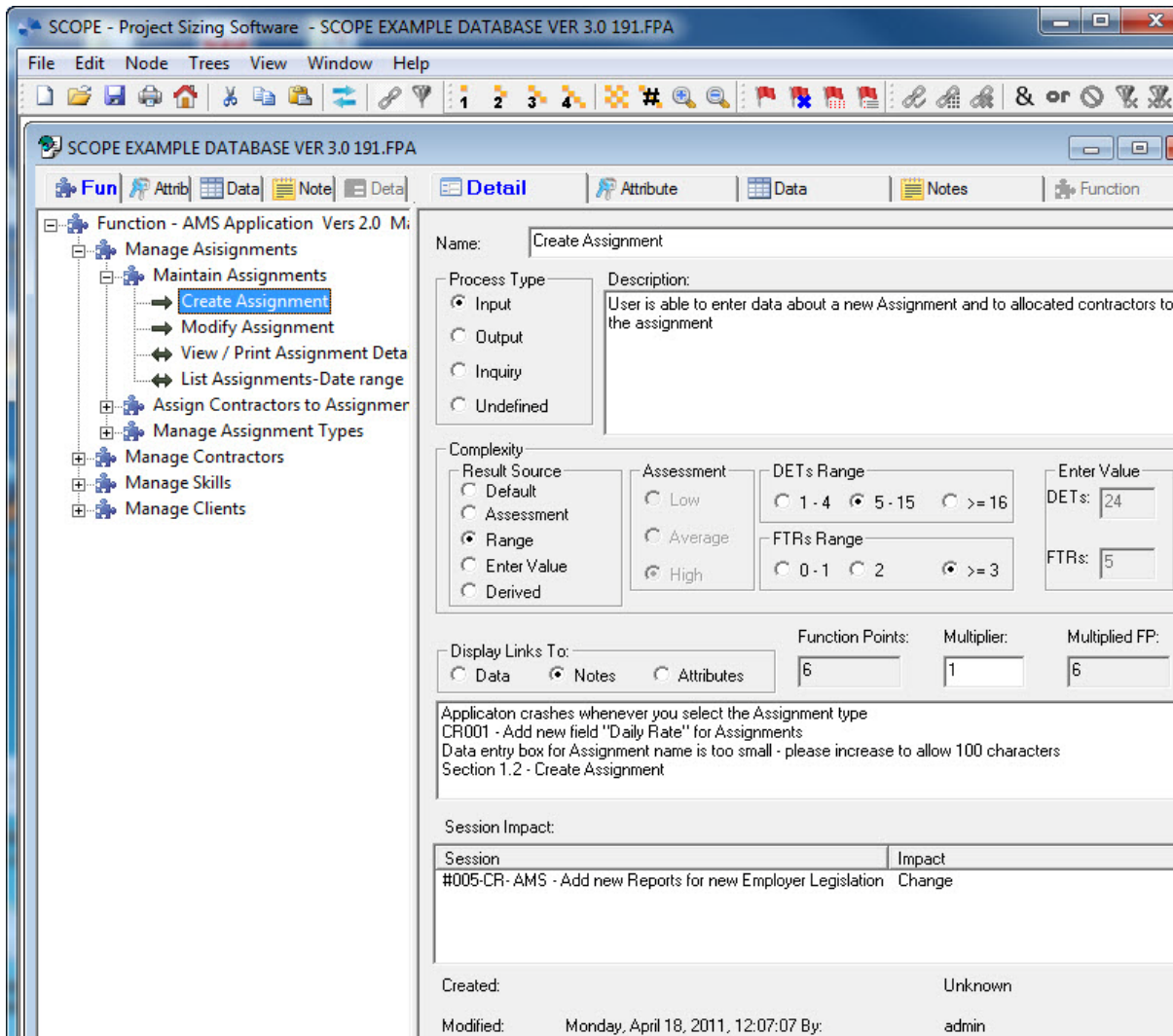
## Audit Trail of History of Changes to Counts

**SCOPE** will automatically record details of which Author who created or modified any tree node (Functions, Data, Attributes or Notes), as well as when the change was made. The information is displayed at the bottom of the Details screen for the Node. It tracks all nodes for all trees.

By default the machine designated user name will be reported as the author of the change, or you can input your own name as the author for your session (View- User Options menu). When reviewing counts, you can search the trees for those nodes created or modified by a particular user, on selected date ranges. The resulting highlighted nodes are flagged on screen and can be reported selectively on any of the **SCOPE** reports using the "Select Flagged Nodes" option in the Report Selection box.

This new audit option allows you to review any changes to a count and have a full history of when those changes were made and by whom. This is particularly useful for **SCOPE Corporate** multi-user environments when multiple users can maintain a count. Use Find and Replace to search on Dates changes were made or Author's

name. If you are unsure of who made any changes then put an "\*" in the search box all changes by all Authors for the selected dates will be highlighted.



## Multi-User - SCOPE Corporate

**SCOPE Corporate** License Type is designed for large organisations that require concurrent access by multiple users to a **SCOPE** database. It enables storage of all your function point counts in a central repository that can be updated and /or viewed simultaneously by any number of **SCOPE Corporate** and **SCOPE Viewer** users.

To avoid the issues of two users working on the same hierarchy at the same time and moving and changing components, **SCOPE** will lock a Release once it has been opened. I.e. As soon as a User opens a Count for a Release, that Release is locked by the User and no other Users will have access to it until the first User selects to

exit the count or opens another Release in the same database. **SCOPE** displays the name of the User currently working on a count. Other Users can open and access any other Release in the Database that is not specifically Locked.

•**SCOPE Professional** – has all the features of **SCOPE Corporate** but operates in the same mode as previous versions of **SCOPE** and is ideal for organisations that prefer to store their **SCOPE** counts locally and only need single user access at any one time to the database.

Users can upgrade current licenses from **SCOPE Professional** to **SCOPE Corporate** to take advantage of having global accessibility to your counts.



# SCOPE Reporting

## SCOPE Report List







### [Reporting Counts](#)

Use the Menu Option [Report Selection](#) (or Ctrl P) to list the available reports for **printing** or **preview**. Press + to expand the report group to select one or more individual reports for sending to the printer or viewing all content online. Reports displayed online can be saved as a PDF file using Acrobat Distiller (select to Print) or sent as an email attachment via MSOutlook. Clicking on the top branch will select all reports (select to Send). Reports can also be exported to HTML, MS EXCEL or MS WORD.

*NOTE: If the reports do not display in Preview Mode, Go to View, Screen Display Options and insert the location of the Runtime Version of Microsoft Access. This has been installed when **SCOPE** was installed but the directory location may not be the default. Use MS Explorer to find the correct directory. Insert the full pathname e.g. C:\Program Files\Microsoft Access Runtime\Office10.*

To only include nodes from a selected branch in the report, first locate the cursor on the appropriate tree branch in the main screen. Then in the report list 'check' the box marked '**from current position**'. If your report has fewer items than expected then you need to check exactly where the cursor is located on every Tree, as it only reports from that node downwards.

To further refine the selection of nodes to be included on reports, assign  **Flags** to the selected tree nodes in  Filter Mode using the Boolean selections (&, , ) and 'check' the box marked '**Select Flagged nodes**' in the Report Selection screen or just locate on the nodes you want to print and select the 'Flag' icon from the main menu. (See *Flags and Filters*)



The main report groups are:

### **Benchmarking Details Reports**

These reports, describe the background of the release models stored in **SCOPE**. Reports include the Application Details, Project Details, Release Details, Release Notes List, Count Session Details and the Value Adjustment Factor.

### **Hierarchy Tree Reports**

Provide a diagrammatic outline-view of each of the four Hierarchy Trees. The Function Hierarchy and Data Hierarchy Reports also provide an option to print the Function Point Counting details next to each node i.e. type, and Fps awarded.

### **Linked Tree Lists**

Provide a comprehensive list of the cross-referenced nodes Linking the Hierarchy Trees to each other. For Data Group / Function Linked Lists it also reports the type relationship between the Data Group and Process i.e. Update or Read Only.

### **Function Point Count Result Reports and All Counts for a Release**

See also- [Reporting the Functional Size in Function Points](#).

These reports provide both detailed and summary reports relevant to the Functional Size of the currently selected Release Model. The different types of Functional Size reports include and exclude different functionality as described in Table below. The Functional Size result will include all functionality on both the function and the data hierarchy unless you have selected to include only a branch from the current position or only selected Flagged nodes within a branch using the Filter Option. In that case the Functional Size reported will only be for the selected Flagged nodes.

### **All Counts for a Release**

Reports list a summary of all the Count Session Sizes both as a table and as a comparative Bar Chart and Pie Chart, detailing the relative contribution of each Count Session to the total Release Size.

### Detail Reports

These reports include, Process and Data Group Detail reports. I.e. all linked items and all functional size details each Process and Data Group that has been selected.

### Portfolio Size Reports

These reports list the size (baseline, impacted, reworked) of all Count Sessions, all Releases for all Applications within the currently opened **SCOPE** database, in either adjusted or unadjusted function points.

### Attribute FP Size Profiles

These Reports profile your counts for the % that is linked to each attribute within a Category. I.e. if you have identified processes as being mandatory to user or optional to the user and created Attributes called Mandatory and Optional then **SCOPE** will report the percentage of the count that has been allocated Mandatory and Optional.

If you have assigned Numerical Attributes then **SCOPE** will report the quantified results in the Numerical Attribute - FP Size Reports.

### Hierarchy FP Size Attribute Summary

These reports are a combination of all the information available on the Hierarchy FP Detail Reports, Function Attribute Lists and the **SCOPE** FP Count Result Reports (Detail and Summary). However they are unique in that are in a hierarchy format and they only display the nodes that are Relevant to the current selection. They are the only **SCOPE** reports that uniquely identify for any single process and or data group, the combination of attributes assigned to these nodes and to total them by Attributes. They also identify the relevant

impact types for the Nodes. The single report includes both the Function Hierarchy and the Data Hierarchy and the FP count summary reports.

The tables below describe the name, content and calculations behind each Report Type.

Description	SCOPE Report Name	Measures	Processes and Data Included	IFPUG Terminology
<b>Baseline Reports</b>				
Report the Net Functional Size of a Production Release	<b>Baseline Application</b>	Size of delivered application	All delivered	Application Function Point Count
<b>Release Reports</b>				
Report the Functional Size of Work in Progress Releases and Other Releases	<b>Baseline Release</b>	Size of delivered Release	All functionality delivered into production at completion of the Release (excludes any 'deleted' by a <b>Count Session</b> )	Development Project Function Point Count
	<b>Release Rework</b>	<i>Cumulative</i> size of functionality worked on by all Change Requests within this Release	Selects all impacted (added, changed and deleted) functionality for all <b>Count Sessions</b> within this Release	Not available

<b>Release Impacted</b>	The size of unique functions worked on by all Change Requests within this Release	All functionality delivered by this Release. Selects all impacted (added, changed and deleted) for all <b>Count Sessions</b>	Enhancement Project Function Point Count (for more than one Change Request)
<b>Count Session Impact</b>	Size of all functionality impacted by the currently selected Change Request	Selects all impacted (added, changed and deleted) by the currently selected <b>Count Session</b>	Enhancement Project Function Point Count (for a single Change Request)

**Linked Tree List Reports**

Linked List	SCOPE Report Name	Nodes Included	IFPUG Terminology
Reports the relationship of the Links between each of the four Trees	<b>Attribute Data</b> <b>Attribute Note</b> <b>Attribute Function</b> <b>Data Attribute</b> <b>Data Notes</b> <b>Data Function</b> <b>Notes Attribute</b>	Selects <b>all</b> Nodes currently linked. If Flagged Nodes or From Current Position is selected then those nodes are also included.	Not Available

**Notes Data**

**Notes Function**

**Function Attribute**

**Function Data**

**Function Notes**

**Detail Reports for Processes and Data Groups**

<b>Process and Data Detail Reports</b>	<b>SCOPE Report Name</b>	<b>Measures</b>	<b>Processes and Data Included</b>	<b>IFPUG Terminology</b>
Report the Functional Size details of each selected individual Process or Data Group. It also lists the names of all the <b>Linked</b> nodes (Attributes and Notes.)	<b>Process Detail Report</b>  <b>Data Group Detail Report</b>	Detailed description of each individual Process or Data Group and their <b>Linked Notes</b> , Attributes	Selects <b>all</b> Processes and all data groups for the Release	Not Available
Reports the General System Characteristics and their ratings. (See <i>Assessing the Value Adjustment Factor</i> )	<b>Value Adjustment Factor Report</b>		Reports the VAF value for current Release selected	Value Adjustment Factor
<b>Process and Data Detail Reports</b>	<b>SCOPE Report</b>	<b>Measures</b>	<b>Processes and Data Included</b>	<b>IFPUG Terminology</b>

	Name			
Report the Functional Size details of each selected individual Process or Data Group. It also lists the names of all the <b>Linked</b> nodes (Attributes and Notes.)	<b>Release Impacted Size – All Sessions Counts - CHART</b>  <b>Release Impacted Size – All Sessions Counts - CHART</b>	For all Counts recorded under the current Release it reports the Size of all functionality impacted by all Change Requests for the Release	Selects all impacted (added, changed and deleted) by each <b>Count Session within the Release</b>	Enhancement Project Function Point Count (for the Release – aggregated count of all change requests)

### All Counts for a Release - Reports

These tabular and graphical reports list the results of all counts for the currently selected Release.

### Portfolio Size - Reports

Reports the baseline impacted and reworked size for all Production, WIP Releases and their Counts, in both adjusted and unadjusted function points.

## Types of Functional Size Reporting

**SCOPE** reports the functional size in 4 different ways Each Type of report is used for a different purpose and has a different **SCOPE** of functions included in the Size.

The types of **SCOPE** reports are as follows:

1. **Release Baseline Functional Size**
2. **Release Impacted Functional Size**
3. **Release Reworked Functional Size**
4. **Count Session Impacted Functional Size**

The type of report can be selected at the time of reporting.

## 1. Release Baseline Functional Size

Reports the 'Net' size of the Release after all the impacts from the Count Sessions have been applied. Although the functions marked as deleted are displayed on the screen, these deleted functions will be excluded from the reports and the calculated net reported size.

The Baseline Release Functional Size for a Work in Progress Release will be the same as the size that will be reported in the Production Release after it is used to update the Production Release.

This size measures the total amount of functionality that is delivered to the User by the application and will be supported.

*Note: In IFPUG CPM terminology this report would be equivalent to the Application Baseline Size (Production Release) or the Development Project Size (WIP Release).*

## 2. Release Impacted Functional Size

Reports the aggregated size of the Count Sessions listed under the selected Release. It is the total size of this Work in Progress Release and is the aggregated size of the *unique* functions impacted by the Count Sessions listed for the Release.

This is different from a Release Reworked Report in that if more than one Count Session impacts a Process or Data Group then the impacted function is only included *once* in the total size. E.g.: if the WIP Release had two Change Requests (i.e. separate Count Sessions) that changed a process of 4 function points, then the impacted process would only contribute 4 function points to the Release Impacted Functional Size. However the impacted process would contribute 4 function points to the size of *each* Count Session within the Release.

This size measures the total amount of *unique* functionality that is worked on during the Release and ignores any rework. It is the net size of the Release irrespective of how many times a function was impacted by Change Requests.

*Note: In IFPUG CPM terminology this report would be equivalent to the sum of the Enhancement Project Counts for a particular Release of an Application except that it excludes duplicate counting of Enhancement Projects that impact the same function.*

### 3. Release Reworked Functional Size

Reports the *cumulative* size of the Count Sessions listed under the selected Release. It is the total size of all the work done in this Work in Progress Release . This is different from a Release Impacted Report in that if more than one Count Session impacts a Process or Data Group then the impacted function is only included *each time it is impacted* in the total size. E.g. if the WIP Release had two Change Requests (i.e. separate Count Sessions) that changed a process of 4 function points, then the impacted process would contribute 8 (i.e. 4 + 4) function points to the Release Reworked Functional Size.

This size measures the total amount of functionality that is worked on during the Release and includes any rework. It is the total aggregated size of the Release and takes into account for the size if a function was impacted by more than one Change Request. Many suppliers use this report for billing purposes as it actually reflects the work they were asked to do.

*Note: In IFPUG CPM terminology this report would be equivalent to the actual sum of the Enhancement Project Counts for a particular Release of an Application.*

### 4. Count Session Impacted Functional Size

Reports the size of each Change Request (Enhancement Project) as a Count Session within a Release. It is the total size of all impacted (added, changed, and deleted) processes and data groups for the selected Count Session listed within the Work in Progress Release.

This size measures the total amount of functionality that is worked on during by the Change Request for the Count Session.



*Note: In IFPUG CPM terminology this report would be equivalent to the size of an Enhancement Project Count for a particular Release of an Application.*

See also [Report Selection](#)

## Reporting the Functional Size in Function Points



### Reporting Counts

**SCOPE** conforms to the requirements of the ISO standard 14143-1 and the IFPUG ISO standard 20926 and therefore reports the functional size as Unadjusted Function Points unless stated otherwise.

**SCOPE** reports the functional size either:

- Online
  - displaying the size for each Application, Release and Count in the Project and Applications List Screen
  - for a currently displayed Release, and its Count Session in the Tree Hierarchy Screen
  - for a currently displayed Release, Count from the Reports List by selecting to Preview the Report or to send to HTML, MS Word<sup>®</sup> or MS Excel<sup>®</sup> and then previewing using those applications.
- Hardcopy
  - for a currently displayed Release, Count from the Reports Selection Screen (Main Menu under File) by selecting to Print the Report

### Online Dynamic Display of Functional Size

The Functional Size in Unadjusted function points is reported on the status bar below the Main Screen. It reports the **Release Baseline Functional Size, Release Impacted Functional Size, Release Reworked Functional Size and the Count Session Impacted Functional Size** depending on which one is selected. It reports

the size (in unadjusted function points) for the function and Data Group nodes below those that are currently selected on the Function Tree.

I.e. if you are located on the Root Node then the Baseline Functional Size reported will be for all Processes and Data Groups in the Release.

E.g. Function = 100 UFPs, Data = 25 UFPs Total = 125 UFPs

If your cursor is positioned on a child node of the Function Tree then the Baseline Functional Size reported would be for all Processes and the Data Groups linked to those Processes from the current cursor position downwards.

### Reporting Flagged Functions

If you have selected to flag four Processes worth 4 function points each, then the size of the 'Flagged' nodes is reported in brackets. All the Data Linked to the Flagged Functions is reported, irrespective of whether the Data Nodes have been Flagged. In the following example 4 Processes were flagged of which 1 of them was linked to 2 Data Groups. Therefore Data reported to be linked is 15 FPs (10 + 5)  
E.g. Functions= 100 (16) UFPs, Data = 25 (15) UFPs Total = 125 (31) UFPs.

However if you ONLY want to report the DATA NODES that are actually physically Flagged, not all those actually linked, then go to the User Options under the Status Bar Option in the dialogue box and check the box titled :"*Only Flagged Data Nodes used for FP Calculations*"

When this option is checked, then for the case where only one of the above linked Data Nodes (10fps) is Flagged then the reported Flagged count displayed in the Status Bar will be:

E.g. Functions= 100 (16) UFPs, Data = 25 (10) UFPs Total = 125 (26) UFPs.

## SCOPE Reports of Functional Size

**SCOPE** reports the functional size in 4 different ways which can be selected at the time of reporting:

### 1. Release Baseline Functional Size


2. Release Impacted Functional Size
3. Release Reworked Functional Size
4. Count Session Impacted Functional Size

For more information refer [SCOPE Types of Functional Size Reporting](#)


## Flags and Filters





### [Profiling and Filtering Counts-Filters and Flags](#)


Flagging Nodes on the trees allows SCOPE to selectively report, only on those nodes currently Flagged by using the "Select Flagged Nodes" option when reporting . This gives tremendous capability to the User to customize the reports to only list those nodes that are required. Nodes can be manually Flagged (Highlight the Node and select - Flag-Toggle or ALT +F, or select the  Flag Icon on the menu.



However the most common way of assigning Flags is to have SCOPE report on a particular selection criteria and SCOPE will "Flag" the nodes that satisfy the filters requirements. Using Flags, SCOPE allows you to filter your function point count to selectively report the size. This filtering is performed by selecting **Filter Mode** from the buttons on the top of the screen. The **Filter button**  is located next **Link Mode** button. SCOPE is either in **Link Mode** OR **Filter Mode**. If the small square boxes next to each node are not visible in the RHS, then you are in **Filter Mode**.

In **Filter Mode** you can use the Boolean options (& AND,  OR or  NOT) icons to select nodes on the opposite tree that satisfy the **Link** criteria you have selected, i.e. if you selected the Boolean Option &, to be tagged to some nodes on the RH tree, then SCOPE will select all the nodes that are linked to all the tagged Nodes on the LH tree. Collections within a tree can be Flagged and the result set of selected

nodes can then be saved as a **Flag Set**  for later display and use for that **Release**. Alternatively, you can assign Flags using a **Filter** to highlight the existence of **Links** between nodes in different trees. A particular selection of nodes and the conditions of selection are stored in a **Filter Set**.

The **Filter Set**  is equivalent to the 'question' being asked whilst the **Flag Set** is the 'answer' to that question. **SCOPE** enables you to save the question (Filter Set) and then re-apply at a later date to display either the same Flagged answer (Flagged Nodes) or different answers if you have made changes to the trees. Alternatively you can store the answer, i.e. the Flagged set of nodes (**Flag Set**) and re-display it when required.

**Flag Sets** and **Filter Sets** are managed from the dialog box, displayed when you choose Trees–**Flag Set List** or **Trees–Filter Sets** or the **Flag** icon or **Filter** icon from the top menu.

**Flag Sets** and **Filter Sets** are saved for the specific tree highlighted at the time of saving. **To re-apply them you need to be located on the tree for which the set was saved before selecting to view the dialogue box to retrieve them.**


You can save many **Flag Sets** and apply them cumulatively so that the display represents the net total of the selection Filters applied. You can also manually allocate **Flags** to any node in addition to those **Flags** currently displayed. Manually allocate and de-allocate flags by pressing **Alt+F** or selecting the **Flag** icon at the top of the screen whilst located on a node. When you save the displayed **Flag Set** you can include the new Flags or alternatively save as another set using the '**save as**' option.


**Filters** allow you to highlight nodes (i.e. **SCOPE** attaches a Flag to the node to highlight it) on the LH tree that are **Linked** to the node currently selected on the RH tree. The conditions for the **Filter** are set on the right hand side and the **Flags** are displayed on the LH tree.

**To create a Filter:**

- Display two trees by clicking the appropriate tabs (they must be different trees, you cannot filter Links within the same tree).
- Choose Filter mode from the menu (**Trees–Filter**) or by selecting the **Filter Mode Icon** from the top of the screen, and then selecting the Boolean conditions (Yes, Or and No).
- Set the criteria in the right hand tree by setting selection conditions (using either the **Node** menu, or the toolbar buttons):



**& (Yes) Exclusive 'AND' Filter** Sets a **Flag** for nodes on LH Tree that are **Linked** to this node on RH tree. When additional nodes on RH tree are selected then any set Flags are only retained on the LH tree if they are **also Linked** to the new selected nodes.

 **(Or) Inclusive 'OR' Filter** Sets a **Flag** for nodes on LH Tree that are **Linked** to this node on RH tree. When additional nodes are selected using  $\wedge$  then the previously set Flags are retained on the LH tree **and** any additional **Linked** nodes are also **Flagged**.

 **(No) Exclusive 'NOT' Filter** Sets a **Flag** for nodes on LH Tree that are **NOT Linked** to this node on RH tree. When additional nodes on RH tree are selected then any previously set Flags are only retained on the LH tree if they are **also Linked** to the new selected nodes.

 **(Clear)** Clears all currently set **Flags** for this node.

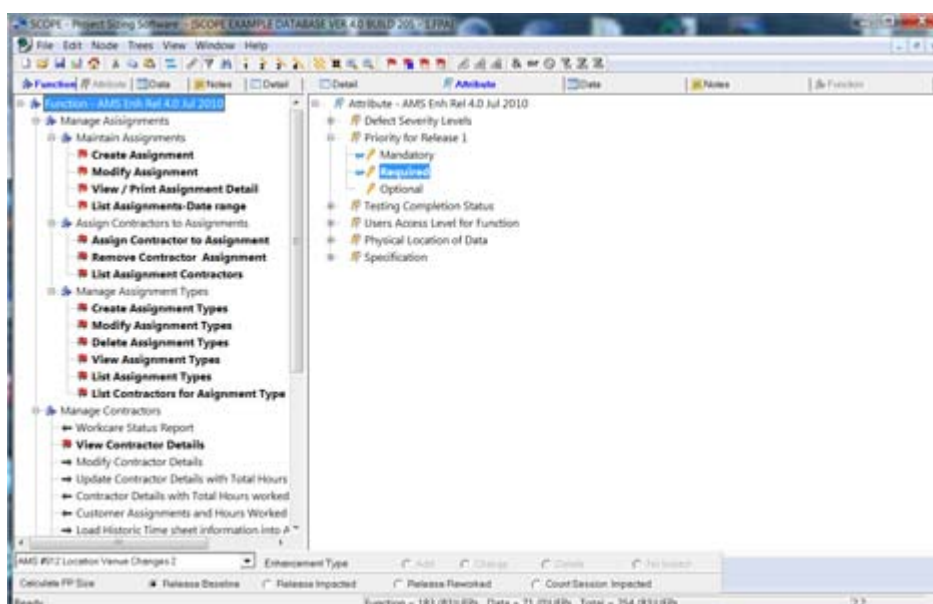
 **(Clear All)** Clears all currently set **Flags** for nodes under this parent.

Nodes that match the filter criteria on the left hand tree are **Flagged** . You can save the **Flagged** nodes as a **Flag set**  for future reference and cumulatively apply them to gain their aggregated impact.

For example if your question is display all the Process nodes **Linked** to three selected Notes, then display the **Function** Tree on the left side and the **Note** tree on the right side. Click on the 'YES (And)' **Filter** condition icon as you highlight each of the Notes. The **Flagged set** of Processes **Linked** to all three Notes will be highlighted with a **Flag** icon. These nodes selected with the Flag can then be reported using the “select Flag nodes” option.

**Flags** can be assigned manually by highlighting the node you want to Flag then selecting the Flag Icon. Additional Flags may be overlaid over those derived from the Filter on the main menu or pressing Alt+F.

**Flags** can be assigned automatically using the **Search and Replace** function under the Edit Menu. The results of the search will be flagged. This facilitates selective reporting of all processes and data groups that satisfy specific search criteria.



## Previewing Printing and Exporting Reports

All Functional Size Reports can be previewed online and/or printed. 🇩🇪

The Functional Size can be reported in Summary or in Detail.

Detail reports list all the counting details for individual Processes and Data Groups.

Whilst the Summary reports summarise the results and group the totals in a variety of ways to assist in comparison and analysis, The Functional Size of a Release can be reported either as a total value for the whole release or by selecting the options in the Report Selection Screen you can include and exclude functionality.

All of the following Functional Size reports will report on the whole Release or only selected parts of the release if you select any or all of the following options:

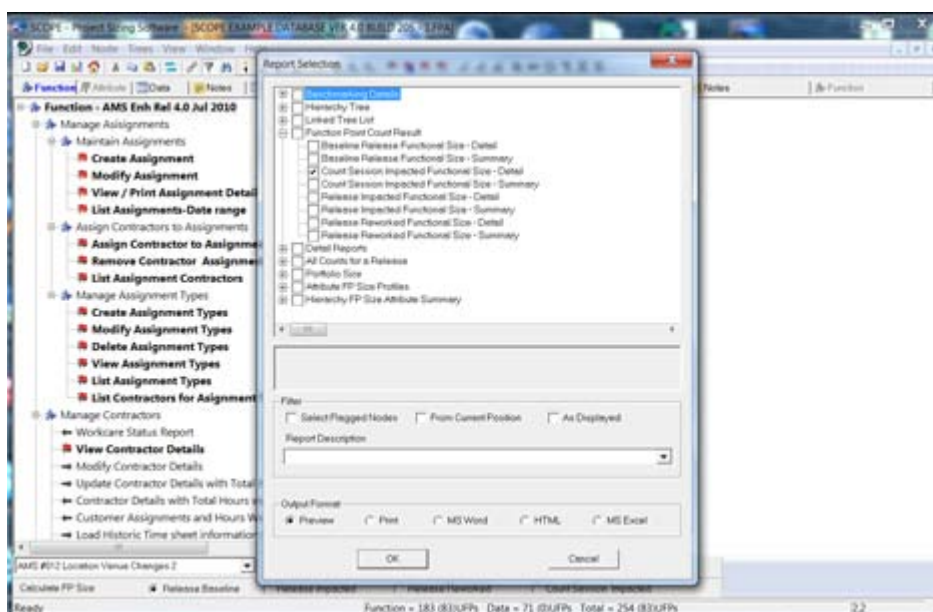
- **From Current Position** - the report only includes the Processes and Data nodes linked to those Processes from that point on the selected branch downwards.
- **Select Flagged Nodes** - the report only includes the Flagged Processes and Flagged data nodes.
- **As Displayed** - the report only reports the nodes currently displayed on the selected Hierarchies. When reporting the Hierarchy Trees **SCOPE** reports the branches only to the level they are currently expanded.

If you choose combinations of the above options then **SCOPE** combines the filter to report the net result of these options.

You are able to annotate the purpose and content of your report by recording your own **Report Description** in the **Report Selection Screen**. The description can be used to provide extra information or instructions to the audience reading the report or to record the filters used for the report. **SCOPE** will save a list of your report descriptions which can be reselected at any time in the future. If you do not want the current displayed description to print on your report header then just delete the text in the description box.

**SCOPE** allows you to preview and print your reports and export them to MS WORD or MS EXCEL or HTML. You are also able to send the reports via email or in Adobe PDF format (see [Report Selection](#)).



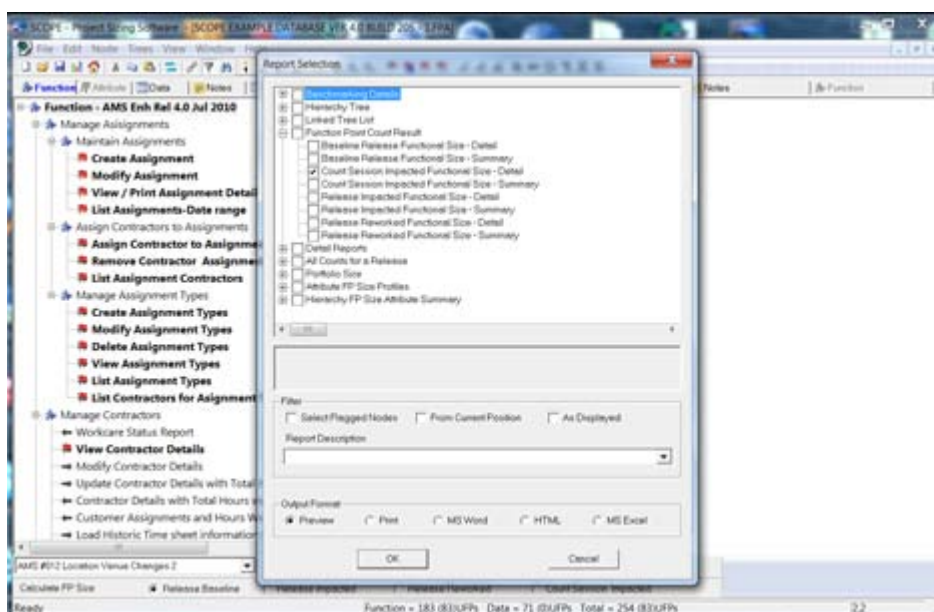


## Exporting SCOPE reports into MS Office® WORD and EXCEL documents

- Select <Report Selection> from under the Main Menu, select the report you want to export and the format from the Report Selection dialogue box. **SCOPE** will launch the selected MS Contractor application to enable you to view the report.

NOTE: Before selecting to export a report of the same name to the same target MS Application a second time, you will need to save the previous report with another name or close it. See also [Convert SCOPE Reports to Text](#)





## Convert SCOPE Reports to Text

There are several ways that you can convert the **SCOPE** reports to text format to be embedded in other documents. In the **Report Selection Screen** select the Output Format as:

1. **MS Word<sup>®</sup>**, **Ms Excel<sup>®</sup>** or **HTML**, then saves the created document or spreadsheet.
2. **Preview** the report using MS Snapshot Viewer<sup>®</sup> and select to save the report to MS Office<sup>®</sup> Image Writer or as an Adobe<sup>®</sup> PDF format or send via Email ( you can also save the .snp file using the save as option under Outlook)

*Note: The conversion of **SCOPE** reports from Snapshot Viewer format to MS Word<sup>®</sup> and MS Excel<sup>®</sup> uses an inbuilt MS Office Utility. This MS Office utilities conversion function is outside the control of the **SCOPE** software, and sometimes changes the layout of the report.*

See also [Report Selection](#) and [Sending SCOPE Reports via Email](#) and [Embedding SCOPE Reports into a Client Report](#)

# Embedding **SCOPE** Reports into a Client Report

## Embedding **SCOPE** Reports into a Client Report

If you want to have **SCOPE** reports embedded into another document then this can be done by either creating the **SCOPE** report in WORD or EXCEL and then inserting into a WORD document or alternatively creating the WORD report and saving it as a PDF file and then merging **SCOPE** reports into the PDF file.

See also [Convert \*\*SCOPE\*\* Reports to Text](#)

## Merging a **SCOPE** PDF file into another PDF File

1. Select to preview your report in **SCOPE** or if the Snapshot Viewer File has been saved, double click to open the (\*.snp) file.
2. From “File” in the main menu, select Print and select the printer as Adobe (Note: you need to have the Adobe Distiller software previously loaded).
3. Check Adobe PDF settings and ensure that ‘Do not send fonts to Adobe PDF’ is unselected.
4. Select Print and select the directory for the location of the saved PDF file.
5. Open Adobe and from main menu and select “Create PDF”.
6. Select from the option for “Multiple files”.
7. Select to “Add” files using the “browse” option - select one file at a time if a particular order is required in the finished PDF file.
8. Select “OK” to create the aggregated PDF file.
9. The **SCOPE** Count Reports have now been appended to the client report as a PDF file.
10. Client report is now ready to be created as a PDF file

## Merging Annotating and Searching SCOPE Reports

If you have MS Office® 2003 or later you can select to **Preview** the Report in the Report Selection screen and then when it displays in Snapshot Viewer select to Print the Report to the printer called MS Office® Image Writer.

MS Office® Image Writer will open and then allow you to:

- Annotate the Report
- Insert text boxes
- Merge this report with other **SCOPE** reports or other documents
- Search for specific text (select Tools, Recognize Text for OCR)

See also [Convert SCOPE Reports to Text](#) and Exporting **SCOPE** Reports to MS WORD® and MS EXCEL®

## Sending SCOPE Reports via Email

If you want to enable someone else to view the output from your function point count you can do this several ways:

### 1. Send all the Count Information and Instructs to download [SCOPE Viewer](#)

Use the [Snapshot](#) Release or Count function to extract the count data to a clean **SCOPE** database. Email the database as an attachment with instructions to the person receiving it, to download **SCOPE Viewer** and install so they can view all the count details and run any extra reports.

### 2. Email the Reports as you View them Online

**SCOPE** uses a MS product Snapshot Viewer® to preview reports.

You can right click on the attachment and select Save As to save the Snapshot Viewer Report or send to another user.

For other users to view a Snapshot viewer file they need to double click on the file name, to display or print the report. If their Windows system does not already have

Snapviewer installed then they can download the Snapshot Viewer application free from the Microsoft website :<http://support.microsoft.com/kb/175274>

Click on the link, save the file on your PC and then run the install program. This will install Snapshot viewer on your PC. Then just click on the files and they can be previewed, printed and saved.

### 3. Email the Reports extracted into MS WORD®

Select to print the reports as an MS WORD® document and then save the report and email as an attachment.

## SCOPE Viewer

**SCOPE Viewer™** enables Function point counters to share all details of the Count Results as a softcopy with personnel who may not have a **SCOPE** license. **SCOPE Viewer™** works the same way as **SCOPE** but only has limited functionality.

It allows the user to view all aspects of a Count that has been recorded in a **SCOPE** database. Function point counters can select to 'snapshot' just one count for Users to review or they can select all counts for a Release or provide the users with access to all counts in the **SCOPE** database.

The Users can then make comments on the count results and return the data to the counter to incorporate into the master version of the count. **SCOPE Viewer™** is free and can be downloaded from the Total Metrics website.

<http://www.totalmetrics.com/function-points-forms/SCOPE-Viewer-Request-Form>

Whilst **SCOPE Viewer™** will not allow the users to modify the count by adding, or deleting Nodes, it will allow user to:

- link nodes and to change node names and descriptions
- run all count reports
- Assign notes or attributes you have previously set up. We would recommend that you set up an Attribute Category with Attributes that allow the Users to assign relevant attributes to the nodes they have made changes to or aspects of the count they want to highlight. E.g. Attributes could be Agree, Disagree made changes, Incorrect see notes, etc.



# Screens and Layout and Navigation

## Function Point Counting Screen Layout

**SCOPE** displays the Main Screen after the **User** selects to **Open** a **Release Count Session** when in the **Applications List**. The Main Screen is divided into several parts, each of which has a separate role.





The central area of the main screen is divided into two parts, which will be referred to as the left-hand (LHS) and right-hand (RHS) sides from this point onwards.


The two sides are identical and can be resized by dragging the centre dividing bar to the left or right. They are interchangeable by clicking the 'flip' icon (looks like a bent paper clip) located at the top of the screen. You can flip to focus the hierarchy on the left hand side for **Linking** to other trees and re-size it to find the layout that suits you best.

Each side can contain one of five views, which you can choose using the row of tabs at the bottom of the screen, above the status line. The only restriction is that you cannot display the same view in both sides at the same time.

The views are grouped into two types: [Hierarchy Trees](#) and **Details**.

**Hierarchy Tree** views display one of the four trees:

1. **Function** 
2. **Data** 
3. **Attribute** 
4. **Notes** 

The views are selected using the Tabs above the main windows. When you display a tree on one side and select the **Detail**  tab on the other, a data entry form appears showing the details that correspond to the selected tree node. The Tab for the currently displayed Tree is 'raised' and the other tree tabs appear as 'depressed'.

NOTE: Some of the features within **SCOPE** can only be invoked when a hierarchy is located on the LHS of the screen.

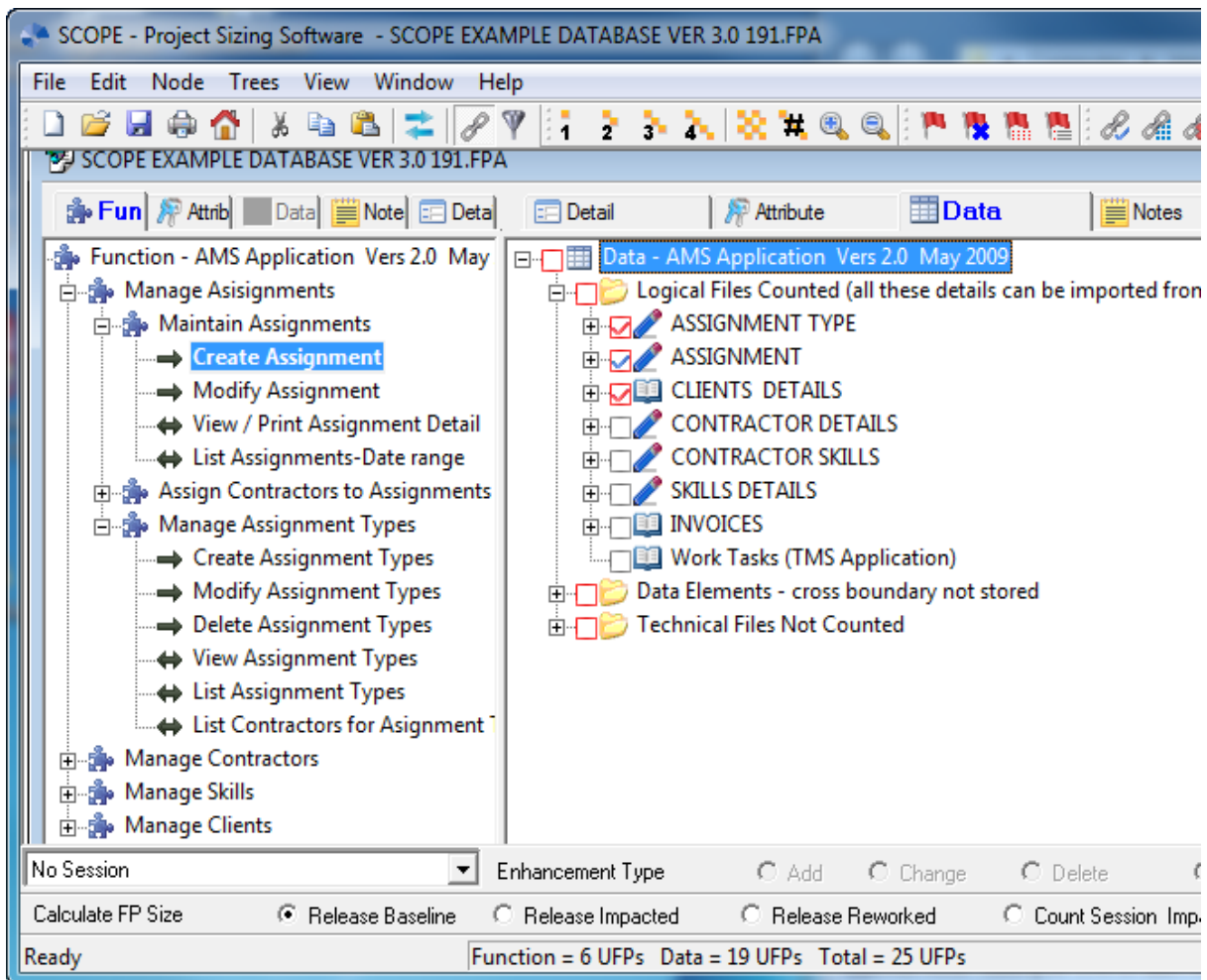
The two sides of the screen can show either two trees at the same time or one tree and its associated details.

*HINT: For very large counts, speed up the tree display turn off the dynamic calculation of function points (select F5 or Main Menu, View, Options).*

*HINT: To speed up saving your database, use the Compact Database option under Files in the Main Menu, then select Save.*

In any of the tree views, you can:

- Insert and Delete tree nodes
- Edit node names
- Copy nodes
- Move nodes
- Flag nodes
- Record node impact type (Function and Data Group Trees only)



If you display two trees at the same time, you can:

- Link a node in one tree with a node or nodes in the other. To globally link multiple nodes, right click on the parent node and select Link, Set All from the pop-up menu.
- Flag selected nodes by using the Filter feature on the top row of buttons, and then using the Boolean options on the button menu for your filter, or the short cuts (Alt1=YES, Alt2=OR Alt3=NO , Alt4=CLEAR). You can also manually flag nodes by selecting the Flag Icon or Alt F. To globally flag multiple nodes , right click on the parent node and select Flag, Set **All** from the pop-up menu.

In the **Details** view, you can:




- See expanded details for the node you have selected in the tree view (on the opposite side of the screen). The fields displayed in the details will vary according to the type of node you have selected.



- Edit these node details.

## Keyboard Shortcuts

### Keyboard navigation shortcuts

Key(s)	Action
<b><u>Left Arrow</u></b>	Select the node at the next highest level and collapse the current branch of the tree
<b><u>right Arrow</u></b>	Expand the current branch of the tree and select the node at the next level down the tree
<b><u>Up Arrow</u></b>	Select the next node up within the current branch of the tree
<b><u>Down Arrow</u></b> 	Select the previous node down within the current branch of the tree
<b>Ctrl+N</b>	Create a new <b>SCOPE</b> file, Application, Release or Count Session
<b>Ctrl+O</b>	Open an existing <b>SCOPE</b> file
<b>Ctrl+S</b> 	Save all changes to the current <b>SCOPE</b> file
<b>Ctrl+P</b> 	Go to Report Selection List
<b>Double Click Left Mouse</b>	Opens a Release or Count Session when in the Applications List. Opens the Details Screen for the current node in the opposite window when in Hierarchy Window.



## Keyboard Function Key shortcuts

### Key(s) Action

- F2** Rename currently highlighted text
- F5** Refresh Function Point calculation on Status Line. This option can be turned on and off using Menu, View, Options, Dynamic FP Calculation
- F1** Online Help

### Utility shortcuts

Key(s)	Action
<b>Alt+Ins</b>	Insert a level 1 parent node
<b>Alt+Ins+Shift</b>	Insert a level 2 parent node (Data Tree only)
<b>Insert</b>	Insert a lowest level child node
<b>Esc</b>	Undo changes made to the current node name
<b>Shift Up Arrow</b>	Move the current node up the tree
<b>Shift Down Arrow</b>	Move the current node down the tree
<b>Delete</b>	Delete the current node

<b>Ctrl+C</b> 	Copy the current selection to the Windows clipboard
<b>Ctrl+F</b> 	Search and Replace
<b>Ctrl+X</b>	Cut the current selection to the Windows clipboard
<b>Ctrl+V</b>	Paste the contents of the Windows clipboard at the current position
<b>Ctrl+T</b>	Insert Template Function Group
<b>Alt+F</b>	Toggles to Flag/unflag the current node
<b>Space bar</b>	Toggle a Link on or off in Link mode
<b>Alt+1</b>	Set Filter Condition to “Yes” in Filter mode
<b>Alt+2</b>	Set Filter Condition to “Or” in Filter mode
<b>Alt+3</b>	Set Filter Condition to “No” in Filter mode
<b>Alt+4</b>	Clear Filter condition in Filter mode

## Change the Count Session in the Display

Above the status line at the bottom of the Function Point Counting Hierarchy screen is a pull-down list of available **Count Sessions** for the displayed **Release**. If you select “**No Session**” then the **Release** model will not allow **Impact Types** to be displayed or recorded.

*HINT: If you need to fix up a baseline count for missing functionality, then select No Session and make your changes so that they will not be recorded as part of a count session and add to the size of your current projects.*

If you have opened the **Release** model by selecting to open a **Count Session** then you can display and record **Impact Types** for that particular **Session**. You can open a particular **Count Session** at any time by selecting the name of the **Session** from the pull-down menu list. If you are located on a node that has been impacted by another **Session** for this **Release** then **SCOPE** will display the list of Sessions that impacted the node with **Impact Type** for each session in the Node's **Details** view.

An alternative way to change the Count Session currently displayed is to select File / Project and Applications List and select to Open another Count Session.

## Building Trees



### [Building Hierarchy Trees](#)

To build a tree of any type, you generate nodes and rename them. The type of nodes that you can enter at any point depends on the tree, and the level within the tree. The root node is Level 0, the [Hierarchy Tree](#) can be decomposed to 'n' levels.

- High level nodes (Levels 1 or 2 etc) can contain child nodes of the same level or lower.
- Level 'n' nodes cannot contain any other child nodes. They represent the lowest level.
- Level 'n' nodes can be inserted directly within the root node. However we recommend that you insert a level 1 or 2 node first.
- For certain trees, nodes of different types (i.e. RETs and DETs) cannot mix on the same Level of a branch of a tree.

To insert or edit tree nodes, use either:

- **Node** menu at the top of the screen select

- **Alt Insert** (parent nodes) and Insert keys (child nodes)
- Mouse **right click** pop-up menu.

For very fast insertion of multiple standard sets of process nodes use the Insert [Template Function Group](#) feature.

## Expanding and Collapsing Trees



There are several sets of commands for expanding [trees](#) to show additional levels and collapsing them to show only the higher levels. These work in the same way as Windows Explorer™ and many other standard tree based applications:

- Mouse commands – click the + and – signs next to nodes.
- Keyboard commands - expand or collapse the tree based on the currently selected node. **SCOPE** remembers which nodes were expanded previously after the branch of the tree is collapsed (i.e. if the branch is expanded again, it will be restored to its previous condition).

The expand tree Buttons across the top of the screen allow you to select the degree of expansion from 1 level to 4 levels.

The Expand Groups button (g) will expand the tree to just the Function Level of each branch. Expand (n) levels allows you to choose the level of expansion.

## Moving and Copying Nodes



[Building Hierarchy Trees](#)

**SCOPE** makes it easy to expand and collapse trees, and to insert, delete, move, copy and paste nodes in a tree.

Nodes can only be moved within the same Release and within the same tree. To move a node or a branch of nodes use the Windows Drag and Drop feature i.e. highlight and hold down the left hand mouse key and drag the node(s) to their target destination.

Nodes can be copied within the same Release, or into any other Release that is in a currently open **SCOPE** database. However they may only be pasted into the same tree type that they were copied from.

To copy a node or a branch of nodes, use the Windows copy / paste commands i.e. highlight and hold down the left hand mouse key and the Ctrl key and drag the copied node(s) to their target destination.

All Copy / Paste commands are available from the Edit menu, Right Click Mouse menu or the shortcut keys.

If you only want to copy the 'links' associated with a node, then highlight the node you want to select Links from and select 'Copy Links' from the Edit Menu (Ctrl+L), highlight the target node that will receive the links and select Paste Links (Alt+L).

This function leaves the target node unchanged and only 'adds' the copied links to any existing links.

*Note: you can also use the **SCOPE** Export Tree option under Edit to export a node , branch or whole tree. **SCOPE** saves the exported Tree Nodes into an XML file that can be later imported back into a **SCOPE** Release using the Import Tree function.*

See also [Import / Export Within \*\*SCOPE\*\* database](#)

See also [Using the Mouse to Copy and Move](#) and [Keyboard Shortcuts](#)

## Using the Mouse to Copy and Move




### [Building Hierarchy Trees](#)


You can use the mouse to copy and move nodes in the tree in a similar way to Windows Explorer TM.

- Click on the node you wish to **move**, drag it to the new location, and release the mouse to drop it. By default, dragging a node moves it.
- If you want to **copy** a node, hold down the **Ctrl** key when you release the mouse button.
- To move a node up or down a branch in the tree press Shift Key and UP or DOWN Arrow.

When you move or copy a node you will be prompted to respond if you also want to move or copy the **Session** impact types and **Links** for the node. If you answer **No** then only the node details will be transferred.


To move nodes up and down the Application, Project or Benchmarking Metrics Trees use the up and down arrows. 

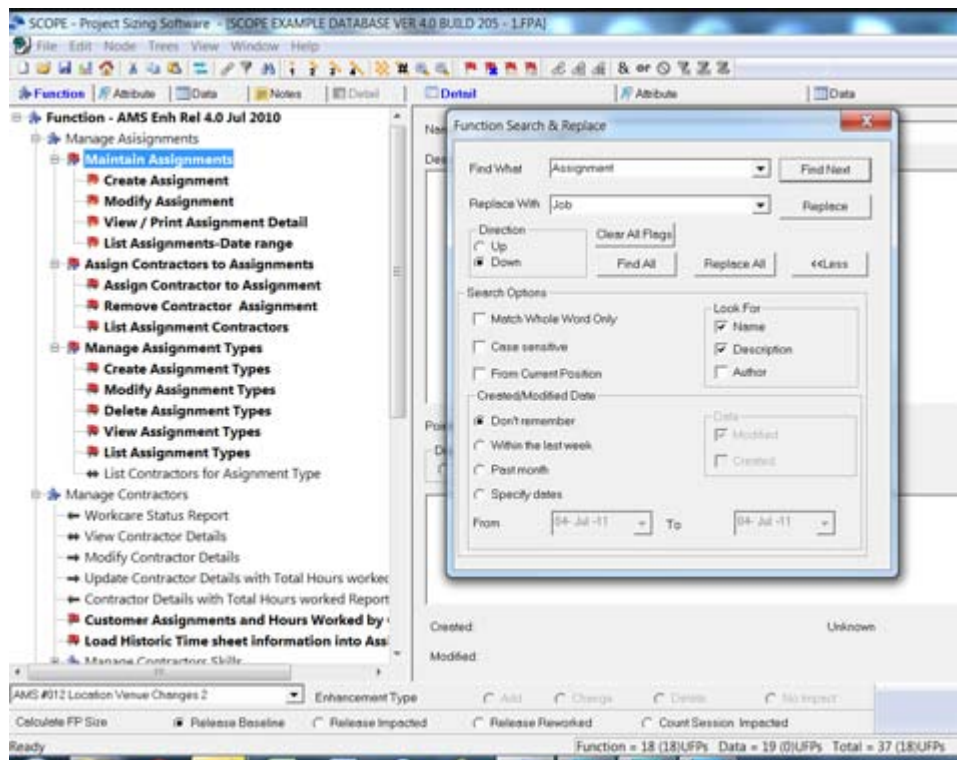
## Search and Find and Replace

**SCOPE** will allow you to  search for any item by name on any tree and replace it with alternative text. By selecting the MORE>> option, the search can be further customised to search for Whole words, Case sensitive or From Current Position.

Search and Replace in Function Point Counting Tree Screens : >>MORE offers additional options of searching on:

- Node Name and / or Description text
- Author's Name who Created or Modified the Node
- Dates Ranges to search for when the Node was Created or Modified

To use the search function select  Icon , press CTRL F, or go to Edit on the main menu and select Find and Replace. You can select to search up or down the tree. By selecting the More>> button you can further refine your search options.



All the nodes that satisfy the search criteria are highlighted and **flagged**. Since the nodes are Flagged they can now be used to as a filter to:

- Selectively report just the flagged nodes
- Selectively link to just the flagged nodes

You can “accumulate” the flagged, highlighted nodes by selecting to search on other criteria. The new search results will “add onto” the previous search results, so the flagged nodes accumulate. To clear the flagged nodes select **Clear All Flags** from either the Search or Replace Dialogue box, under Node on the Main Menu, or selecting the “Unflag Nested” Icon on the tools menu.

see [Flags and Filters](#)

## Sorting Tree Nodes



[Building Hierarchy Trees](#)



**SCOPE** allows you to sort the nodes on any of the trees. You can **SORT** the whole tree or just from a selected branch downwards on the following fields:

- **Names of nodes of any Branch of any Tree** - This is very useful for documenting your counts so that you can easily locate an item within a list. For example you may insert your Data Groups as you identify them and then select to sort the list when you finish, enabling easy checking for completeness.
- **[Links](#) for any Branch of any Tree** - This is very useful when you have long lists of Data Groups or Notes and need to know exactly which ones are linked to the currently highlighted process, without navigating the length of the tree.
- **Type for any Function and Data Trees** - This standardises the documentation of your counts and facilitates locating processes, by sorting all your processes under each branch into Inputs, Outputs and Enquiries and your Data Groups into Internal Logical Files and External Interface Files.

Locate your cursor on the branch node you want sorted and right click the mouse. If you want all Levels below this level sorted then select (Sort Branch – All Levels) or if you just want to sort the direct descendent children of the current node select (Sort Next Child Level Only).

## Status Line

The status line (at the bottom of the Main Screen) provides the following information.

- **Help text** at the left of the status line shows warnings and other messages. It also describes buttons when you move the mouse over a toolbar button.
- **[Functional Size](#)** - When the Function Tree is displayed, the numeric value in the middle of the status bar shows the Functional Size for the Release, or the selected node in unadjusted function points. See - [Types of Functional Size Reporting](#) for more details. If you have selected (i.e. flagged) particular processes or data groups using the Filter option or by manually Flagging. Then the functional size of the selected items is displayed in brackets on the

status bar. **SCOPE** reports the Type of Functional Size (Baseline, Impacted, Reworked) depending on which option is selected on the status bar.

*HINT: To update/refresh the displayed value in the count, select F5. The functional size value updates dynamically as you move around the function tree. For very large counts you can speed up navigation by turning off the display of the functional size by selecting View, Screen Display Options from the Main Menu. Turn off the check box titled "Dynamic FP Calculation". To re-calculate the FP size at any time press F5.*

- **Nodes Dynamic Address** at the right of the status line displays the position of the currently selected node in outline numbered format. This address changes you move around the hierarchy and the highlighted node changes. The dynamic node address, automatically updates as nodes are inserted and deleted from the tree.
- **Count Session List** - lists all the Count Sessions within the current Release. Select the Count Session you want to display from the Combo Box.

No Session	Enhancement Type	<input type="radio"/> Add	<input type="radio"/> Change	<input type="radio"/> Delete	<input type="radio"/> No Impact
Calculate FP Size	<input checked="" type="radio"/> Release Baseline	<input type="radio"/> Release Impacted	<input type="radio"/> Release Reworked	<input type="radio"/> Count Session Impacted	
Ready	Function = 6 UFPs Data = 21 UFPs Total = 27 UFPs			1.1.1	


## Toolbars

There are several predefined toolbars and buttons to simplify common tasks. To see a description of a toolbar button, move your mouse over the button (without clicking it) and a short hint will be displayed. Some of the buttons also have longer help text, which is displayed in the status line at the bottom of the screen.

Toolbars are normally displayed in a single row underneath the menus at the top of the screen. If you wish, you can drag any of the toolbars to any side of the screen, where it will dock automatically. Toolbars can also be made to 'float' by dragging them from their current location and releasing the mouse without being near a window edge.

You can control which toolbars are displayed using **View–Toolbars** from the menu.

## Compact Database

This option  which is found under FILE on the Menu is used to compress an existing **SCOPE** database. Run this option on a regular basis to reduce the overall size of your **SCOPE** database and to speed up saving and response times.

## Basic SCOPE Commands

### Exit

This menu option will close any open files and exit **SCOPE**, returning you to MS Windows. **SCOPE** prompts you to save data before exiting but does NOT save automatically. **SCOPE** does NOT save as you edit, to save during editing use the **Save/Save As** option.

### New

Use this option to start a new **SCOPE** database. You will be asked for a new **File Name**, and a location (on your hard drive or network) to save the file.

### Open

This option is used to open an existing **SCOPE** database. The result is a standard Windows dialog box, asking for the location of the database to be opened. **SCOPE** databases have the extension **.fpa**.

### [Import from FPW](#)

This option allows you to import all the data from Function Point Workbench™ into a **SCOPE** database without losing any information. The import takes less than a minute for an average sized FPW data repository. As soon as the import complete you can start counting in **SCOPE**.

## Close / Close Current

CLOSE will close your current .fpa database and all the counts. CLOSE CURRENT only closes the currently displayed count.

## Save/Save As

Use this to either **Save** the file you have been working on, or to save it in a different location and/or with a different **File Name**. **SCOPE** saves automatically at user controllable time intervals, you can adjust the time interval or disable the Auto Save.

However if you are in a multi-user environment using **SCOPE Corporate** then other concurrent users may elect to save the database (including your data).

## Compact Database

Use this housekeeping function to manage the efficiency of **SCOPE**. We recommend you compact the database routinely to ensure that the indexes to all **SCOPE** records are working efficiently.

## SCOPE Online HELP

Press **F1** in any screen to access Help on any topic. In order to view HELP your computer needs to connect to the Total Metrics WWW site. **SCOPE** Help additionally provides search capability on **Table of Contents**, **Index**, and **Glossary**.

For more advanced help also view the **SCOPE** online Tutorials (see [http://www.totalmetrics.com/products/SCOPE/SCOPE\\_Help](http://www.totalmetrics.com/products/SCOPE/SCOPE_Help)) and the Function Point Counting Expert System [FP Decision Maker™](#)

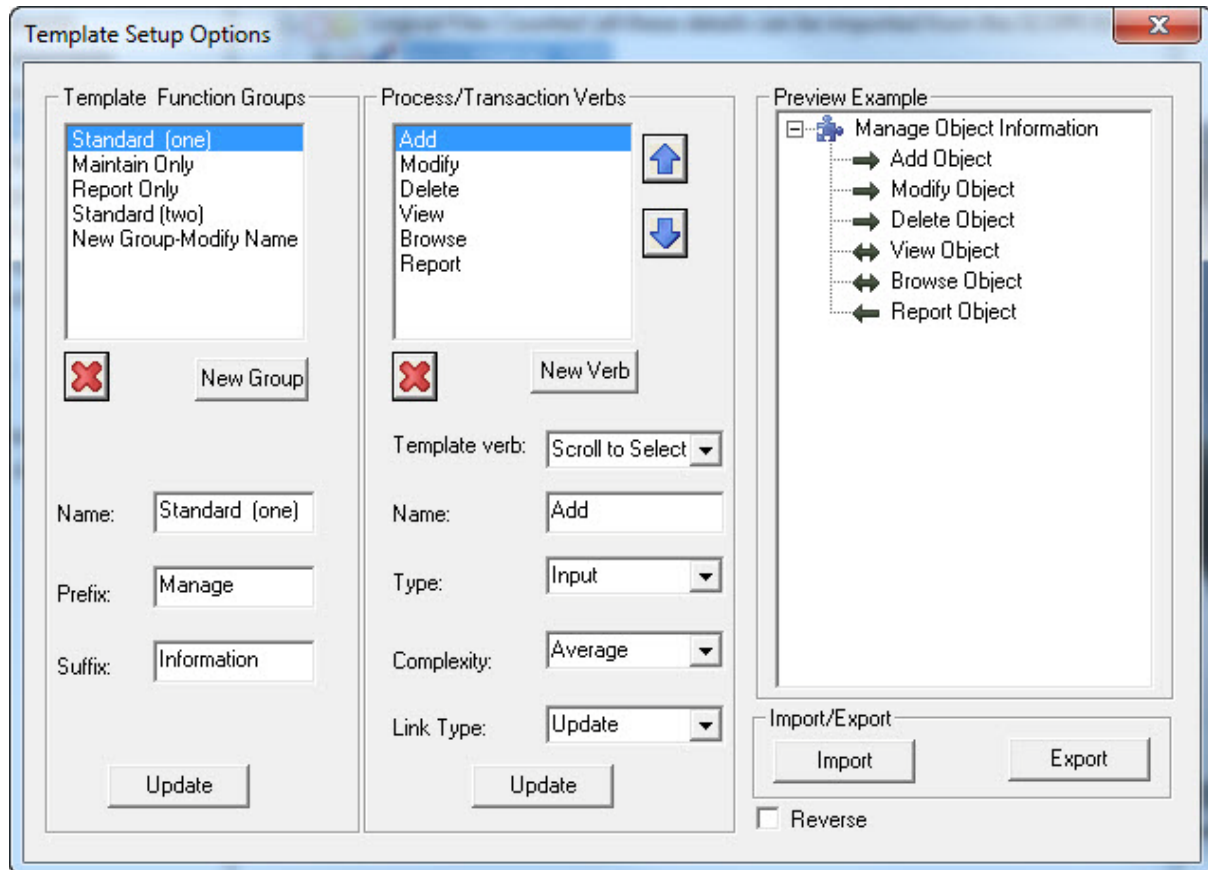
## Starting Up SCOPE

When you first run **SCOPE**, the options of which **SCOPE** database is to be opened can be found under the **File** Menu.

In addition, the **File** menu also contains a list of the most recently opened databases. These are listed in reverse order, above the **Exit** option. Other options in the **File** menu are listed below.

# Setup Template Function Groups

**Template Setup Options** can be modified by selecting **Setup** button on the **Insert Template Group** Dialogue box, or from under **View** on the Main Menu.



In this dialogue box you can set up your own customised Template Function Groups, suitable for your organisation, and add the appropriate verbs to be assigned to the processes, that are standard for your own naming conventions.

## Create a new Template Function Group

Steps:

- Selecting **New Group** and give it a **Name**.
- The Prefix is the word that will be inserted in front of the 'noun' name in the Function Branch e.g. in the Standard (one) template Group in the example it is the word 'Manage' prefixing the "Manage Loyalty Member Information" function.

- The **Suffix** is the word that will be inserted in front of the 'noun' name in the Function Branch e.g. in the Standard (one) template Group in the example it is the word 'Information' in the suffix of the "*Manage Loyalty Member Information*" function.
- Select **Update** to update the Template Function Groups with your new Group.
- However you will need to create some appropriate Process/Transaction verbs for your new Template Function Group.
- To change details for a Template Function Group just make changes then select **Update**

### Process/Transaction Verbs

**SCOPE** has a list of predefined Verbs that are currently used to describe elementary processes e.g. add, modify, delete, cancel, transfer, report, list, browse, view, enquire etc. These verbs have been pre-assigned the most common default 'type' and 'complexity'. For example the verb 'Add' in the following screen has been defaulted to an External Input with Average complexity and would update a logical File. If you want to Change Verbs then make your changes and select to **Update**.

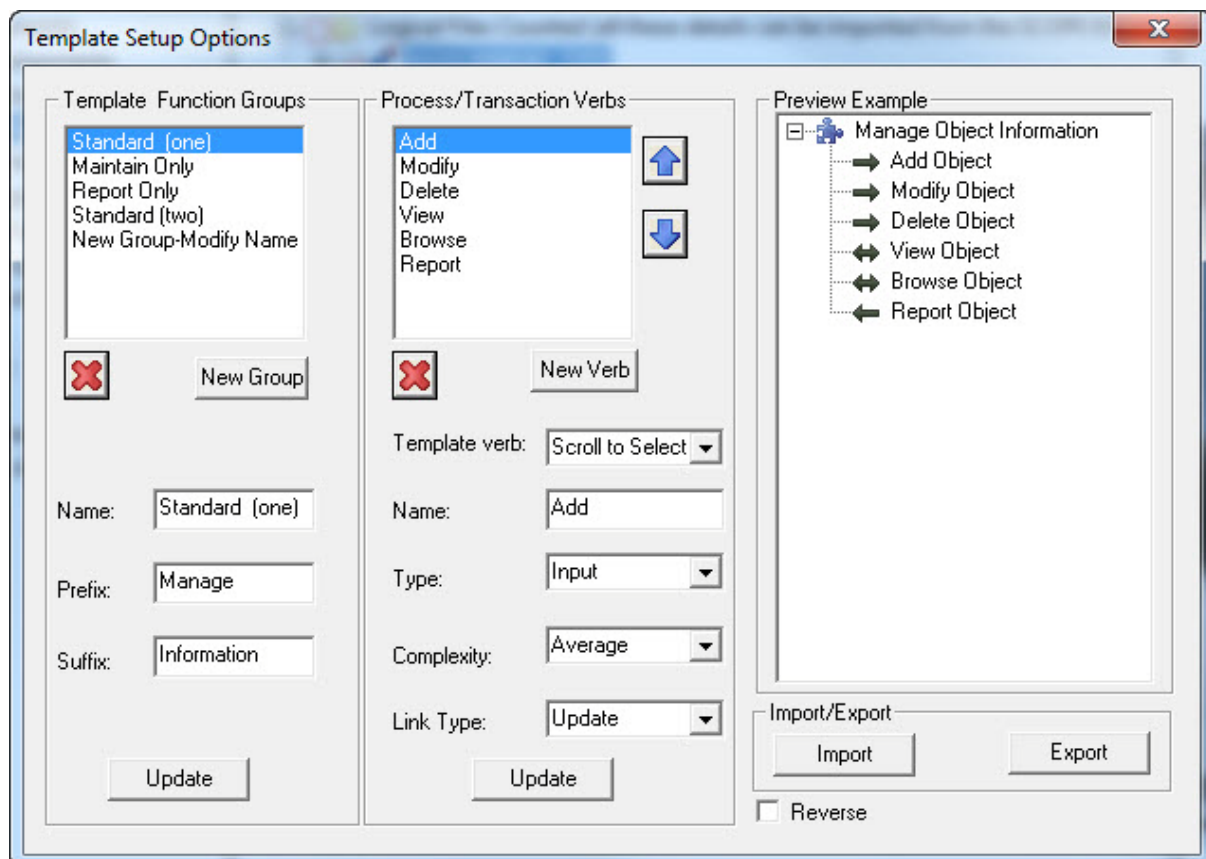
### Create a new Process/Transaction Verb by:

- selecting **New Verb** and give it a **Name**
- the **Complexity** is the complexity that will be assigned to the elementary process when the function group is generated (Low, Average or High)
- the **Type** is the type that will be assigned to the elementary process when the function group is generated (Input, Output or Enquiry)
- the **Link Type** is the access type that will be assigned to the elementary process if the Function Group is generated from a Data Group. i.e. see Generating A Function Group from a Data Group
- select **Update** to save the Template Function Group so it will now have your new Verb
- see the **Preview Example** to see how your Function Group will look when generated by **SCOPE** using the Insert Template Function Group option

- to change details for a **Process/Transaction Verbs** just make changes then select **Update**

## Reversing the Order of the Verb and Nouns in Template Function Groups

The syntax of some Languages (e.g. German) requires the Verb to be located after the Object name. Select the 'Reverse Option' at the bottom right hand side of this screen to change the order of the noun and verb.



## Importing and Exporting Template Function Groups

**Export** your Template Function Groups to save as a file that can be later **Imported** into another **SCOPE** database and merged with any existing Template Function Groups.

# Changing Language Screen Display and Reports

**SCOPE** is [multi-lingual](#) and provides the User with the option to change the Language for the screen displays, messages, menus and reports.

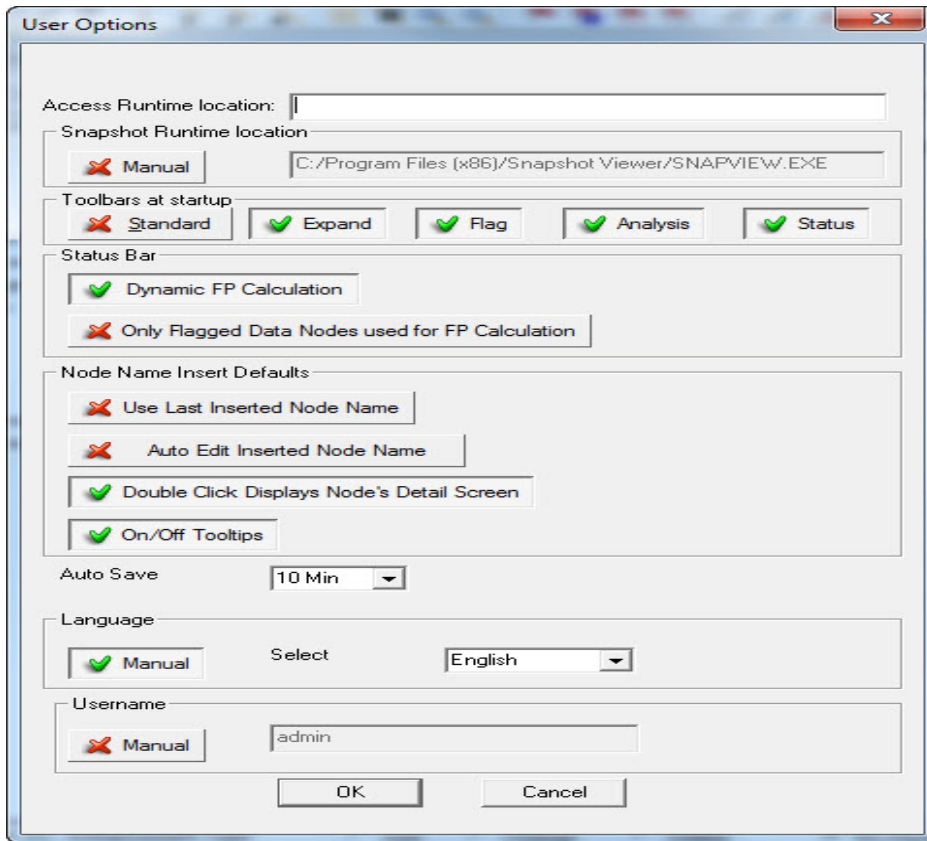
When you install **SCOPE** it automatically defaults to the Language pre-set by the operating system of your computer. To change this language at any time after installation:

Open **View** on the Main Menu and select **User Options**. The last Option is Language. If you click **Manual** then **SCOPE** allows you to select from the list of available languages. The default language is English. If **SCOPE** does not display your language then please contact us at [www.totalmetrics.com](http://www.totalmetrics.com).

Languages include:

- Dutch
- Portuguese
- Spanish
- Italian
- French
- German
- Japanese
- Chinese
- Korean
- English
- etc.





# Features in Versions of SCOPE

## Overview of New SCOPE 4.0 Features

### 1. SCOPE Metrics™

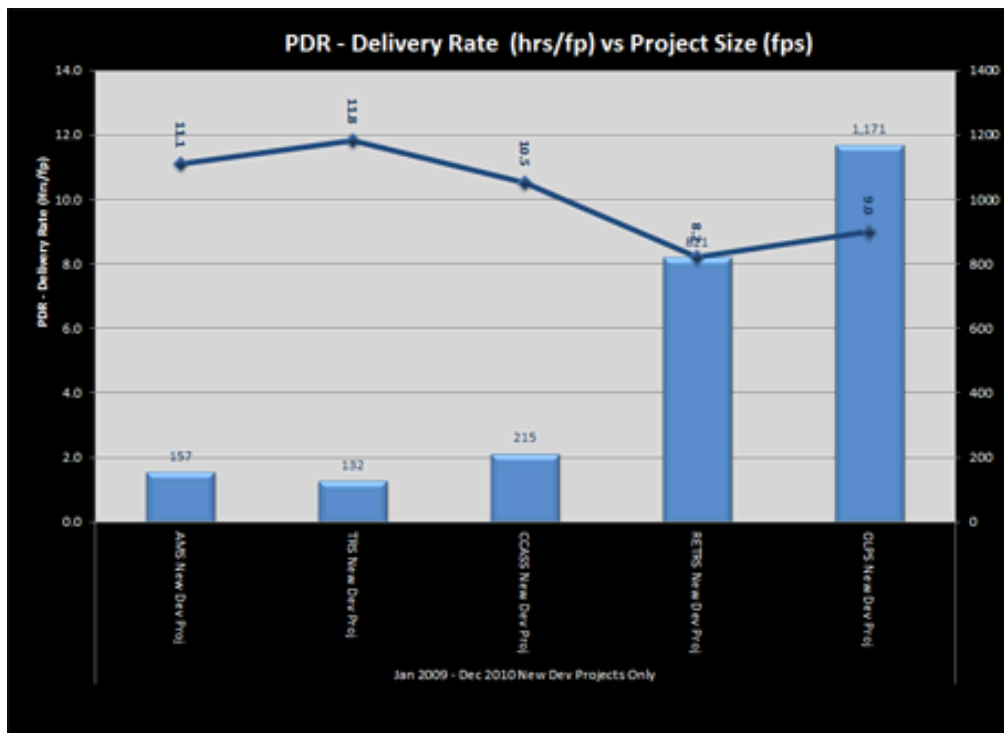
**SCOPE Metrics™** is delivered with **SCOPE Professional 4.0™** and **SCOPE Corporate 4.0™**. It can also be purchased separately as a standalone metrics module and used to record data for size, effort, defects, and environment attributes; for all your applications and projects. The data fields are compliant with the collection standards set by the International Software



Benchmarking Standards Group (ISBSG) for Development and Enhancement (D&E) and Maintenance and Support (M&S) metrics. You can selectively assign Projects and/or Applications to your customised Benchmarking periods for comparative performance reporting and trends analysis. The standalone module is ideal for organisations that need to report productivity and quality metrics based on functional size but do not need the full function point counting repository capability of **SCOPE**. At the press of a button you can email your selected D&E projects and M&S applications data submission to ISBSGs for their repository.

### 2. IT Performance Reporting

**SCOPE** provides full online and print reporting of productivity, quality and size metrics, both as tabular data and interactive pivot charts. Select to report by Work Package (Count Session), Project, Release, Application and/or Period. Customise the inbuilt reports or add your own to the report template and interactively include and exclude displayed data from your graphs.



### 3. Web Enabled Business Analytics Portal for Industry Benchmarking



**SCOPE CONNECT™** subscribers can utilise the latest technologies and frameworks of the semantic web to identify, integrate, query and visualise their metrics data.

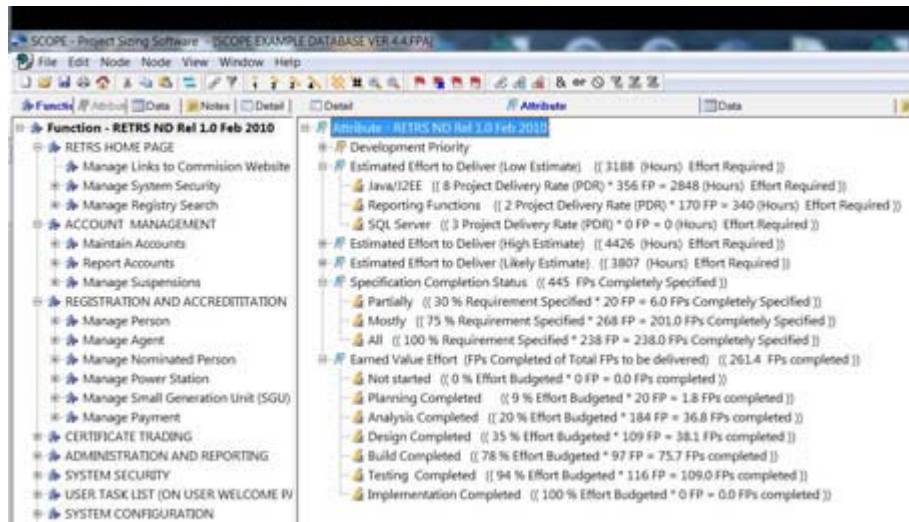
**SCOPE CONNECT™** portal provides drill down reporting and dynamic filtering of the ISBSG database to enable you to 'slice and dice' your own metrics data to benchmark against relevant Industry projects.

### 4. Apply 'numerical quantifiers' to SCOPE Function Point Values

**SCOPE 4.0** has customisable 'numeric' attributes that can be linked to the Process and Data tree. Either use the inbuilt Numeric Attribute Templates provided, or create your own Numeric Categories. For example you can create new or customise existing numerical attributes by setting up:

- Different Project Delivery Rates (PDR- hours/fp) for different functional areas and **SCOPE** will calculate the effort hours to deliver the linked functionality
- Earned Value reporting by assigning 'percentage complete' to project functionality and **SCOPE** will calculate the 'earned value' function points for management reporting
- NESMA Enhancement Impact Factors and calculate the NESMA function points or set up your own customised impact factors.

© Copyright Total Metrics Pty Ltd  
2003 – 2011



## 5. New User Interface

SCOPE has modernised its user interface:

- Industry Windows 7 standard icons replace control buttons for all basic functions.
- Additional shortcuts for Application List, Project List and Benchmark Metrics screens
- All screens enable basic functions (e.g. Save, Search, Move up/down, Copy/Paste)
- Benchmark Metrics Module enables multi-select of Tree nodes for all operations
- Hierarchy screens have Zoom In/Out for customised visibility

## 6. Other Features

- Snapshot and Export whole Applications with their all Releases and Counts for import into to a new or existing database
- Cut and paste nodes and change tree sequence position of any node on the Applications List, Project List or Benchmark Metrics trees using arrow icons to move nodes up or down
- Assign Enhancement Types from either LHS or RHS tree
- Optimised speed for SCOPE functions. Complex functions (import and convert database) now have a status bar to report progress.

# Overview of New SCOPE 3.0 Features

## 1. SCOPE 3.0 has Flexible License Options – Single User or Multi-user?

- **SCOPE 3.0 Corporate** - is the new multi-user license type designed for large organisations that require concurrent access by multiple users to a **SCOPE** database. It enables storage of all your function point counts in a central repository that can be updated and /or viewed simultaneously by any number of **SCOPE Corporate 3.0** and **SCOPE Viewer™** users.

- **SCOPE 3.0 Professional** – has all the features of **SCOPE 3.0 Corporate** but operates in the same mode as previous versions of **SCOPE** and is ideal for organisations that prefer to store their **SCOPE** counts locally and only need single user access at any one time to the database.

Contact us now to upgrade your current licenses from **SCOPE Professional** to **SCOPE Corporate** to take advantage of having global accessibility to your counts.

*SCOPE Corporate is the only Function Point Counting tool in its class to allow multi-user accessibility!.*

## 2. Complete Audit trail of all Count Updates

**SCOPE 3.0** will automatically record details of which User created or modified any tree node as well as when the change was made. By default the machine designated user name will be reported as the author of the change, or you can input your own name as the author for your session (View- User Options menu). When reviewing counts, you can search the trees for those nodes created or modified by a particular user, on selected date ranges. The resulting highlighted nodes are flagged on screen and can be reported selectively on any of the **SCOPE** reports using the “Select Flagged Nodes” option in the Report Selection box.

*This new audit option allows you to review any changes to a count and have a full history of when those changes were made and by whom. This is particularly useful for **SCOPE Corporate** multi-user environments when multiple users can maintain a count.*

## 3. Snapshot a Project and all its Count Sessions

**SCOPE 3.0** allows you to select a Project on the Project List to ‘Snapshot’ into its own database. The new database will only include the Project’s related

Count Sessions, for all the Applications impacted by the project. This new function is similar to the existing 'Snapshot Count' function but it exports all the counts assigned to the Project into a single new database.

*Allows a counter to create a single database with just their projects impacted counts so they can be worked on as a project group. Other users reviewing the project count can be shown only the Count Sessions relevant to their project.*

#### **4. Automatically Saves your data at user defined intervals**

**SCOPE** will automatically save your data at prescribed time intervals to avoid you losing critical changes when experiencing power or network failures. If you would like to manually control the save option then just select to change the frequency of the 'save' or disable it under 'User Options'

#### **5. New Hierarchy Style Function Point Count Details – all on a single Report**

The new "Hierarchy FP Size Attribute Summary Reports" combines the Process Hierarchy and Data Hierarchy into a single report that only includes those lower level nodes relevant to the Count Session or Release currently selected. Each displayed node reports the function point count details such as Process Type and FPs but additionally identifies which nodes are assigned to the currently flagged Attributes. It also reports impacts to DETs and RETs. You can selectively 'flag' up to 5 different Attributes from the same or different Categories to be highlighted and summed on the report.

*We developed this report at the request of our users and believe it will soon be **SCOPE's** most popular report.*



**Attribute - FP Size - Release Impacted**

Application Name Assignment Management System - View some Example Counts here  
 Release Name AMS Development Project V 1.0 Sept 2006  
 Project Details New Development **Count Session Details**  
 AMS Development AMS Development Project...FPCount Project  
 Report Selection FPs linked to the selected Attributes - Impacted by the Release  
 Filter Report Highlights - Priority allocated to implementing in First Release

Impact Type  
 A=Added  
 C=Changed  
 D=Deleted

Function Hierarchy	Linked Attributes	Total	UFPs	A	C	D
[1] MANAGE ASSIGNMENTS - GROUP TOTAL= 58						
[1.1]   Maintain Assignments - Group Total= 25						
[1.1.1]     Create Assignment - EI	(a)	6	A	C		
[1.1.2]     Modify Assignment - EI	(a)	6	A	C		
[1.1.3]     Delete Assignment Details - EI	(c)	3	A			D
[1.1.4]     View / Print Assignment Detail - EQ	(a)	3	A	C		
[1.1.5]     List Assignments-Date range - EQ	(a)	3	A			
[1.1.6]     Assignment Success Rate Report - EO	(c)	4	A			
[1.2]   Assign Contractors - Group Total= 13						
[1.2.1]     Assign Contractor to Assignment - EI	(b)	6	A			
[1.2.2]     Remove Contractor Assignment - EI	(b)	3	A			
[1.2.3]     List Assignment Contractors - EQ	(b)	4	A			
[1.3]   Manage Assignment Types - Group Total= 20						
[1.3.1]     Create Assignment Types - EI	(a)	4	A			
[1.3.2]     Modify Assignment Types - EI	(a)	4	A			
[1.3.3]     Delete Assignment Types - EI	(a)	3	A			
[1.3.4]     View Assignment Types - EQ	(a)	3	A			
[1.3.5]     List Assignment Types - EQ	(a)	3	A			
[1.3.6]     List Contractors for Assignment Type - EQ	(a)	3	A			
[2] MANAGE CONTRACTORS - GROUP TOTAL= 24						
[2.1]   Manage Contractors Skills - Group Total= 24						
[2.1.1]     Add Contractors Skill - EI	(a)	6	A			
[2.1.2]     Modify Contractors Skill - EI	(a)	6	A			
[2.1.3]     Delete Contractors Skill - EI	(a)	3	A			
[2.1.4]     List/Print Contractors Skills - EO	(a)	5	A			
[2.1.5]     View Contractor Skill Details - EQ	(b)	4	A			
[3] MANAGE SKILLS - GROUP TOTAL= 6						
[3.1]   List Skills - EQ	(b)	3	A			
[3.2]   View Skill Details - EQ	(b)	3	A			
[4] MANAGE CLIENTS - GROUP TOTAL= 4						
[4.1]   List Clients - EQ	(c)	4	A			
<b>Function Hierarchy</b>	<b>58</b>	<b>23</b>	<b>11</b>	<b>9</b>	<b>0</b>	<b>0</b>
<b>Total Metrics</b>		<b>92</b>	<b>92</b>	<b>15</b>	<b>3</b>	

Assignment Management System - View some Example Counts here  
 AMS Development Project V 1.0 Sept 2006  
 AMS Development Project...FPCount  
 (Report#79) Release.....2 2183  
 SCOPE Project Sizing Software

**Linked Attributes**  
 (a) - Mandatory  
 (b) - Required  
 (c) - Optional

**6. Other Features and updates - SCOPE 3.0 responds to your at your request.**

- Hierarchy Details Report - Function and Data - The functional size of each process and data group are now right justified and totalled for each Hierarchy report.
- Import Count Sessions – now as additional inbuilt intelligence that automatically determines the correct location of imported nodes
- Online report - ‘flagged’ data FPs - User Options, choose either
  - report all the data which is linked to flagged functions, OR
  - only report flagged data which is linked to flagged functions.
- Imports directly ALL FPW Versions - imports all FPW FP data - Most counts in less than a minute for all FPW versions 3 to 7
- Template Set Up Options - Allows the user to select the order of the noun and verb to suit the grammar requirements of the language they are operating in (see “Reverse” option)

# Overview of New SCOPE 2.2 Features

## 1. [SCOPE now speaks your language](#)

**SCOPE 2.2** and **SCOPE Viewer™** are now multi-lingual. You can choose the language for your screen displays, messages and reports. When installed **SCOPE** defaults to the language set by your operating system. When you are running **SCOPE** you can change the language to the language of your choice including:

- *English*
- *Portuguese*
- *French*
- *German*
- *Italian*
- *Chinese*
- *Japanese*
- *Korean*
- *Dutch*
- *Spanish*
- *etc*

*Now you can function point count in your language and report to your users in their language.*

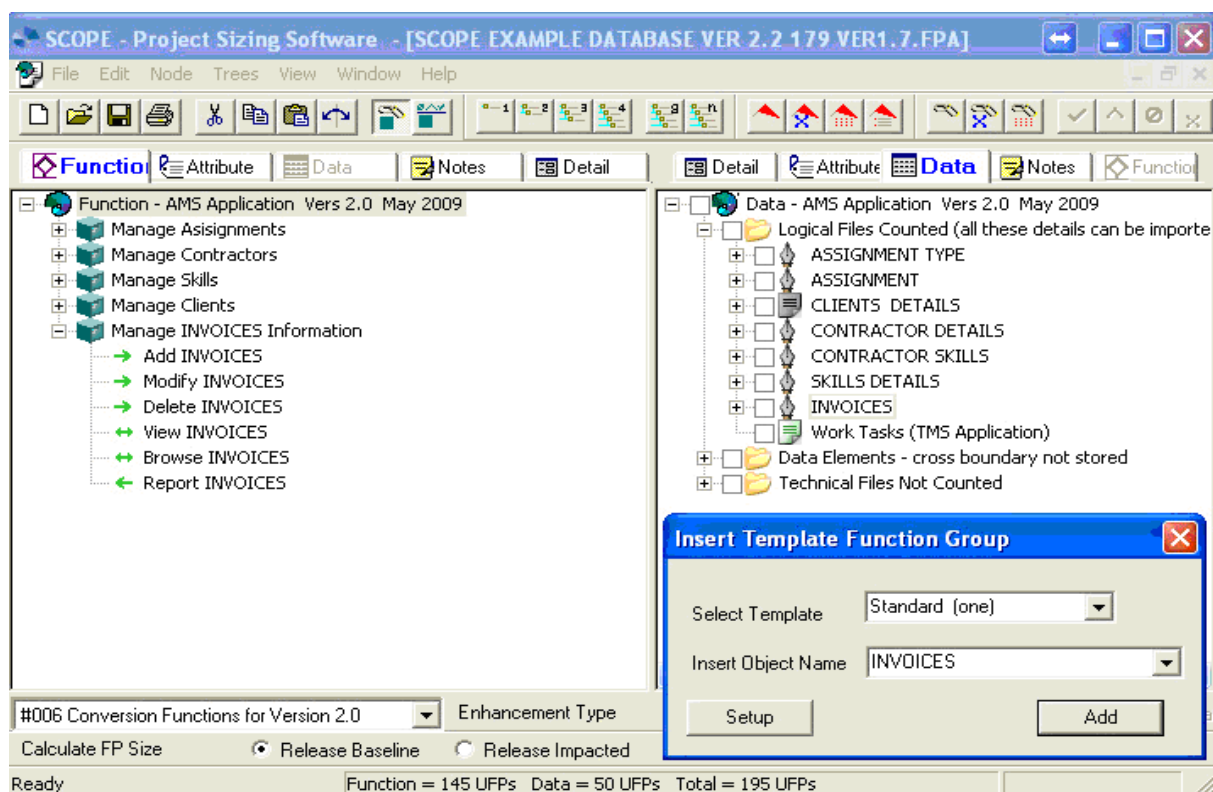
## 2. [Automated Counting - SCOPE Function Block Templates](#)

**SCOPE 2.2** allows you to quickly count 'standard' functionality by generating function blocks of transactions that have their name type and complexity automatically assigned to previously defined default values. This is particularly useful in early counting.



For example: Often a logical file will have one or all of the following transactions - Create, Modify, Delete, View, Browse/List and, or Report. To generate all of these transactions and their file links, just locate your cursor on the logical file and select to insert a 'Template Function Group' and **SCOPE** will automatically generate all the transactions for you. You can create multiple Template Function Groups and set up default name, type and complexity and whether they update or only read a file.

*Once you have set up your default templates **SCOPE** allows you to import and export them for future use by yourself or your colleagues.*



## Overview of New SCOPE 2.0 Features

1. **Multiple counters simultaneously count the same Baseline – SCOPE** enables you to count your Change Requests off-line and then merge your count back into the master copy of the Work in Progress Release so other counters' changes are retained when your changes are recorded. Alternatively you can merge a previous count for a project that you put on hold into your latest Baseline.

*You can now easily have multiple counters counting multiple change requests concurrently on the same baseline. If you have counted a project based on an old baseline that was put on hold, you can export it from the old Release count and import it to apply to the current Release hierarchy. See [Import / Export Count Sessions](#)*

2. **Count what you want when you want** – **SCOPE** allows you to count projects against a current Work in Progress Release baseline, then if the Project is not completed in time for the Production Release to be updated, or if the Project did not go ahead as planned, just select to hold it over for the next Release. **SCOPE** will not update the baseline with the count and will create a new Work in Progress Release which will include the delayed count.

***SCOPE** responds to the needs of a busy IT shop that require ‘what-if’ counts for planning purposes but do not want to lose the information or have it become out of date before the project is actually implemented. **SCOPE** will retain the information of the count over time and exclude it from updating the Baseline until you decide to do so. See [Excluding Counts from Baseline Update](#)*

3. **Count Conversion Functionality** and select to exclude it from the Baseline Update – **SCOPE** allows you to create a Count Session within a project specifically to count conversion functionality. It will be counted as part of the Release size for the project but can be selectively not applied when updating the Production Baseline count.

***SCOPE** lets you decide which counts within a Release will be applied to the Baseline. See [Excluding Counts from Baseline Update](#)*

4. **Reporting the Project aggregated size and Productivity Rate** – **SCOPE** reports the size of a project’s Count Sessions in each Application impacted by the project. It aggregates the sizes and determines the total project size and the project delivery rate (PDR) for the project in the Project Details Report.

*This feature enables reporting and comparison of project productivity rates. See [SCOPE Report List](#) and [Project Metrics for ISBSG](#)*

5. **Application Portfolio Metrics Reports** – **SCOPE** reports all sizes of all Releases and Count Sessions for all Applications in the Applications Portfolio. This feature is available online and in hard copy.

*This feature enables you to view and compare Release sizes and Baseline Growth over time for all applications in unadjusted or adjusted function points. See [SCOPE Report List](#)*

## 6. New features in **SCOPE** Release 2 that will increase your productivity

- Online Dynamic Reporting of Count Sizes – Select the option on the status bar to dynamically report Baseline Size, Reworked Size or Impacted Size for the Release or Session **SCOPE** displays at the bottom of the hierarchy screens.

*Saves time running online reports by reporting the latest size value dynamically as you count. See [Types of Functional Size Reporting](#)*

- Export Metrics for Import into other Products – Select to export :
  - All Metrics Results - for a Release, Project or a single count to an XML file for easy import into your own metrics repository or an industry database. See [Export XML to a Metrics Repository](#)
  - Functional Size Results into a CSV format compatible for import into SPR Knowledge Plan®. See [Export to SPR KnowledgePlan \(CSV\)](#)

*Seamless integration of **SCOPE** results into your estimation and metrics repositories.*

- ## 7. Listing of Notes, Attributes and Data in the Detail Screens – See at a glance a list of the linked notes, data and attributes when viewing the details of each Process or Data Group, double click on the list to take you to the selected link.

*Speeds up counting and count reviews, as everything is on a single screen.*

See [Viewing Linked Processes, Data , Notes and Attributes](#)

- ## 8. Online Reporting of the Size of All Releases, Count Sessions in the Applications List Screen – You can see at a glance the size of all Count Sessions and all Releases for all Applications in the Application List Screen. Size can be optionally reported as Baseline Size, Reworked Size or Impacted Size for Release or Session.

*This feature saves creating reports on individual Count Sessions and Releases to compare values.*

- 9. Group Data Groups into Folders on the Data Hierarchy** – **SCOPE** enables you to group related Data Groups under a Data Group on the data hierarchy for ease of documentation and understanding. For example Folders could be for Accounts, or Customer related Data Groups or alternatively a folder for your Reference Files, Configuration Files, Rule Tables and your External Interface files, grouped by the applications where they reside.

*This feature facilitates easier understanding, completeness of documentation and easier maintenance of your counts. see [The Data Tree](#)*

- 10. Reporting Function and Data Type and their size on the Hierarchy Reports** – **SCOPE** now also reports the type and size of each process and data group on the hierarchy report. At group level it reports the aggregated size of the child nodes.

*This feature enables easier checking of the count completeness and accuracy as all processes and data groups are positioned where they occur in the functional model. see [SCOPE Report List](#)*

## Overview of New SCOPE 2.1 Features

- 1. Project Productivity and Size Reporting** – The Project List is now available as a tab on the [Project and Applications List](#) Screen. The Project List displays all Projects with their associated Count Sessions and count sizes along with the Project aggregated size. If a project's effort is recorded within the Project Details, then the Project Delivery Rate (PDR) of the project is also displayed and reported. Highlight the count and it will display its associated Release and Application, double click it to open it.

*Easy aggregation and reporting of a Projects' counts across multiple Applications.*

- 2. Everyone can now have free access to view all Count Details with [SCOPE Viewer](#)<sup>™</sup>.** **SCOPE** counts can now be viewed by the user or count reviewer using the free downloadable reader **SCOPE Viewer**<sup>™</sup>. This free publicly available **SCOPE** reader is downloadable from the Total Metrics WWW site allows viewing and reporting on all aspects of the count.

*SCOPE ensures that you can easily share your count results with anyone; they can run their own reports and review all your counting decisions. Saves you time by not needing to run multiple reports to distribute.*

**3. Selectively extract “[Snapshots](#)” of Releases or Counts** – SCOPE allows you ‘extract’ a Release with all its counts or just a Count Session for a Release and all their details and save them in a new SCOPE Database. This provides an added level of security of your portfolio data in that it allows you to extract only the Counts relevant to the counter. Once they have made their changes to the count then the whole Release or just the Count Session can be exported and imported back into the master Repository in SCOPE.

*SCOPE “SNAPSHOT” allows the Count administrator to control access to sensitive counts in the Master Repository, by extracting on the relevant count information for counters to work on. Allows counters to count remotely on a small database for additional speed, then merge their count back into the current baseline at a later date. It also allows a counter to SNAPSHOT their count to distribute for review with SCOPE Viewer™*

**4. Automatic Recovery** – If your operating system crashes or your network fails, while you have an open SCOPE database, the next time you open SCOPE it will ask if you want to recover your unsaved file. If you confirm then your previous set of changes will be saved and your database re-instated.

*SCOPE now ensures that you will never again lose data due to untimely system interrupts.*

**5. [Reporting all Trees ‘As Displayed’](#)** – SCOPE allows extra refinement to all reporting so that only the nodes ‘expanded’ on the trees as they are currently displayed on screen, will print on the reports. The selection can be further narrowed by using the existing report filters of only reporting from the branch downwards, flagged nodes or only the nodes impacted by the Count Session or Release

*This feature further enables customised reporting so you only report what you need to see.*

**6. [Reporting Count Values filtered by Attributes](#)** – SCOPE will report the actual number of function points, and their percentage contribution for the processes and data groups assigned to the different attributes. These percentages are reported with respect to the entire Baseline Count or can be further refined to only report for the particular Release or Count Session. (See “Reports – “Attribute FP Size Profiles”).

*This new report allows you to interactively report the percentage of functionality that satisfies different attributes. E.g. The percentage of ‘High Priority’ functionality compared to ‘Optional’ or percentage of a package that needs’ reconfiguring’ rather*

*than be 'coded'. Customise your attributes so you can report on your own profiles to support your decision making.*

### **7. Process and Data Groups assigned a 'zero' multiplier is now display highlighted 'blue'.**

Immediately highlights if a process or data group has been 'turned off' and is not contributing to the count.

### **8. The Notes Icon now shows when it includes a [description](#) – if a Note has additional text in the description field, the Notes Icon changes from to .**

*Allows you to quickly discern if there is additional information about the Note in the description that may be of interest.*

## **Overview of New SCOPE 1.9 Features**

**1. Export Reports - SCOPE** enables you to send and save any of the tabular or text reports to:

- Microsoft EXCEL®
- Microsoft WORD®
- HTML

*Making it easy to embed **SCOPE** reports into your management reports or manipulate the data in an EXCEL® spreadsheet.*

**2. Across Release Reporting** – additional tabular and graphical reports that enable you to compare counts across a Release.

You can now easily compare sizes of individual Change Requests within a Release.

**3. Automatic Counting of Processes and Data Groups** – SCOPE will automatically derive the complexity of a process based on the number of Data Groups and DETs linked to it.



*You can now easily import the attributes of your Data Groups from an external source. You can then select which Data Groups are referenced (FTRs) and which DETs are used by the Process. **SCOPE** then derives the complexity of the linked processes and data groups automatically. This is particularly useful for automatically calculating the number of Data Groups you have linked to your processes.*

#### 4. Enhanced Searching and Flagging Capability – **SCOPE** allows you to select to:

- **Search** and find text in any node of any tree and ‘highlight and flag’ the search results
- **Flag all impacted processes** and data groups for an entire Release or just a Count Session so that you can selectively report or link them
- **Select to link / unlink** to either flagged nodes only or to un-flagged nodes only

***SCOPE** has advanced reporting features that can be applied selectively to flagged functions. The capability to ‘automate’ the flagging means that you can select functions for reporting or to be linked to another node with a minimum of key strokes. The highlighting of all functions impacted within this Release allows you to see the effect of all the Change Requests that have been applied within this Release period.*

*The ability to Link just to Flagged nodes facilitates linking between trees. E.g. search for “Customer” on the Process tree will highlight and Flag all “Customer” related processes, then select the “Customer” Data Group and Link to Flagged Nodes. You can choose to link as Update or Read Only.*

#### 5. **Clone Links** – You can now select to copy only the links on a source node and paste the links to a target node and optionally to all of its descendents.

*This feature speeds up your documentation by cloning the links you have previously created on a node to be copied and assigned to any other nodes and/or their children.*

#### 6. **Set Links for Data Groups** – You can now select to link to a set of dependents and choose whether the link access type is Read Only or Update. **SCOPE** also allows you to select to leave existing links or overwrite.

*This feature speeds up linking of Processes to Data Groups particularly when you want to document how the DETs and FTRs are accessed.*

**7. Cursor position ‘jumps’ to last inserted node** – When positioned at a parent node and inserting a child node, the cursor will focus on the child node enabling immediate editing of the name.

*This feature speeds up data entry enabling immediate editing of the last inserted node.*

**8. SCOPE retains name of last inserted node** – When inserting a node under any tree, **SCOPE** retains the name of the last tree node entered and allows you to then modify the name. (You can optionally toggle this feature on or off via View/Preferences/Auto Fill Name”)

*This feature speeds up data entry of nodes with similar names*

**9. Report Comments in Descriptions saved** – **SCOPE** saves your customised text in the report description in a drop down list so you can reuse it for multiple reports.

This feature speeds up the customisation of your report headings, enabling you to record specific comments on a set of reports.

**10. Set defaults for data entry of Function and Data Nodes** – **SCOPE** previously defaulted the inserted processes to the industry default values of ‘Average complexity Inputs’ and the inserted data groups to ‘Low complexity of an undefined type’. You can now select your own defaults for Type and Complexity under “**View /Preferences**”

*This feature speeds up data entry of similar nodes e.g. A long list of high complexity reports can be entered by just pressing the Ins Key..*

**11. Convert a ‘RET to a Data Group’ and a ‘Data Group to a RET’** – **SCOPE** allows you to correct any errors in data entry by allowing you to convert an incorrectly grouped Data Group to a RET and vice versa.



*This feature enables you to easily correct your counts when you have grouped your RETS and Data Groups incorrectly. It is particularly useful when you import a list of physical tables with their attributes from EXCEL® and you want to regroup them into FTRs and RETs.*

12. **User Preferences to select defaults – SCOPE** allows you to save time counting by setting the default for the following options when you select to Insert a new node:

- **Type of Process or Data Group** e.g. Input, Output, Enquiry
- **Complexity of Process or Data Group** e.g. Low , Average or High
- **Result Source** – i.e. Range, Derived, User Input, Default, Assessment (see View - Preferences)

13. **Speeded up display - SCOPE** has significantly speeded up any functions that require searching and displaying the hierarchy. Remember to select to turn off the **Dynamic FP Calculation** to make **SCOPE** work even faster (see View – Options under main menu).

14. **Auto fill Name Inserts- SCOPE** will auto fill the name of a new node with the name last used for that type of node. This speeds up documenting your count when you have consecutive nodes with similar names. To use this feature select Auto fill Name under View - Preferences.

# Moving from FPW to SCOPE

## Background of Comparison of SCOPE and FPW

*SCOPE Project Sizing Software™ is recognised by the metrics industry as the most advanced function point counting tool available on the market today and was designed by industry functional size measurement expert Pam Morris (CFPS), who specified and project managed the original development of Charismateks Function Point Workbench™ software (FPW) from 1991 to 1994.*

*SCOPE was built specifically to address all the limitations that the Total Metrics team of CFPS function point specialists, had experienced when using FPW; particularly with respect to ongoing management of counts in a corporate environment and tracking software changes in outsourcing Contracts.*

*SCOPE has extended all the great functions and features, originally designed into FPW, to take them to a new level of sophistication. In bringing function point counting up to date with the latest software technology and methods of development, it has also added many new features to take your function point counting into the future.*

*Function point counting is now:*

- o Easier*
- o More reliable*
- o More accurate*
- o More cost effective*
- o More accessible*
- o Less exposed to risk of losing data*
- o Less exposed to risk of data corruption*

**SCOPE** imports all the detailed count data from all current versions of FPW so you can upgrade to using **SCOPE** in minutes and continue counting without any loss of historical data.

**SCOPE** has been implemented in major corporations in over 17 countries, to become today's function point counting tool of choice for people who are serious about counting.

*Join all the other previous FPW users and upgrade to **SCOPE** today.*

*Ask us about our discounts for previous FPW Licensed users.*

*Total Metrics will be pleased to assist you in building your business case to upgrade to **SCOPE**.*

*Please contact us at:*

*[admin@totalmetrics.com](mailto:admin@totalmetrics.com)*

## Summary Gap Analysis - SCOPE 4.0 and FPW7

SCOPE'S FEATURE	SCOPE	BENEFITS OF SCOPE
Interface designed for <b>Windows 7</b> ® by Microsoft Partner to work like MS Explorer®	<b>YES</b>	<b>Modern familiar interface and Windows Icons means minimal training required</b> to learn all <b>SCOPE</b> features.
Selectable <b>multilingual interface</b> (includes all screens, messages and reports)	<b>YES</b>	<b>SCOPE is available in 10 Languages:</b> English - Japanese - German - Chinese - Korean - Portuguese - Dutch - Spanish - Italian - French.

ISBSG compliant <b>Metrics Repository</b> allowing user to record all Effort, Defect, Environment Attributes for trends analysis and benchmarking	<b>YES</b>	<b>SCOPE integrates all Project and Maintenance and support metrics</b> into a central repository for centralised reporting.
<b>SCOPE CONNECT™</b> uses <b>semantic web technology</b> WWW portal for sophisticated management reporting and dynamic <b>ISBSG benchmarking capability</b> .	<b>YES</b>	<b>SCOPE CONNECT™</b> allows users to identify, integrate, query and visualise their metrics data with drill down reporting and dynamic filtering of the ISBSG database . Slice and dice' your own metrics data to <b>benchmark against relevant Industry projects</b> .
<b>SCOPE</b> extracts ISBSG compliant Metrics data and <b>email ISBSG with your submitted Project Data</b> or export to MS EXCEL customisable pivot charts for graphical reporting.	<b>YES</b>	<b>SCOPE</b> can export an XML file of selected Metrics data and email it to ISBSG as a submission for their ISBSG Development and Enhancement Repository or the ISBSG Maintenance and Support Repository.
<b>Customisable 'numeric multipliers'</b> - allows users to use templates or create their own numeric multipliers to report metrics based on size.	<b>YES</b>	<b>SCOPE</b> provides inbuilt Numerical Categories (NESMA Impact factors, Earned Value Reporting, Project Delivery Rates) or you can create and customise your own for quantitative reporting.
<b>Synchronisation capability</b> - allows users to count off-site and later merge the changes they have made into the baseline count without overwriting changes made in the meantime, by other counters.	<b>YES</b>	<b>SCOPE allows counts to be done remotely</b> without the worry of overwriting changes made by others when the count results are merged back into the same or an updated baseline.
<b>Single SCOPE database</b> file to simplify data storage and transmission of counts	<b>YES</b>	<b>Makes transferring</b> data from different storage media simple and easy
Enables Project Managers to quantitatively track and <b>interactively display the size of project rework</b> displaying the history of changes online.	<b>YES</b>	<b>Enables suppliers to easily charge back</b> for project <b>SCOPE-creep</b> and changes to User requirements

Tracks when a process or data group is changed multiple times for the same project or removed from the project <b>SCOPE</b> .		
Imports <b>historical count data</b> from other industry FP counting software e.g. FPW	<b>YES</b>	<b>Easy to upgrade</b> from other tools without losing historical count data
Allows Projects to be mapped to multiple applications so that counts are <b>automatically aggregated</b> at Project level as well as at Application Release level to display online interactively	<b>YES</b>	Maps the structure of your counts to the real-world structure of your applications development and maintenance environment <b>for easy reporting and communication</b>
Allows <b>multiple separate counts</b> to be applied concurrently to the same baseline that can add, change and delete processes and data groups without overwriting other counts changes.	<b>YES</b>	Allows multiple counts to be done for multiple change requests that impact the same Release of an application – <b>avoids separate counts corrupting the master baseline</b> with counts overwriting each other
Inbuilt <b>expert assistance in IFPUG counting rules</b> enhances ability to record and report accurate and detailed count information	<b>YES</b>	<b>Reduces risk</b> of giving incorrect sizing for decision making by ensuring more accurate and consistent counting
All data entry and linking can be done <b>on a single split screen</b> without trekking through layers of stacked windows	<b>YES</b>	<b>Saves significant time</b> (therefore dollar costs) for a counter to record count results. Also assists in reviewing counts as all information is available on a single split screen and names are fully readable
<b>Field lengths are virtually unrestricted</b> to allow actual specification names to be used in documenting the count and display without truncation	<b>YES</b>	
<b>Data groups can be hierarchically structured</b> to individually document names of RETs and DETs which can be linked to Elementary Processes	<b>YES</b>	

Allows easy hierarchical cataloguing of Notes and Attributes with <b>long field length or no field length restriction for complete count documentation</b>	<b>YES</b>	<b>Saves significant time</b> (therefore dollar costs) for an auditor to review a count and for another counter to maintain a count since count decisions are easy to record, view and maintain
<b>Online expert system</b> to provide expert assistance in IFPUG counting rules	<b>YES</b>	<b>Saves time and costs of audits</b> and recounts by providing an online mentor on counting queries
<b>Full Audit capability</b> of all changes to counts	<b>YES</b>	<b>Tracks Author and date when all count details were modified</b> including comments. Fully searchable so you know what changed and when and who made the change.

## Detailed Comparison SCOPE 4.0 and FPW7

### 1 SCOPE maintains the Integrity of the Count Repository

**SCOPE's** unique configuration control capability enables it to manage the individual functional sizing of concurrent Change Request Projects (Enhancement Counts) ensuring other counts are not overwritten when updating the master Application counts (Production Releases). This feature enables a project manager to 'size' multiple change requests on the work in progress release and track the impact of each individual CR's count on the overall release baseline. The aggregated collection of counts can then be automatically combined to update the Production Baseline Release. This reflects 'real life' where many different business initiatives make changes to an Application within the same time frame.

**SCOPE** also allows flexibility with *how* and *when* you apply your counts to the baseline e.g.:

- **‘Cancelled Projects’** - If a change request is already counted on the baseline but the project was not approved then the cancelled Count Session can be deleted in a key stroke. All impacts from the count session are removed and the integrity of the Release is retained. All other counts recorded on the same baseline will not be affected, even if they made changes to the same elementary processes or data groups.
- **‘Postponed Projects’** - If a change request needs to be counted but will not be implemented in the current Release, then it can be counted on the current Release baseline and selectively ‘held over’ and not incorporated into the Production baseline when it is updated. However, it is automatically retained in the baseline count used for counting and kept up to date until a decision is made to re-instate it or get rid of it. This saves having to recount at a later date and the count in the meantime has been maintained such that it will reflect the ‘latest’ complexity status and the links between processes or data groups in its **SCOPE**.
- **‘Conversion Projects’** If a change request is not to be recorded in the Production count. This would occur for changes to the functionality required to be recorded at Project level but not to be implemented into the production version of an application (e.g. conversion functionality). The size of the CR can be retained in the Release project count and automatically ‘not applied’ to the Production baseline count. This saves having to selectively ‘trim’ your count prior to update.

**Automatic Synchronization of the Baseline** - The ‘impacts’ from a Change Request can also be imported and exported from a baseline. The need for this would occur when someone had updated the baseline on a copy of the database, but in the meantime the original baseline had been revised. The counter can then synchronize their ‘count’ with the latest revised version of the Baseline by selecting to ‘import’ a count. **SCOPE** applies its intelligence to apply the impacts of the count on the revised baseline. I.e. if a process in the count is deleted it will find the process on the revised baseline count and mark



it as deleted. If the process has been changed then it will be updated and marked as 'changed'. If a new process is *added* then **SCOPE** will find the correct parent in the revised baseline count and insert the process under its correct parent.

If you have multiple counters counting on the same baseline at the same time, they can do their counts on their own version of the database, then export them and import them into a master **SCOPE** database and **SCOPE** will manage them so the integrity of the master version is maintained.

### **Comparison to FPW**

- *FPW does not enable concurrent counts to be recorded (overlaid) on the same Release functional model. If concurrent counts are recorded on separate copies of the baselines functional model then each count has the potential to overwrite the previous one when updating the baseline resulting in an incorrect baseline count*
- *FPW does not allow a 'count' impact to be imported and merged with other counts, it only allows branches to be copied between counts or whole counts imported. Many clients report significant overhead in managing their counts to ensure that the Master Baseline is not overwritten by counts applied in the wrong sequence*
- *FPW does not provide functionality for multiple counters to be working on the same baseline count at the same time such that their work can be merged without the risk of overwriting*
- *FPW does not allow the capability of counting remotely then merging the completed count back into the 'current' functional model. It does not enable all the new modifications to be incorporated into the current model which may have changed content and structure since the original copy was made.*



## 2 SCOPE maintains ISBSG Compliant Metrics Repository for online Benchmarking and Trends Reporting

**SCOPE's** developers have worked with the International Software Benchmarking Standards Group (ISBSG) to develop an XML file format the ISBSG can accept for submission of projects into their database. **SCOPE** enables you to record all Project Effort, Defect and Environment attributes required by ISBSG for Industry benchmarking.

- create your **own Benchmarking Data sets** of project or maintenance and support data grouped how you want them to be reported
- select the Projects and Applications you want to **send to ISBSG**. **SCOPE** removes any identifying information and allows you to view the extracted data prior to sending via email
- **dynamic benchmarking against ISBSG datasets** – **SCOPE Connect** enables you to dynamically benchmark against ISBSG data that has been filtered to be aligned with data in your dataset.

### **Comparison to FPW –**

- *FPW does not support a Metrics Repository of Project and Maintenance and Support performance and quality metrics data for dynamic benchmarking and trends analysis*

## 3 SCOPE maintains the Security and Confidentiality of the Data

**SCOPE's** unique capability to synchronise and extract counts allows the Metrics Manager to select to 'Snapshot' the Release Model to a separate database enabling counts to be:

- **Validated** *before* they are merged into the current baseline so as to avoid corrupting the master data repository
- **Private** – counts are only provided to other counters on a 'needs to know' basis. I.e. it allows the repository manager to keep the project size

data of other business areas private and only accessible to the Repository Manager in the master database

- **Secure** - Commercially sensitive projects can be counted 'offline' and only if and when they are approved for public knowledge, then they can be merged back into the current baseline

#### **Comparison to FPW –**

- *FPW has no ability to automatically synchronise and then merge counts done 'offline', as a result counts have to be manually re-applied once approved*
- *FPW can only apply security at the database access level and does not allow for segregation of the database and later synchronisation*

## **4 SCOPE reduces risk of database corruption**

**SCOPE** databases are easily identified and saved as a single \*.FPA file that is Microsoft ACCESS® compatible. Users can use Microsoft ACCESS® to customise and create their own **SCOPE** reports.

#### **Comparison to FPW –**

*- FPW saves to a Paradox database of >40 individual files. All of these files need to be copied and transferred whenever a count database is transferred to another medium or directory using MS Explorer. This creates an issue if for some reason the transfer of just one of the tables fails, then the whole database is corrupted and irretrievable.*

## **5 SCOPE provides the evidence for Project Managers to charge for Rework**

**SCOPE** enables multiple counts to be performed on the same functional model throughout the development lifecycle. Projects often impact the same functions multiple times in project lifecycle. I.e. new functions or data groups may be added by the project then changed several times or even deleted at the

users' request. **SCOPE** has the unique capability to track this *rework*. It is able to report cumulative size of the rework in addition to the net functionality delivered (the net result of the delivered software). **SCOPE** also records the counters name, date and time of the creation and modification of all the count processes and data groups and allows changes to be searched on name, or date of change.

#### **Comparison to FPW –**

- *Whilst FPW does report rework, it does not enable concurrent counts for the same release and it is not able to record or display online, for each process and data group, the extent of rework. FPW does not record and interactively display situations where the same process or data group is changed several times within a release by different counts or subsequently deleted in a de-scoping exercise.*

## **6 SCOPE makes it easy to upgrade from other tools**

**SCOPE** can be downloaded from the Total Metrics WWW site and installed in minutes. You can import your historical count data into the **SCOPE** structure from:

- EXCEL spreadsheets
- Function Point WORKBENCH™ (all count details [transactions, data groups, links, notes and labels] as well as project and application details)
- imports ALL versions of FPW

#### **Comparison to FPW**

- *FPW only imports VAF, process and data group data from its own template Excel spreadsheets but any descriptions for the processes or Notes documenting the count are not able to be imported from the Excel template spreadsheet, without manual copy and pasting of text.*
- *FPW is not able to import any data from **SCOPE***

## 7 SCOPE can be used by Novices

**SCOPE** has a modern Windows 7 standard intuitive interface which optimises the use of Windows 'shortcuts' and function keys. All the key components of a count (Processes, Data, Notes and Attributes) have been modelled to behave identically so that once the User learns to maintain, link and report one component (which is similar to the way MS Explorer<sup>®</sup> works), they can effectively use all **SCOPE** functionality.

**SCOPE Viewer™** has proven that Users who have no function point knowledge or FP tool experience can effectively review counts and run reports in **SCOPE**.

### **Comparison to FPW**

- *FPW uses different structures, concepts, rules, and function keys for each of the count components (transactions, files, notes and labels) and requires the user to learn each set of unique commands to maintain each type of count component.*

## 8 SCOPE is more cost effective when recording counts

**SCOPE** was *designed* by function point counters *for* function point counters, to make counting fast, effective, auditable and well documented. The key component to this objective was to have all features in **SCOPE** performed on the single main screen avoiding the time wasting tasks of navigating through overlapping multiple windows.

**SCOPE** displays all four count components (Processes, Data, Notes and Attributes) as Hierarchy trees such that the majority of any tree's nodes are visible AND readable on a single screen, thus avoiding time wasted in scrolling vertically and horizontally to understand a functional breakdown.

The split screen display allows linking of all count components to be completed with a single mouse click without changing windows.

Data, Notes and Attributes can all be hierarchically modelled and catalogued into folders to facilitate locating them and understanding their relationships when linking to a Logical Data Group or Note to a Process. All branches within any tree can be automatically sorted in a sequence of the user's choice.

**SCOPE** has an MS Windows standard 'search and replace' function enabling quick up and down searches to find any text in the name or description of any count component (Process, Data, Note or Attribute)

**SCOPE** allows the counter freedom to use meaningful names and descriptions that best describes any of the count components and always displays the full name without truncation.

**SCOPE** provides further flexibility for ease of searching and linking by allowing the user to flip the dominant components from the left hand or right hand tree. I.e. unlike FPW it is not driven from a fixed single directional left to right 'transaction tree' view. You can put the focus of the main window on any one of the Process, Data, Notes or Attribute Trees and then drive the count and the links from that view for ease of linking, filtering and reporting.

### **Comparison to FPW**

- *FPW's earlier style user interface requires the counter to navigate through multiple overlaying windows in order to complete a simple function such as linking a process to a new data group, over the course of a large count this can add considerable more effort and cost for a count*
- *FPW limits all exposed key fields to 8 and name fields to 32 characters. Longer names are truncated when displayed in boxes. In order to see the names without having to highlight the box or increase display size, counters waste valuable time compacting and truncating the specification names used by the business to 'fit' them within space constrained by FPW's pre-sized boxes*

- *FPW displays all count components other than processes as a flat list. The displayed lists can be sorted alphabetically but the order, hierarchical level and sequence cannot be customised, nor can the components be hierarchically grouped and catalogued for ease of review and maintenance of the counts*
- *FPW drives everything from the Transaction hierarchy and does not cater for decomposing Data into RETs and DETs thus making the auditing, maintenance, and managing of the Files much more complex and time consuming*
- *FPW does not allow the user to put the name and description for processes, thus limiting the capability to describe and document it for ease of maintenance.*

## 9 SCOPE is more cost effective when Maintaining and Auditing Counts

**SCOPE** was designed with the concept of making it quick and easy to maintain counts of each new change request and making it easy to document and report count decisions to assist in auditing.

**SCOPE** does this by providing the capability to:

- o **Provide an audit trail** of who changed which tree node when that if fully searchable
- o **Quickly record project changes** (new functions, changed functions and deleted functions) with a single mouse click on pre-existing counts
- o **Detailed Count Reports** that list exactly how a process was counted, not just its type and complexity (i.e. Ranges selected, numbers entered by the user or just defaulted)
- o **Detailed Documentation in Reports** that list for each process which Data Groups, RETs and DETs it accesses and the type of access.  
(**SCOPE** will actually automatically derive process and data group complexity from these links to significantly reduce counting time and increase accuracy)

o **Hierarchal modelling** of Data, Notes and Attributes in addition to Functions and Elementary processes

- **Data** - **SCOPE** enables you to group your related data into Folders, then within a folder sort them in any order you choose and decompose them and name them at Data Group (ICF/EIF), RET and DET level and to link Processes, Notes or Attributes at any level. **SCOPE** models the Data hierarchically into its RETs and DETs. Processes can be optionally linked to DETs, RETs and Logical Data Groups for greater accuracy of recording and easy auditing
- **Notes** – **SCOPE** allows any comments or Notes to be grouped into SETS which can in turn be decomposed in a similar way to a Table of Contents. Notes can be of any length and arranged and re-arranged and sorted in any order. For importing your specification just copy the list and import directly from an EXCEL spreadsheet
- **Attributes** – **SCOPE** also models Attributes (key words / labels) into Categories as hierarchical trees. Attributes are not mutually exclusive i.e. Processes can be assigned more than one Attribute within a Category. Data can also be linked to Attributes.

o **One step (one mouse click) linking** of any Process, Data Group, Note or Attribute (label) without swapping windows.

#### **Comparison to FPW –**

- o *FPW does not record who changed count components and when*
- o *FPW requires opening up excessive windows just to link to a new File, Note or Label. For example it takes 6 mouse clicks just to link an existing file and 5 windows to add a new file and link it to the process.*
- o *FPW requires the user to sift through 'layers' of windows to create links of any kind*
- o *FPW displays both Files and Notes in a flat list of which the order and grouping can only be sorted alphabetically, their order or sequence*



*cannot be customised. Does not display which Transactions are linked to a particular Note or File without selecting the Note or File and running a specific query.*

*o Without referring to the individual details reports FPW does not report how individual Processes or Data Groups were counted. FPW transaction and File list Reports only show High, Ave, or Low complexity.*

*o Labels in FPW can only be assigned to Transactions and not Data which provides very limited capability in profiling counts*

## 10 SCOPE facilitates more Accurate and Consistent Counting

**SCOPE** has an inbuilt expert system (FP Decision Maker™), designed by authors and reviewers of the IFPUG Counting Practices Manual, that steps counters through the IFPUG CPM decision logic when trying to determine the type or complexity of a function. This ensures that counters are reminded of the IFPUG guidelines and make count decisions via a consistent and auditable process.

**SCOPE** has a fully indexed ROBOHELP Help system for all functionality. This help accesses the Total Metrics www site to give the user the very latest HELP for all functionality and embedded Flash Tutorials on most counting activities.

Both HELP and the Tutorials are updated every **SCOPE** Release and because it is online is updated dynamically whenever we identify another area where it can provide assistance.

**SCOPE** allows individual users to customise **SCOPE** to operate with their own user counting and display options and defaults. This flexibility in customisation includes being able to dynamically switch between 10 languages (e.g. French, Italian, German, Japanese, Portuguese, Dutch, Chinese etc.) which dynamically changes the language in which the screens and messages will display.

### **Comparison to FPW**



- *FPW does not provide any automated counting assistance*
- *FPW does not enable users in to operate the software in their language of choice or dynamically switch between languages*

## 11 SCOPE counts are more understandable by the Business Users

**SCOPE** 's way of recording functional size takes into account the way we develop software today i.e. It recognises the way it structures its Applications, Release, Projects and Counts such that :

- A user's business initiative (Project) may have many change requests that impact one or many different software applications and sometimes have more than one CR that impacts a single Release of one of the applications
- Software tends to be developed on a Release based approach rather than an approach where each Change Request resulting in a new production version of the software
- Each Release may have one or more Change Requests belonging to either same or different projects. These Change Requests need to be individually sized since they contribute to different projects and are often run by different teams and approved independently

**SCOPE** enables a Project to record multiple Impacts across multiple Applications and aggregate Function Point size, at Change Request, Application Level, Release Level and at Project Level.

**SCOPE** can record multiple Impacts from multiple projects on an Application concurrently and be able to maintain and report the different Project Impacts independently.

**SCOPE's** flexibility allows it to respond to changing project implementation decisions by being able to record the Project Impact on an Application AND be

able to decide to not apply it, or to remove it or to hold it over to be applied again at a later date when the project is approved or restarted.

### **Comparison to FPW**

*FPW has a linear relationship between software activities and **does not provide**:*

- *a graphical hierarchical display that describes the Relationship of all the Counts to the Releases to the Applications*
- *a graphical display that describes the multi-dimensional relationship between Applications, Projects and Counts*
- *a means to record, measure and interactively display a project that impacts more than one application*
- *a method to 'hold over' a count and reapply it to the updated baseline when a projects implementation is postponed*
- *a means by which to automatically select to exclude functionality from the baseline update*

## **12 SCOPE makes Count Results freely accessible**

**SCOPE** has advanced cross-referencing and reporting functionality to enable you to easily do online 'what-if' analysis and produce up to 40 different reports instantly.

**SCOPE** central repository of counts is able to be accessed concurrently by multiple **SCOPE** users. Previewed reports, if accepted, can be printed or saved to a file or emailed.

**SCOPE** allows you to select to export the report to MSWORD or MSEXCEL or HTML, print or preview.

**SCOPE** reports, Baseline Size, Reworked Size and Current Count Size dynamically at the bottom of the screen as you move through the functional model.

Full Detailed Management Reports are generated online within seconds in print preview mode. The Count Detail Reports actually report the level of detail that a process or data group was counted. E.g. displays the ranges, or actual number of RETs or DETS. This is useful for auditing count results.

**SCOPE** allows you to extract your count using the Snapshot option to send the full count details to a client. The client can then download **SCOPE Viewer**™ free from the Total Metrics WWW site and install it so they can investigate all aspects of the count, print all reports or provide comments and send it back in softcopy to the counter.

#### **Comparison to FPW**

- *FPW has only one summary function point count report that can be selected to be displayed. The other Detailed Function Point Counting reports need to be printed as hard copy or 'published' by saving to a file. To view the 'published' information online requires the output report to be first named and saved to an XML file, then opened. This sequence takes several steps to complete in order to view the information. If the report indicates an error or omission in the count, the count needs to be fixed, and then all the steps in the publishing process repeated.*

Download your evaluation copy of **SCOPE** today and start counting and see the differences for yourself!

## **Moving from FPW to SCOPE - Types of Counts**

The following Commands in FPW are mapped to the similar commands in **SCOPE**.

#### **Application Baseline / Project Function Point Counts**

FUNCTION	Function Point WORKBENCH™	SCOPE Project Sizing Software™	COMMENTS SCOPE Features
<b>Production Application Baseline Count</b>	File > Browse for Counts and select count (Double-click) or Open in the Count List. Type is App for Application	File - Project and Applications List-Explode tree - Select Application, Production Release (Open, Release with Gold Padlock)	<b>SCOPE</b> highlights the latest Production Release with a Gold Padlock ICON. If that count is the latest i.e. There are no current Count Sessions then it has an Opened padlock Icon.
<b>Development Project Count</b>	File > Browse for Counts and select count (Double-click) or Open from the Count List. Type is Dev for Development Project.	File - Project and Applications List-Explode tree - Select Application-Work in Progress Release (Open Green Padlock), Open the Count Session	<b>SCOPE</b> highlights the latest release being counted for a project with an open green padlock. Counts measured at different stages of the life cycle are recorded as Count Sessions but are individually tracked on the same Release model to retain configuration control. Record Project Details for each Count Session in the Project List
<b>Enhancement Project Count</b>	File > Browse for Counts and select count (Double-click) or Open from the Count List. Type is Enh for Enhancement Project.	See above. Highlight a Count Session and select Open. Link the count session to the Enhancement Project in the Project List Screen	If you make changes to the Release when a Count Session is open then all changes for the Enhancement Project can be tracked by assigning an impact type to the elementary processes and data groups (impact type = add, change, delete) . This is similar to using Tracking in Microsoft WORD. Record Project Details in the Project List.  <b>SCOPE</b> allows you to record multiple counts for a Project

			across many different Applications or within the same application and aggregate the counts to a Project Total
<b>Recording Rework during a Project</b>	Not available to record rework (a/c/d) on the same process in the same Release count. A work around is to use Labels	Use a Count Session to record your new changes. Impacts across the life cycle can be tracked cumulatively	Report the total functionality impacted using the Release Rework Functional Size Report Option
<b>Updating the Baseline Application count</b>	File > Maintain Application Baseline or use File > Browse for Counts, select count and press [Maintain Application Baseline]	File Project and Applications List Select a work in progress Release with the Open Padlock (has update rights), select Update to Baseline.	The Baseline Application Count is protected from being mistakenly updated by an earlier count that overwrites later changes. You are given the option to 'hold over' a count if it is not to be applied to this baseline or to exclude a count in which case it is not used to update the baseline (useful for conversion counts).

## Moving from FPW to SCOPE - File Complexity

The following Commands in FPW are mapped to the similar commands in SCOPE.

### Assessing Complexity of Logical Data Groups

FUNCTION	Function Point WORKBENCH™	SCOPE Project Sizing Software™	COMMENTS - SCOPE Features
<b>Using Ranges of RETs and DETs</b>	Complexity Rating Method - Rapid	Result Source-Range	<b>SCOPE</b> Default is Low - Type undefined
<b>Input numbers of DETs and RETs</b>	Complexity Rating Method - Record DETs/FTRs ; can be derived from the numbers entered	Result Source - Enter Value	
<b>Derive from names of DETs and RETs listed for Data Group</b>	Not Available	Result Source - Derived	<b>SCOPE</b> automatically derives BOTH the number of RETs and the DETs recorded for the Data Group in the Data Tree structure. This provides the most accurate counting capability of any tool currently on the market. Ensures traceability and auditability of your counts. Note: DETs and RETs can be imported from any list recorded in a column in a spreadsheet using the EXCEL Import option
<b>Guess Low/Average/High</b>	Only available using range selections	Result Source-Assessment	<b>SCOPE</b> allows you just to select low average or high, default is LOW

## Moving from FPW to SCOPE - Transaction Complexity

The following Commands in Function Point Workbench™ are mapped to the similar commands in SCOPE.

**Assess Complexity of Elementary Processes**

FUNCTION	Function Point WORKBENCH™	SCOPE Project Sizing Software™	COMMENTS - SCOPE Features
<b>Using Ranges of DETs and FTRs</b>	Complexity Rating Method - Rapid	Result Source - Range	<b>SCOPE</b> Default is Average Input
<b>Input values of FTRs and RETs</b>	Complexity Rating Method - Record DETs/FTRs	Result Source - Enter Value, Range	
<b>Derive from number of DETs and FTRs linked to the process</b>	Not available	Result Source - Derive - Complexity and type automatically derived from RETs and DETs linked and access type	<b>SCOPE</b> automatically derives BOTH the number of FTRs and the DETs from the links. This provides the most accurate counting capability of any tool currently on the market. Ensures traceability and auditability of your counts.
<b>Guess Low /Average /High</b>	Only available using range selections	Result Source - Assessment and select Low/Ave/High	<b>SCOPE</b> - select low, average or high



# Moving from FPW to SCOPE - Adding Transactions and Data

The following Commands in FPW are mapped to the similar commands in SCOPE.

## Record Processes and Data Groups on Functional Model

FUNCTION	Function Point WORKBENCH™	SCOPE Project Sizing Software™	COMMENTS - SCOPE Features
<b>Modify Data Group Details</b>	File > Count Files or directly using Count File List from the context menu in Transaction Hierarchy workspace. Modify File Details directly in this list or Open File Details dialog.	Double click Data Group. Or Select <u>Detail</u> TAB opposite window to <u>Data</u> Tree	<b>SCOPE</b> displays all Data details on the same screen, dynamically as you move around the data tree
<b>Create a new Data Group</b>	Tables > System Tables > System Files and [Add]  There is no way to model, 'group'  Data Groups in FPW	Select <u>Data</u> Tree TAB ( ALT/INS) for Data Group or set up Folders for Related Data Groups (Right Click and select to Insert a Data Group Folder)	<b>SCOPE</b> allows you to create Data Groups on the same screen as you view your hierarchy. If you need add a new file press ALT/INS. Data can be modelled for easy sorting, searching and grouped from a User perspective. Related Data Groups can be catalogued and stored under a Data Folder for ease of use.
<b>Create a RET for a Data Group</b>	Not available	ALT/INS/Shift,	<b>SCOPE</b> allows you to record details of the RETs and link them to Processes that Read or Update them
<b>Create a DET for a Data Group</b>	Not available	INS	<b>SCOPE</b> allows you to record details of the DETs and link them to Processes that Read or Update them

<b>Insert a higher level Function Node</b>	INS /OK Component	Select <u>Function</u> Tree TAB - ALT/INS	<b>SCOPE</b> uses all the Windows standard commands for copying, moving , shifting nodes.
<b>Insert an Elementary Process</b>	INS- Transaction - OK	INS	<b>SCOPE</b> uses Windows Explorer format and by not having boxes around functions and processes it allows over 40 to be displayed in a single screen.
<b>View Process Details</b>	Highlight for Flyover or Double Click Mouse	Select <u>Detail</u> TAB on the opposite window to the <u>Function</u> Tree	<b>SCOPE</b> displays all Process details on the same screen, as you move around the tree. You can view all its links, Data, Notes and Attributes, how it was counted, defaults used and the Change Request (Count Sessions) that impacted it.

## Moving from FPW to SCOPE - Enhancement Counts

The following Commands in FPW are mapped to the similar commands in SCOPE.

### Enhancement Counts - Recording and Reporting

FUNCTION	Function Point WORKBENCH™	SCOPE Project Sizing Software™	COMMENTS - SCOPE Features
Identify which Processes or data groups are impacted by a change request to the software	Create an Enhancement Project Count - the command to set the value of the Enhancement Type depends on whether a Transaction or File is selected	Highlight Work in Progress Release - open Count Session - To assign change type select Enhancement Type (see above status bar) The Icon next to the Data Groups and Processes, immediately change colour Green = add, Orange = change Grey = Delete Black = No Impact	<b>SCOPE</b> records work in a Count Session by awarding an impact type to the new, changed or deleted Processes or data groups. In the Details screen, view cumulative session impacts recorded in multiple sessions across the Release Project Cycle. The size of the current Enhancement Count Session is automatically displayed above the status bar in FP Size and Count Session Impacted
Reporting a selected Function Point Counting Session	Function Summary with Files	Reports -Count Session Impacted Functional Size  OR view result online at the just above the status bar  OR view result online in Project and Applications List	<b>SCOPE</b> allows you to report the impact recorded just for this selected count session for the Release.  All reports are viewable online or a summary value is dynamically calculated on the screen and in the Project and Applications List. All reports can be exported to MS WORD, MS EXCEL or HTML
Reporting All Function Point Counting Sessions for a	Not available	Reports - Release Impacted Functional	<b>SCOPE</b> Reports the impacted functions for all count sessions for this

Release		Size  OR view result online at the just above the status bar  OR view result online in Project and Applications List	release
Reporting the Net Result of the Enhancement Counts	Only available in printed or published reports	Reports - Release Baseline Functional Size  OR view interactively online (Release Baseline) as you make changes (see above)	Reports the net effect of the Adds and Changes, removes the Deleted functions

## Moving from FPW to SCOPE - Profiling Results using Labels

The following Commands in FPW are mapped to the similar commands in SCOPE.

### Profiling the Functionality for Analysis and Reporting using Labels

FUNCTION	Function Point WORKBENCH™	SCOPE Project Sizing Software™	COMMENTS - SCOPE Features
<b>Create Labels</b>	(Create Labels) Select  Tables - Global Tables - Global List - System Use, Add	(Create Categories of Attributes)  Select - <u>Attribute</u> Tree TAB - ALT/INS to create CATEGORY. Highlight Category - INS and Attribute	<b>SCOPE</b> has Categories instead of Labels and Attributes instead of Label Options. <b>SCOPE</b> allows you to Label Data as well as processes.  <b>SCOPEs</b> attributes are non- exclusive so it allows you to link more than one option of an attribute to a single process.
<b>Linking Labels</b>	Select Link Labels whilst in a Transaction. Only links to Transactions and links to related Label Options are not allowed.	Select Link Mode and view Attribute tree. Link to Data or Processes or Notes.	<b>SCOPE</b> allows you to create new Categories and Attributes whilst still viewing the Process, Data or Notes Tree. You can link related Attributes to the same Process or Data Node. They are not mutually exclusive.
<b>View Combinations of Labelled Processes</b>	View Options, Search and Highlight, Complex Labels etc.	Select Filter Mode Icon, Highlight the attribute and click the Boolean Icons (And/Or/Not) on Main Menu	<b>SCOPE</b> allows you to view the flagged result of your filter selection immediately on the screen. Allows you to save the question selection criteria (Filter) or the results (Flags)
<b>Save a</b>	Save / Load Complex	Filter Set Icon,	<b>SCOPE</b> allows you to use a selection filter for any of the

<b>selection Filter</b>	Label	Save	Trees (Process, Data , Notes and Attributes) and save this filter. It is not restricted to just the Attributes Tree
<b>Load a selection filter</b>	Load Complex Label	Filter Set Icon, Apply	If you want to see the cumulative result of selecting, using a Data Group plus selected Notes, plus selected Attributes, then save each Flag Set result and then apply them cumulatively
<b>Save the results of your selection Filter</b>	-	Highlight the root node for the Flagged Tree, Flag Set Icon, Save	<b>SCOPE</b> allows you to save the results of a selection, and then re-apply them cumulatively.
<b>Cumulatively Load the results of many selections</b>	Load Complex Label, Add to Complex Label	Flag Set Icon, Apply Flags Cumulatively, Apply	

## Key Advances of SCOPE over FPW

# Advanced Ease of Use and Time Saving Data Entry



[Counting Transactions](#)



[Counting Logical Files](#)

All features in **SCOPE** are performed and displayed on the single main screen avoiding the time consuming tasks of navigating through overlapping multiple windows. All features and short-cuts are typical of those set by Microsoft Windows® products.

The MS Explorer® like Trees in **SCOPE** enables you to intuitively view a significant proportion of the functionality of your software application in a single screen.

See also how to insert multiple transactions for a data group with a just a mouse click - [Template Function Groups](#)

## Advanced Configuration Control



### [Set Up Multiple Counts for Same Release](#)



### [Import Export Counts within a Release](#)

**SCOPE's** unique configuration capability enables it to manage concurrent Enhancement counts ensuring other counts are not overwritten when updating the master Application counts (Production Releases). This feature enables a project manager to '**SCOPE**' multiple change requests on the **work in progress release** and track the impact of each individual count on the overall release and to record Benchmarking Metrics at Change Request level.

**SCOPE's** allows a user to record multiple function point counts for the same Release of an application and to selectively report and edit them. If the count is no longer required then it can be deleted (select **Delete Count Session** from the Software Applications List when located on the count). Once the Count Session is deleted, the Release Baseline will be left as it was before the count was recorded. When you select to delete a count you will be prompted to select if you want to **Delete Added** and/or **Delete Deleted** processes and data groups that were impacted for the count.



If you select the box to delete the **Added** processes and data groups **SCOPE** will delete all the nodes that were added new as part of the count. You can use this feature to 'fix up' a baseline. i.e. Create a count called 'Fix up Baseline' then add in the processes and data groups that you believe should have been included. Have your new nodes checked then delete the Count Session but un-select to **Delete Added**, these nodes will remain in your Baseline but not be recorded as part of the Release.



If you select to delete the **Deleted** processes and data groups then **SCOPE** will remove all nodes marked as deleted. This is a useful way to 'clean up a hierarchy'. i.e. create a Count Session called 'Clean up' then mark all processes and data groups that need to be removed to make the count correct. Have someone validate your decision, then select to delete the Count Session called "Clean up". All the nodes marked as deleted will be removed from the hierarchy.

See also [Import / Export Count Sessions](#)

## Merging Databases



### [Import Export Counts within a Release](#)

**SCOPE** will allow you to merge data created in different databases by exporting the data from one database, into a saved file which can be imported into the same or different database and merged with the existing data. From the Applications List select the horizontal arrow icons to export  and import .

**Applications** - can be exported/ imported with all their Releases, Counts, related Projects and Benchmarking data

**Releases** - can be exported/ imported with all Counts, related Projects and Benchmarking data

**Count Sessions** - **SCOPE** will allow you to export a selected Count Session to be imported later into another Release within either the same **SCOPE** database file or a

different database. This is essentially a 'merge' option where **SCOPE** merges the imported Count Session into the Release, so the Release now reflects the latest impacts and the imported Count Session becomes one of the Counts for the Release. See [Import / Export Count Sessions](#)

## Tracks Rework for Enhancement and Development Projects



### [Set Up Multiple Counts for Same Release](#)

**SCOPE** also enables multiple counts to be performed on the same functional model throughout the development life cycle. As a new function is added, and subsequently changed several times at different stages of the life cycle, **SCOPE** tracks the rework. It is able to report the net impact, the net result of the delivered software and the cumulative size of the rework.

**SCOPE** records an audit trail of all tree nodes of who created the node and who changed it with dates, times and user names. (See [Audit Trail of SCOPE Changes](#) )






See also [Types of Functional Size Reporting](#)

## Detailed Recording of Data Groups



### [Counting Logical Files](#)

**SCOPE** allows you to create a detailed hierarchical model of your data as well as your functional processes. You can:

- group your related Data Groups (ILFs  and EIFs ) into  **Data Group Folders** for cataloguing purposes
- record the of **Record Element Types** (RET) for each Data Group
- record each individual **Data Element Types** (DET) for each RET

This hierarchical model aids in:  
© Copyright Total Metrics Pty Ltd  
2003 – 2011

- more easily understood documentation of your count
- faster counting when you need to quickly find a particular Data Group
- enabling you to document any Tables in your application that have been excluded from being counted because they are physical tables not Logical Data Groups e.g. *create a Folder called "Physical Tables" and list the Code tables and Technical tables that are part of the application but not counted under IFPUG Rules. Then set the multiplier to '0' for these tables. Attach a Note to the tables listing the reasons why they have been excluded from the count.*
- enabling you to list DETs that are used by processes and cross the boundary but are not stored on Logical Data Groups. These DETs can be linked to the processes that use them and used to automatically derive the size of the Process. e.g. *create a Data Group Folder called "Transient DETs", then record the DETs that cross the boundary but are not stored on an ILF or EIF e.g. Message DETs, Control DETs, Totals, Derived fields etc. Link all DETs to each Process that uses them and select Result Source= Derived to have **SCOPE** automatically count DETs , FTRs and derive the complexity of the process.*

**SCOPE** also allows you to derive the complexity of a process automatically using the number of FTRs (Logical Data Groups) and DETs linked to the process, so the more completely you are able to document your count then the more accurately it can be sized.

*Hint: If you already have a softcopy list of the names of your Data Groups, RETs and DETs, in a data dictionary then cut and paste the list into the*

**Master\_SCOPE\_Excel\_Import\_Template** spreadsheet. (located under the directory where you installed **SCOPE**) Follow the instructions in the ReadMe sheet and then import the list of FTRs, RETs and DETs into your **SCOPE** count. See

[Import Existing Counts from CSV](#)

## Extended Length for Names and Descriptions

**SCOPE** allows you to enter up to 255 characters for all names of all your Processes, Data Groups, Notes and Attributes etc. Description field lengths are almost unlimited. You can enter and report a full description for all types of Tree Nodes.

## Online and Print - over 50 Different Reports



### [Reporting Counts](#)

**SCOPE** has advanced cross-referencing and reporting functionality to enable you to easily do online 'what-if' analysis and produce over 50 different reports for immediate viewing.

Previewed Functional Size Measurement and Benchmarking Details reports can be saved or printed in the following formats:

- Snapshot Viewer ® files (Snapshot Viewer is free from Microsoft and downloadable from the WWW)
- Snapshot Viewer ® files and sent as an Email Attachment from the Report Preview window
- PDF files ( if you have a copy of Adobe Distiller® )
- MS Office® Image Writer files ( Users with MSOffice 2003 or later)
- MS EXCEL® workbook ((Users with MSAccess 2000 or later)
- MS WORD® document ((Users with MSAccess 2000 or later).

Benchmarking Data can also be exported and reported in :

- MS EXCEL® - **SCOPE** Analytics Pivot Chart reports
- Clear Blue Water® WWW based Analytics Portal - **SCOPE** Connect for drill down and interactive ISBSG reporting

### Single Database File for Ease of Administration

**SCOPE** Database – single Microsoft Access® Compatible File

**SCOPE** databases are easily identified and saved as a single \*.FPA file that is Microsoft Access® compatible.

# Background and Articles on Functional Size

## Introduction to Function Point Analysis

### Background

Function Point Analysis (FPA) is a technique used to size the software work product. This work product is the output of software new development and enhancement projects. It is the software which is migrated to the production application at project implementation.

Function Point Analysis (FPA) has been used since the late 1970s to assess the functionality delivered to the user based on the user's external business view of the functional requirements. It measures the logical view of an application as compared to measuring the physically implemented view or the internal technical view.

FPA measures these functional requirements in terms of the:

- Business transactions (e.g., Enquire on Fault Record) that the user can perform using the software,
- Business data (e.g., FAULT File) that the software can store and access.

The process of performing Function Point Analysis is called a 'Function Point Count' and it involves the identification, classification and weighting of each of these transactions and data components. The weightings are combined to give the functional size as an Unadjusted Function Point Count. Older versions of IFPUG CPM methodology required an additional step of assessing the technical and quality features embedded in the software product and adjusting the functional size accordingly. The result was referred to as the Adjusted Function Point Count.

*NOTE: The latest IFPUG CPM 4.3 Methodology records Functional Size WITHOUT adjustment. **SCOPE** reports Functional Size results in function points as per the new IFPUG 4.3 recommendations which are unadjusted. However if your organisation still requires an Adjusted function point count then record the details required under*

*the Value Adjustment Factor, General System Characteristics and see the **SCOPE** summary function point count reports for the adjusted values.*

The Function Point Analysis technique is used to assess the functionality delivered by software (often called a 'function point count') and a 'function point' is the unit of measurement for the software functional size.

## Classification of Functional Components

Once all the functional components have been identified they are classified into types depending on the type of activity they perform for the user.

**Transactions** can be classified into three types:

- **Inputs:** enable the user to input data into the software to be stored,
  - e.g. *Create Fault Record = Input*
- **Outputs:** enable the user to extract derived information from the software,
  - e.g. *Aged Faults Report = Output*
- **Enquiries:** enable the user to query stored data
  - e.g. *Display Fault Details = Inquiry*

**Data Groups** can be classified into two types:

- **Internal Files** store data input by the user transactions
  - e.g. *Fault File = Internal File*
- **External Files** store data accessed by the user transactions but not maintained by the users' transactions
  - e.g. *Account File = External File (where this file is maintained by another system)*

## Identification of Functional Components

The technique of functional modelling (functional analysis/ functional decomposition) is used to model the relationship between the transactions and the application as a whole. The transactions are mapped onto a functional hierarchy of the application under the business activity to which they contribute.

The following criteria is used, where possible, to check each task to determine if it is a unique elementary process (logical business transaction). It is counted as a unique logical transaction when:

- it has processing logic (editing, validation etc) different from other similar transactions
- it accesses a unique combination of fields and files
- on completion, it leaves the business in a consistent, predictable state,
- it is user recognisable and definable
- it is created by business requirements and not the technical requirements of the chosen solution
- it is logically independent of other transactions (although it may in some cases be triggered by another transaction)
- it is logically triggered by an external event
- it achieves a business objective, not a technical objective

The technique of data modelling (information engineering, entity relationship diagramming) is used to identify the data and the relationship between the data. The data files are then mapped to the transactions on the hierarchy which access them.

Data files are logical master groups of data from a business user perspective. They are a group of data that tends to be created as a 'set' although parts of the data may be modified independently. They may be a business reference file e.g. Currency Details which are referenced by transactions or business entities maintained by the business transactions.

Data Files do NOT include files created for quality, technical, performance, security, navigation reasons. Data Files are permanent groups of data, they are not stores for temporary data.



## Weighting of Functional Components

Once the functional components have been identified and classified they are evaluated for their functional complexity using a set of prescribed attributes. The functions are categorised into low, average or high complexity.

Functional components are awarded Function Points according to their classification of type and categorisation of complexity.

E.g.:

*Create Fault record*

= *External Input = High Complexity = 6 Function Points*

*Currency Conversion File*

= *Internal Logical File = Low Complexity = 7 Function Points*

Once all functional components are identified, classified into type, assessed for complexity and awarded 'points' these points are accumulated into a total Function Point Count. *NOTE: IFPUG 4.3 records this size as the Functional Size. Any further adjustment is not recommended.*

Previous versions of the IFPUG Methodology had a final step is to adjust this count for quality and technical characteristics by using the value adjustment factor (range 0.65 – 1.35) for the Adjusted Function Point Count. This step is now an optional add-on for IFPUG and not recommended.

## What is Function Point Analysis (FPA)?

FPA was originally developed by Allan Albrecht in the late 1970s at IBM, and has been further developed by the International Function Point Users Group (IFPUG).

FPA provides a set of rules to functionally size the software work product. This work product is the output of software new development and enhancement projects for subsequent releases. It is the software which is migrated to the production application at project implementation.

Function Point Analysis (FPA) is a method of Functional Size Measurement. It assesses the functionality delivered to its users, based on the user's external view of the functional requirements. It measures the logical view of an application as compared to measuring the physically implemented view or the internal technical view.

FPA measures these functional requirements in terms of the:

- Business transactions (Processes) (e.g. Enquire on Customer Record) that the user can perform using the software,
- Business data (Data Groups) (e.g. Customer File) that the software can store and access.

The activity of performing Function Point Analysis is frequently referred to as a 'Function Point Count' and it involves the identification, classification and weighting of each of these Process and Data Group components. The weighting's are combined to give the Functional Size as an **Unadjusted Function Point Count** (UFP). This is the **Functional Size** as defined by the ISO/IEC standard 20926, the IFPUG CPM 4.3 and ISO/IEC 14143-1.

Before IFPUG 4.3 FPA included an additional optional step that involves assessing the technical and quality features embedded in the software product and adjusting the Functional Size accordingly. The result is referred to as the **Adjusted Function Point Count** (AFP) or the **Product Size**. IFPUG no longer recommends this adjustment to measure functional size.

The Function Point Analysis technique is used to assess the functionality delivered by software and an 'unadjusted function point' (UFP) is the unit of measurement

Once you have a Function Point count, you can use the resultant measure of the software product, either on its own or combine it with other measures to develop the following project performance indicators:

- The **SCOPE** of the software development product (e.g. software units to be delivered or worked on).

- Quality indicators (e.g. the number of defects per software unit).
- Productivity (e.g. the cost per software unit).
- Performance (e.g. staff resources per software unit).

**SCOPE** facilitates a better understanding of a software application by displaying each functional area to be sized in a hierarchical tree display, thus providing an easy to interpret map of the application itself.

## What is Functional Size Measurement?

Functional Size Measurement (FSM) is a technique for measuring software in terms of the functionality it delivers. The ISO/IEC standard for Functional Size Measurement 14143-1:2006 defines FSM as a means of quantifying the Functional User Requirements i.e. functions that the user has required to be delivered. (For more information on the IFPUG Method for counting function points see - [Introduction to Function Point Analysis.](#))

Functional Size can be used for many purposes (See - [Uses & Benefits of Sizing](#)) however; it is primarily used at the planning stage for input into project resource estimation calculations for cost, effort and schedule. At the completion of a project it is used to compare performance in terms of the cost effectiveness and efficiency of the development and support teams.

FSM measures the functional requirements of the software. This means that it can be applied before development commences, rather than retrospectively as is the case with other forms of software measurement, such as counting lines of code and/or other physical objects. This capability to measure early enables accurate estimates to be made, risks to be evaluated, and project **SCOPE** to be negotiated, before final commitments are made.

FSM also enables comparison of applications and projects based on their size. Productivity rates for applications of a similar attribute profile can be compared for benchmarking support ratios and improvement purposes. Productivity rates from

past projects can also be used to predict effort, once a project's Functional Size has been determined.

**SCOPE** supports the rules of the Functional Size Measurement method, ISO/IEC 20926:2008 standard IFPUG Unadjusted and the IFPUG Function Point Analysis Method CPM 4.3. This technique is often referred to as IFPUG Function Point Analysis or "FPA".

## Function Point Counting Expert System

FP Decision Maker™ is a free online tool within **SCOPE** that helps you answer your function point counting problems by prompting you with the IFPUG Rules and asking you to confirm if it is applicable to the current case. This tool was developed by Pam Morris who was an IFPUG CPC member for 7 years and co-author and reviewer of IFPUG 4.0 to 4.3.

We recommend that you use the FP Decision Maker™ any time that you are unsure how to count a process or data group or if it should be counted or not.

For the www link to FP Decision Maker™ see <http://www.totalmetrics.com/function-points/SCOPE-Counting-59.swf>

## Levels of Function Point Counting

### Introduction

A function point count can be conducted at a number of 'levels', each of which provides a count which has its:

- Decisions documented to different levels of detail
- Results within different bounds of accuracy.

The level of detail for a particular count will depend on the purpose for which the count will be used. Different purposes will require different degrees of accuracy and detail in the documentation and consequently different counting rates. The most

optimal level of counting may not always be able to be achieved in a particular situation since the level actually selected may be constrained by:

- the quality of project or application documentation available,
- the time in which the count must be completed,

This document defines a number of levels of function point counting that are available from Total Metrics. We will normally recommend a particular level to you based on how the results will be used and your description of the quality of the information available to provide background on the count. However the final decision will rest with the client and the quality of the information available.

A particular application count may be conducted at one of the following levels detail:

#### Level Name

1. Detailed Linked and Flagged Count
2. Detailed Linked Count
3. Detailed Count
4. Default Complexity Count
5. Rough Count
6. Size Approximation

## Level 1: Detailed Linked and Flagged Count

### Level 1 Count Description

A Detailed Linked and Flagged Count includes the following:

- application boundary is defined
- full functional decomposition to transaction level (transaction level is considered the lowest level function available to the business user)
- all files and transactions within **SCOPE** are uniquely identified
- all files and transactions are classified according to type
- all files and transactions are accurately categorised according to complexity (actual numbers of DETs and FTRs are identified where possible and provided the necessary source information is available)

- all related files and transactions are linked (aids in assessing impact of change requests)
- explanatory notes are attached to files and transactions as necessary (aids in future maintenance of the counts)
- where possible a cross-reference between the physical files and the logical files is documented
- explanatory notes also link files and transactions to relevant documentation
- all agreed attributes are attached to relevant transactions (aids in selective count reporting for management purposes)
- count is recorded and reported using the **SCOPE Project Sizing Software™** software repository tool

### Level 1 Count Attributes

Detailed Linked and Flagged Count are:

- very detailed
- easily auditable
- accurate (within the limits of the FPA technique +/- 10%)
- very well documented
- easily maintained

Best suited for following count purposes:

- benchmarking projects (new development and enhancement)
- detailed estimates
- project tracking
- as detailed baseline model for future detailed enhancement project counting
- input into Metrics reporting for Strategic and Tactical Level reporting

Issues:

- very time intensive – counting rates up to 200 fps per day
- requires very skilled counters
- rarely cost effective for large, legacy application baseline counts

Pre-requisites:

- good to high quality system documentation
- data model
- full access to system experts

### **SCOPE and Level 1 Counts**

Use the Enter Values Option and enter the number of DETs and FTR and RETs when determining the complexity of Processes and Data Groups in **SCOPE** and link Processes and Data Groups. More accurate Level 1 counting can be done by actually listing all the DETs used by a process on the data tree and linking to them. The complexity of the Data Group can be derived from these values.

## **Level 2: Detailed Linked Count**

### **Level 2 Detailed Linked Count Description**

A detailed linked count includes the following:

- application boundary is defined
- full functional decomposition to transaction level
- all files and transactions within **SCOPE** are uniquely identified
- all files and transactions are classified according to type
- all files and transactions are accurately categorised according to complexity (DET's and FTR's are identified within IFPUG ranges where possible)
- all related files and transactions are linked (aids in assessing impact of change requests)
- explanatory notes are attached to files and transactions where necessary
- count is recorded and reported using the **SCOPE Project Sizing Software™** software repository tool

### **Level 2 Count Attributes**

Detailed Linked Counts are:

- very detailed
- easily auditable
- accurate (within the limits of the FPA technique +/- 10%)
- very well documented
- easily maintained

Best suited for the following count purposes:

- benchmarking projects (new development and enhancement)
- detailed estimates
- project tracking
- as detailed baseline model for future detailed enhancement project counting

Issues:

- time intensive – counting rates up to 250 fps per day
- rarely cost effective for large, legacy application baseline counts

Pre-requisites:

- good to high quality system documentation
- data model
- full access to system experts

## **SCOPE and Level 2 Counts**

Use the Range option when selecting the complexity of Processes and Data Groups in **SCOPE** and link Processes and Data Groups.

# **Level 3: Detailed Count**

## **Level 3 Detailed Count Description**

A detailed count includes the following:

- application boundary is defined
- full functional decomposition to transaction level
- all files and transactions within **SCOPE** are identified
- all files and transactions are classified according to type
- all files and transactions are accurately categorised according to complexity (DETs and FTRs are identified within IFPUG ranges where possible)
- explanatory notes are attached to files and transactions where necessary



- count is recorded and reported using the **SCOPE** Project Sizing Software™ software repository tool

### Level 3 Detailed Count Attributes

Detailed Counts are:

- detailed
- auditable
- accurate (with limits of the FPA technique +/- 10%)
- well documented
- very maintainable

Best suited for following count purposes:

- benchmarking projects (new development and enhancement)
- detailed estimates
- baseline application counts for portfolio sizing
- as detailed baseline model for future detailed enhancement project counting

### SCOPE and Level 3 Counts

Use the Range option when selecting the complexity of Processes and Data Groups in **SCOPE**

## Level 4: Default Complexity Count

### Level 4 Default Complexity Count Description

A default complexity count includes the following:

- application boundary is defined
- full functional decomposition to transaction level
- all files and transactions within **SCOPE** are identified
- all files and transactions are classified according to type

- all files are defaulted to low complexity
- all transactions are defaulted to average complexity
- count is recorded and reported using the **SCOPE** Project Sizing Software™ software repository tool

### Level 4 Default Complexity Count Attributes

Default Complexity Counts are:

- less detailed
- auditable
- reasonably accurate (within the limits of the FPA technique +/- 15%)
- documented
- maintainable

Best suited for the following count purposes:

- portfolio baseline assessment
- benchmarking development or support ratios
- quality metrics
- high level estimates
- as a baseline model for future enhancement project counting
- can be cost effective for large, legacy application baseline counts

Issues:

- efficient – counting rates up to 400 fps per day
- cost effective for large, legacy application baseline counts

Pre-requisites:

- average system documentation
- data model if possible
- access to system experts

### SCOPE and Level 4 Counts

Use the Industry Default option when selecting the complexity of Processes and Data Groups in **SCOPE**

## Level 5: Rough Count

A rough count includes the following:

- application boundary is defined
- functional decomposition (3-4 levels only)
- transactions and data functions 'tallied' from menus, menu access paths, file lists, screen lists, report lists, application boundary
- diagrams, system interface documentation
- assumptions documented in count report
- count is recorded and reported using the **SCOPE** Project Sizing Software™ software repository tool

### Level 5 Rough Count Attributes

Counts are:

- low detail
- less accurate (+/- 20 - 25%)
- documented (issues and assumptions)
- 'Skeleton' on which enhancement counts can be built
- needs to be refined over time

Best suited for following count purposes:

- portfolio baseline assessment
- benchmarking support ratios
- as a baseline model for future enhancement project counting
- cost effective for large, legacy application baseline counts

Issues:

- very efficient – counting rates can exceed 750 fps per day
- cost effective for large, legacy application baseline counts which have very little enhancement

Pre-requisites:

- summarised system documentation

- full-time access to system experts (for the duration of count)

### **SCOPE and Level 5 Counts**

Level 5 counts are done in **SCOPE** using the Multiplier in the Process Details and Data Group Details screen.

## **Level 6: Size Approximation**

There are various methods of approximating the functional size without counting all files and transactions. Such methods are often used for portfolio estimation, or as a basis for scheduling more detailed counts. They are based on characteristics of the application, which have been proven to have a strong correlation to size. E.g. numbers of reports, number of 3rd normal form tables, number of support staff etc. The size is estimated based on the answers to about 30 questions in a questionnaire.

### **Level 6 Size Approximation Description**

A size Approximation includes the following:

- size estimate reported in unadjusted and / or adjusted function points
- assumptions documented in report

### **Level 6 Size Approximation Attributes**

Size Approximation provides a result that:

- has very little detail –size results only
- accuracy historically has been demonstrated to be within (+/- 20%)
- is **not** documented other than the completed questionnaire and a very brief report on the result
- is **not** maintainable, they are snapshot of size only. They need to be redone if anything changes

Best suited for following count purposes:

- portfolio baseline assessment
- software asset valuation
- project scoping
- estimating count durations
- benchmarking support ratios
- most cost effective for large, legacy applications, which do not need their counts maintained

#### Issues:

- very efficient – most applications can have their size estimated within half a day
- very cost effective for large, legacy application baseline counts which have very little enhancement

#### Pre-requisites:

- accurate completion of a questionnaire (usually takes 2 hrs, but may take up to 2 days if the software is poorly documented or applications knowledge is limited)
- access to system experts (1 – 2 hour interview)

#### SCOPE and Level 6 Counts

Level 6 counts are available online using [FP Outline™](#) (see

<http://www.totalmetrics.com/function-point-software/software-size-estimation>)

## What is FP Outline?

### Background

*Many organizations have a need for [quick easy software sizing](#) and have neither the time nor the skills to do a detailed Function Point Count.*

**FP Outline™** provides the expertise to quickly determine the approximate size of a project or an application in minutes rather than the days, weeks or months

consumed using traditional IFPUG counting methods. Learn how you could use **FP Outline™** to save significant time and money in implementing functional sizing in your organization.

To gain access to **FP Outline™** online see: <http://www.totalmetrics.com/function-point-software/software-size-estimation>

When could you use quick sizing methods?

- **Early project estimation** - quickly determine the project's functional size, even before specifications are completed, then apply the productivity coefficients to estimate effort, cost and duration.
- **Outsourcing Contract Negotiation** - establish the functional size of the client organisations software to be maintained by the supplier at due diligence stage
- **Valuing your software assets** -establish the functional size of an organisation' s software to determine its replacement cost for asset valuation and accounting purposes
- **Budget approvals** - use the functional size and projected productivity rates to verify your estimates for management budget approvals.
- **Benchmarking** -establish the functional size of an organisations projects and applications for quick determination of product quality and development and support efficiency and effectiveness.
- **Release Management** - establish the functional size of a change request to determine if it is possible to include in the planned release.

## How does FP Outline™ work?

FP Outline™ uses a series of algorithms derived from thousands of projects and applications counted over the last 14 years by IFPUG certified counters. The algorithms are based on over 40 relationships derived between known project and application attributes and the measured functional size. Many of these relationships are between the physical aspects of the project that are easily measured, and the logical functional size.

All you have to be able to provide is data on the 'physical measures' which in most cases are easy to collect, and then FP Outline™ does the rest.

For example, there is a very predictive relationship between the number of pages of a functional specification and the function point count for a project. This makes

sense when you consider the more functionality delivered by the project the more pages of specification. Just count the pages of specification!

This is just one relationship that forms the basis for the 20 questions asked by FP Outline™ to 'predict' the size of your project or application.

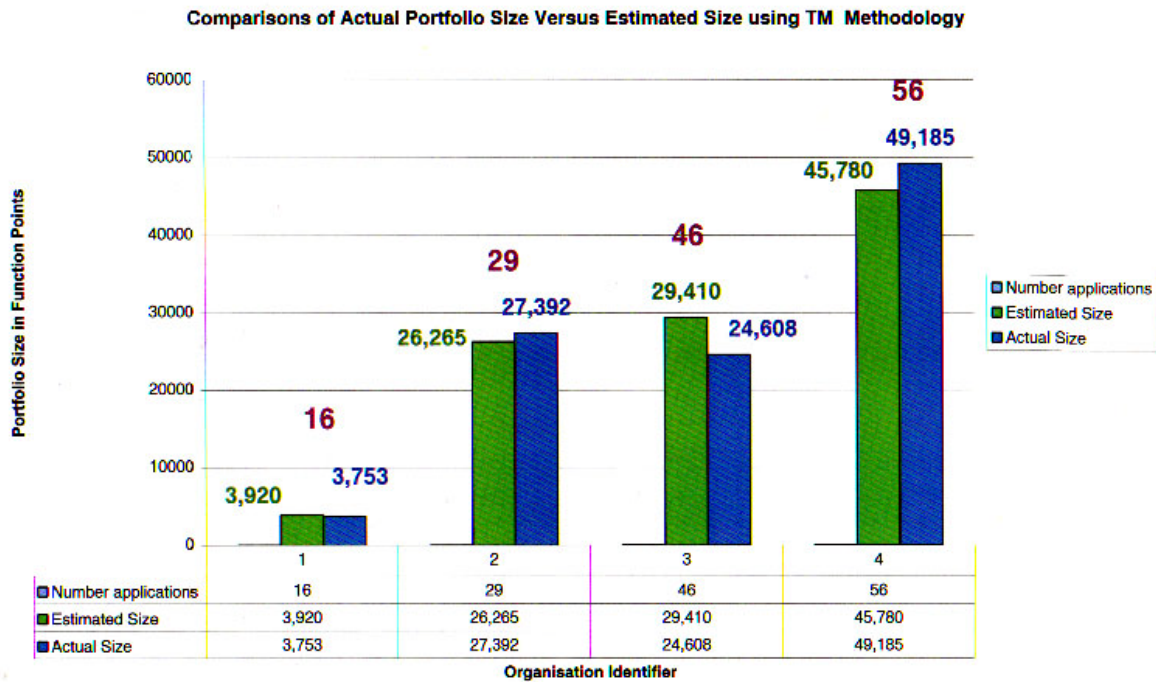
FP Outline™ reports the approximate size in function points with an appraisal of the level of confidence that FP Outline™ had in determining the answer. The accuracy of the predicted size will depend on which questions you answer, and the accuracy to which you answer them. Our users are amazed at its predictive ability when they compare the size calculated by FP Outline™ the actual measured size using the IFPUG methodology.

## How accurate are the size predictions?

Total Metrics has been using the methodology underpinning FP Outline™ for over 14 years and has been able to demonstrate its accuracy, in both project (new development and enhancement) and application baseline counts for over 2000 applications and projects worldwide.

## Client Case Study

A large Telecommunications company planning to outsource the maintenance of a set of 45 applications needed to urgently provide the functional size of their portfolio to the prospective supplier. Total Metrics took 6 effort days using the FP Outline™ methodology to establish the applications portfolio size at 30,710 UFPs. The predicted size was later verified using the IFPUG methodology and consumed 122 effort days to count. The actual measured size (25,326 ufps) was only -17.53% different to the predicted size. FP Outline™ predictions tend to typically lie within a +/- 20% range.



**Comparison of Estimated Size Using FP Outline™ to actual detailed counting results using IFPUG 4.3 Rules 20 times faster and only 17.5% different**

## Metrics for Project Governance

### Background

Our experience as Software Measurement consultants has taught us that knowledge gained in the act of measurement can be as valuable to project managers, as their use of our measurement results.

For example, as part of our measurement role we are often asked to functionally size a project early in its lifecycle for input into estimation models. In order to perform the functional size measurement we need to dissect the functional requirements for the project, model them and individually catalogue and quantify each base functional component. In doing so we make observations about the status of the project and the quality of both the requirements and the specifications and based on our experience with similar projects, we are able to make predictions on the likelihood of the project's success.



With time, as our predictions have become reality, we have begun to recognise that our observations, if reported, could have provided valuable input into the overall management of the project and if heeded could have prevented numerous project failures. The act of measuring provides quantitative assessments of the quality and status of a project that is rarely seen by others and the measures we take give insights that can provide real benefits to the project team beyond just monitoring their productivity.

This realisation has caused us to change our approach and to focus on using the role of measuring to provide ongoing advice to the project whilst it is progressing. We use the measurements to quantify our observations so our recommendations are now a critical part of the project decision making. Metrics experts observe and measure without any vested interest and as such provide unbiased and independent assessment of the project risk, quality and status. The measurement results support these observations.

As metrics consultants we had been confusing the measure with the goal. Key objectives should not be the measurement results but successful software development projects. Delivery on time and on budget with the right functionality is the true measure of the worth of 'metrics' to a project. To make measurement an integral part of the software development process we first have to make it relevant to the project's success.

This change of emphasis has meant that we are now perceived by our clients as providing project governance through the act of measurement and called "**SCOPE Managers**" not "Metrics Consultants". We have shifted the perception of the project team from seeing us as just another project overheard, to being someone that can assist project teams to better manage and control their risk and optimise their chances of success.

To download the full paper please go to : <http://www.totalmetrics.com/function-point-resources/downloads/Software-Measurement-Project-Governance.pdf>

# Role of SCOPE Manager during Project Life Cycle

## Business Planning / Feasibility

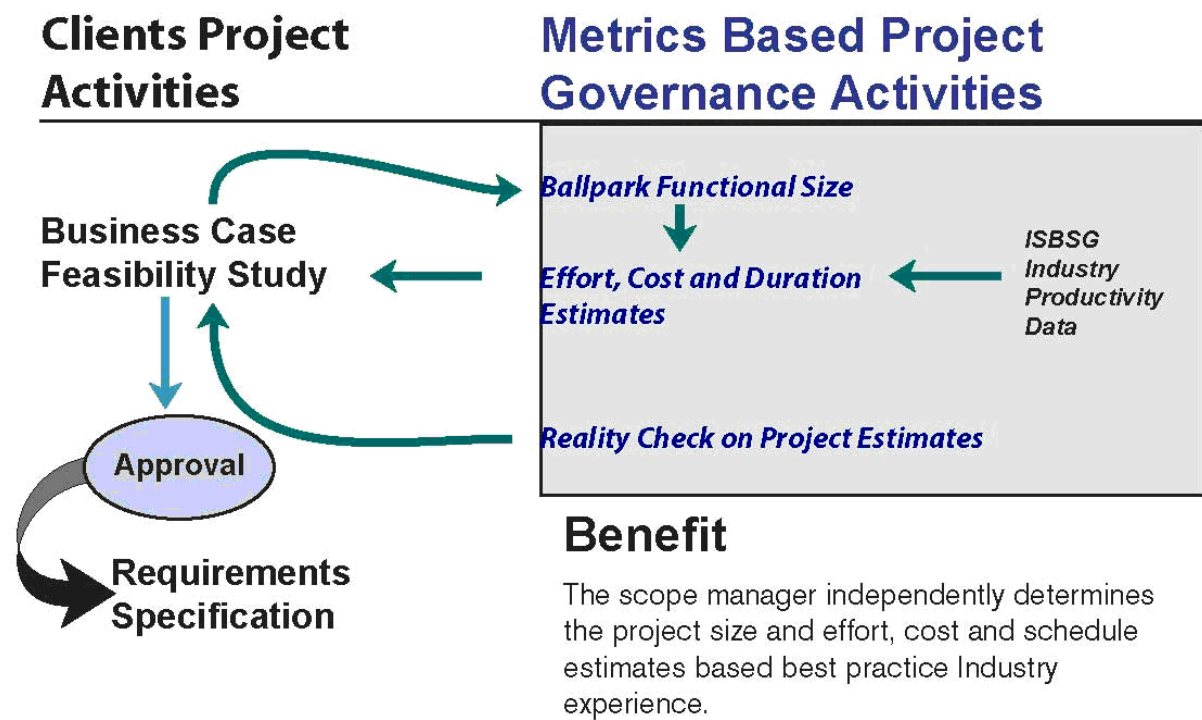
The **SCOPE** manager can be involved in the project as early as the business case stage where they assess the high-level business requirements to provide an estimated functional size of the proposed project. The functional size combined with a productivity rate for the planned development environment can be used to establish a ballpark range of predicted project effort, cost and likely duration.

If the organisation has its own internal productivity data then this can be used for the estimates. Alternatively, industry data for productivity rates are available from the International Software Benchmarking Standards Group (ISBSG) [1]. The ISBSG's data provides industry productivity data for a wide range of development platforms, languages and environments.

The project estimates can be used as a 'reality check' against the planned budget and required delivery dates. If delivery time is constrained, then the **SCOPE** Manager can use ISBSG's regression equations to demonstrate the trade-offs between compressing the schedule and the cost of adding more people on the project. For example, doubling the speed of project delivery requires up to four times the number of people [5]. Large teams have a significant negative impact on an individual's productivity rate and consequently an overall increased cost of the project to deliver the same product.

If the estimated cost and duration exceeds the planned budget or schedule then the functionality may need to be reduced. Other governance processes need to be in place to ensure that the reduced functionality still delivers the planned business benefits.

Project risk of failure increases exponentially with project size. Early quantification of the size of the proposed software product enables evaluation of potential risk. The **SCOPE** Manager provides quantitative input for the business to make objective decisions as to the development strategy to minimise risk, whether to proceed to the next step of building a requirements specification or to cancel the project.



### Requirements Specification Stage

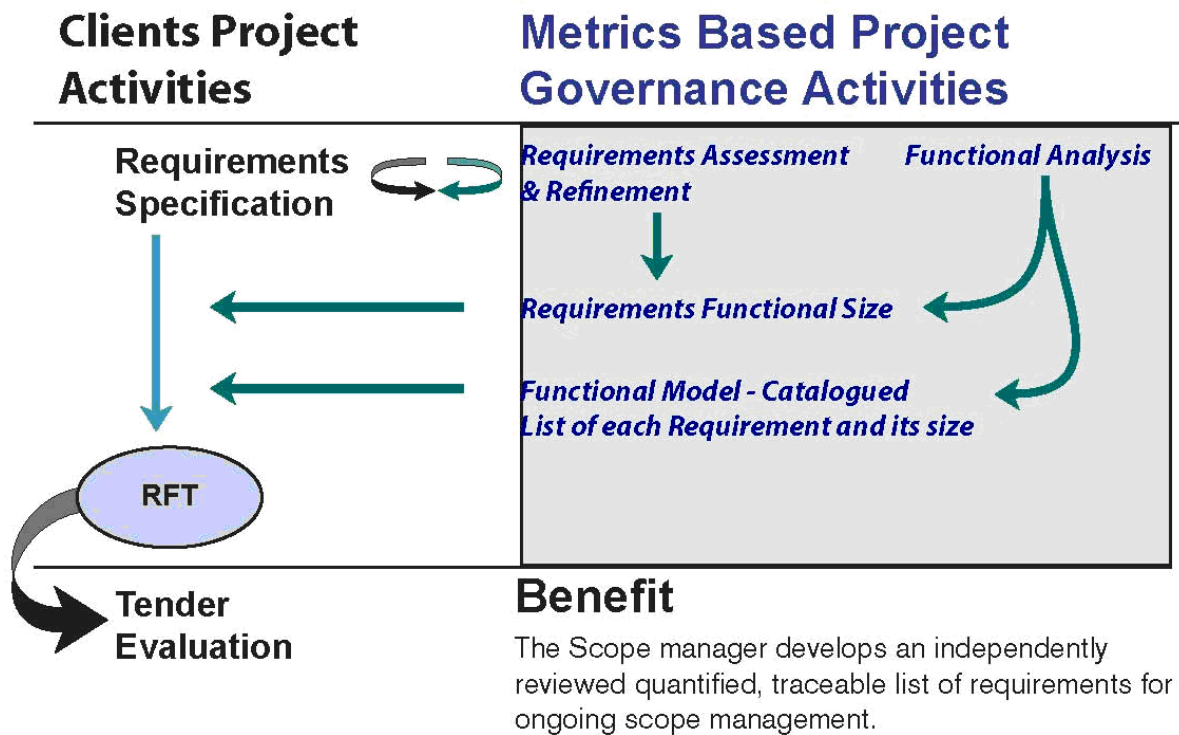
As part of the functional sizing process, the User's Requirements need to be decomposed into individual functions within a functional model. Each function (process and data group) is identified, catalogued and sized. The cataloguing and modelling process often highlights gaps in the Requirements Specification i.e., where functions have failed to be specified, or have been specified inadequately, inconsistently or ambiguously. The **SCOPE** Manager is in a unique independent position to view the project how the external developers may see it. The **SCOPE** Manager's experience with sizing functional specifications enables them to identify areas that may have been overlooked by the project team and provide objective feedback on the quality of the specification. For example, they can mark up the functional model for functionality that has been explicitly specified or only implicitly

specified and quantify the percentage of each. The functional size is still only an estimated 'range' as the complexity of many functions can often not be evaluated at this stage; it is usually anticipated that the project will grow further. The Users may also prioritise their Requirements as those that they consider to be Core functionality and mandatory to be delivered versus those that they consider to be extended or for future consideration. The **SCOPE** Manager can determine the size and estimate of each alternative.

High-level project resource estimates are revised based on the selected platform and the predicted size range. Once the project team have updated the specification to fix ambiguities, inconsistencies and missing functionality, the refined Requirements Specification is ready to be used as the basis for input into the Functional Specification. In an outsourcing situation the Requirements Specification would be provided as part of the Request for Tender (RFT). The functional sizing model along with its list of individual identified quantified functions and their associated priority for delivery is distributed as part of the RFT. This becomes the baseline Requirements document with which the business can evaluate whether the completed project has delivered their required functionality.

If the method of quotation by the suppliers is to be via a 'fixed \$ price per function point' as identified within the Southern**SCOPE** [5] methodology, then the tendering suppliers need a clear indication of which of the Users Requirements would be considered to be included or excluded from the fixed price.

The **SCOPE** Manager identifies which of the User's Requirements will consume effort (and therefore costs) that are proportional to the overall functional size and which will not, and thus be excluded from the fixed price. For example, documentation of Project Deliverables is proportional to functional size and would be included within the fixed price per function point. In comparison, research and acquisition of hardware is not, and should be quoted separately.

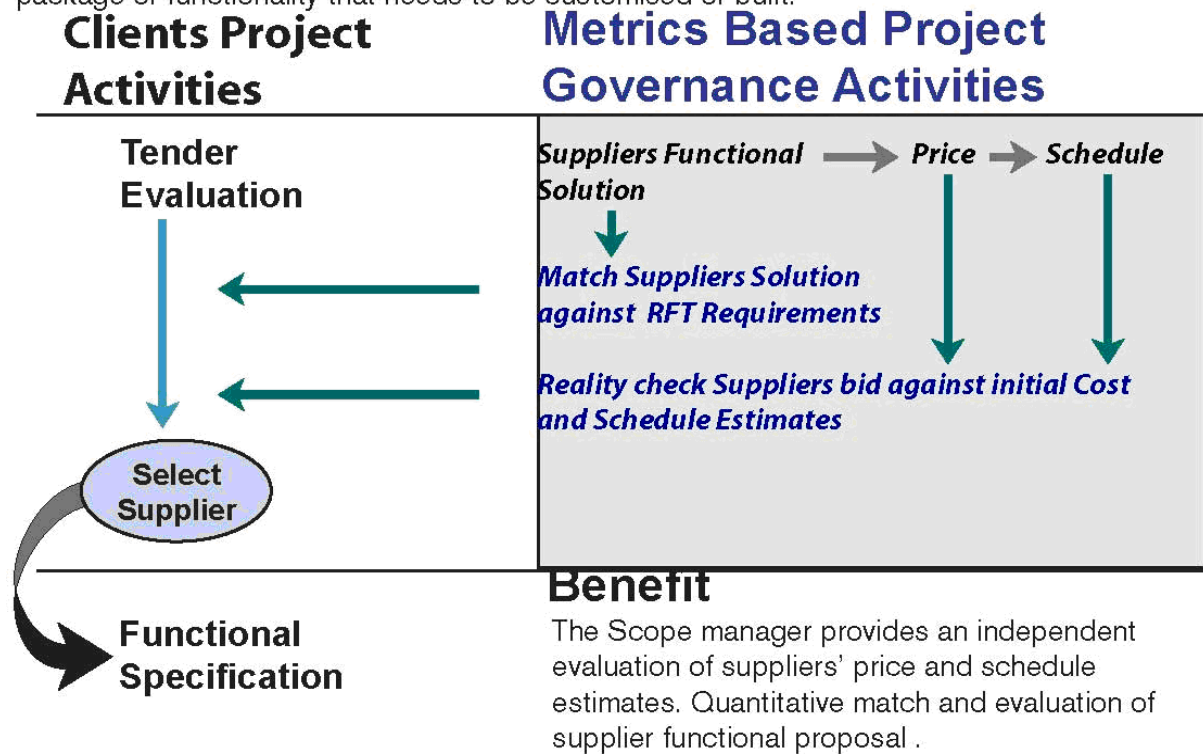


### Supplier Selection Stage

The early ballpark estimates of projected effort, duration and cost based on functional size enable the client to objectively evaluate the ‘reasonableness’ of the supplier’s proposed quotation and solution. This mitigates the risk of selecting the supplier based on the lowest price and promised fastest delivery who would potentially have the greatest risk of failing to deliver the project

The **SCOPE** Manager uses the functional size model to quantify the ‘fit’ of each supplier’s proposed solution to the original requirements enabling full objective evaluation of the supplier’s solution by the quantification of the proportion of extra functionality, functionality omitted, functionality delivered by a package or functionality that needs to be customised or built.

package of functionality that needs to be customised or built.



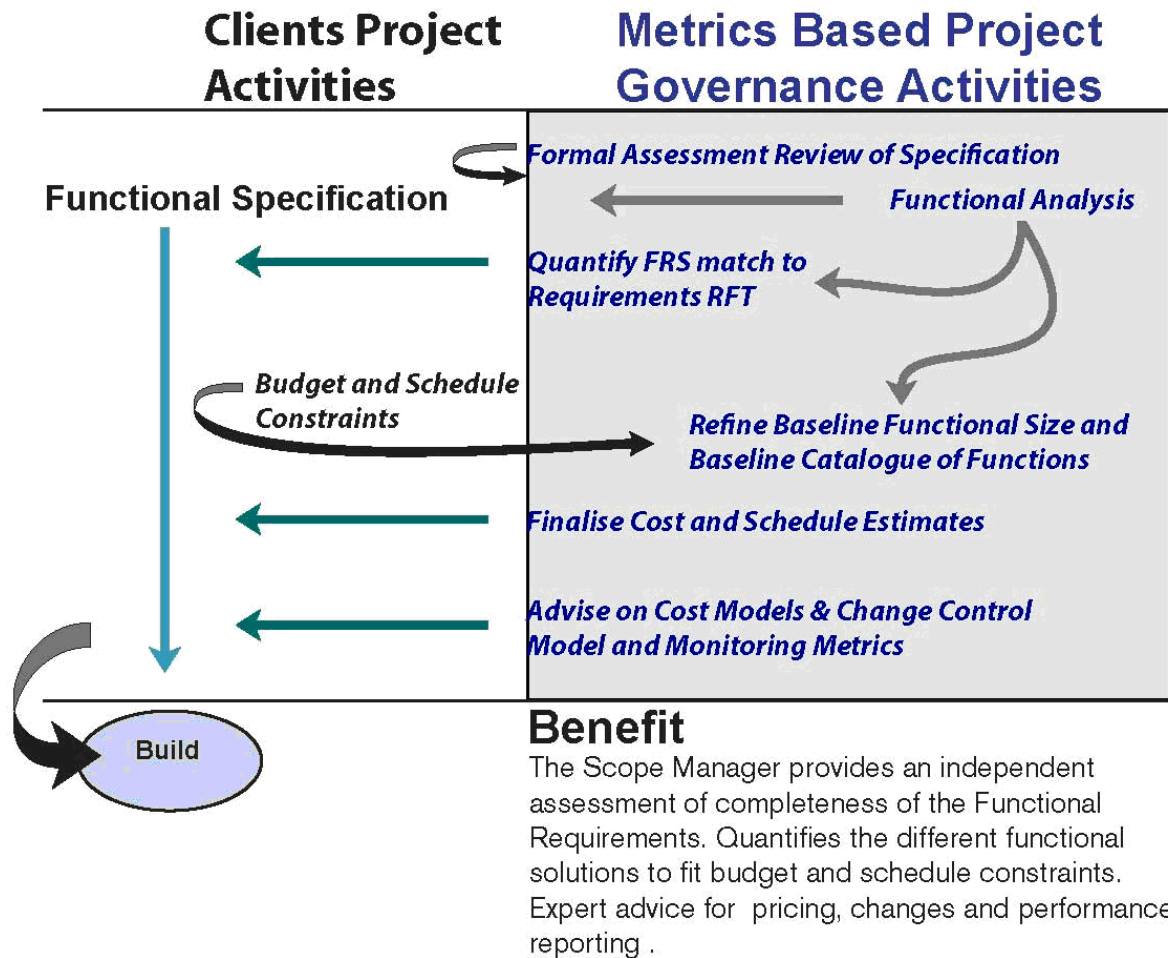
### Stage

The **SCOPE** Manager revises the functional size based on the Functional Specification and quantitatively maps the functional requirements to the original RFT Requirement's Specification to provide a percentage match of the RFT to the proposed solution. Any omissions, ambiguities or inconsistencies in the Functional Specification are highlighted for revision before proceeding with the build. If at this stage the functional size indicates that the project will cost more, or be delivered later than planned, then non-core functionality is selectively removed from the project until the project size indicates that it can be delivered within the allocated budget and delivery dates.\

If the project-charging model is based on dollars per function point delivered, the **SCOPE** Manager will work with the client and supplier to finalise the price variation model for changes that are approved during the remaining development. I.e., typically penalties are paid for any function points added, modified or deleted from this stage forwards. The dollar amount charged is usually scaled to increase as the project progresses. The outcome from the functional sizing and mapping exercise is



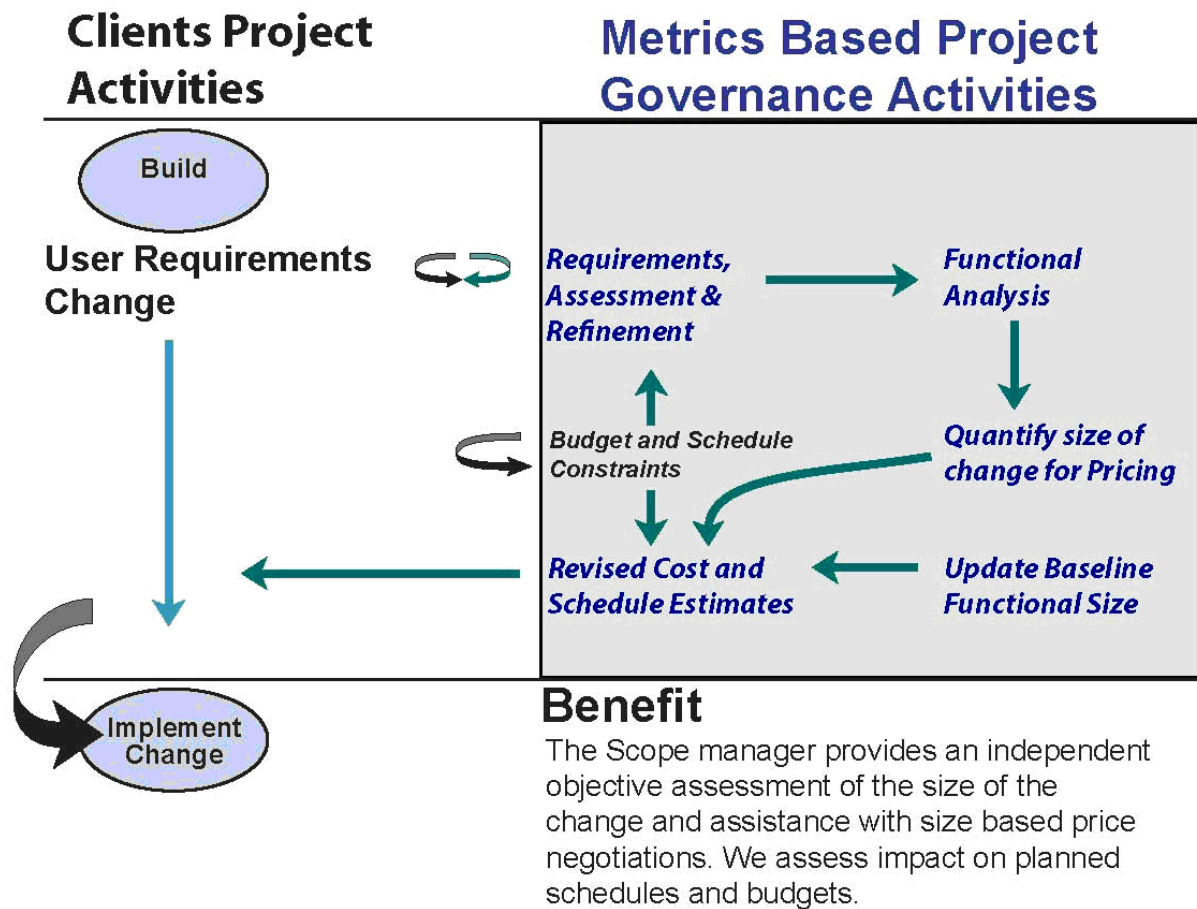
a traceable, auditable, quantified list of agreed functional requirements to act as a baseline for ongoing SCOPE management.



### Changes introduced during the Project Build to Implementation

The SCOPE Manager is tasked with the quantification of Client Change Requests based on functional size of impact. This is used as a basis for pricing negotiations, enabling the client to assess the price of Change Requests prior to submission to the supplier and know they are being fairly charged for their required changes.

The SCOPE Manager uses the size of the change to establish the revised project SCOPE as a means of evaluating the supplier's revised project delivery date.

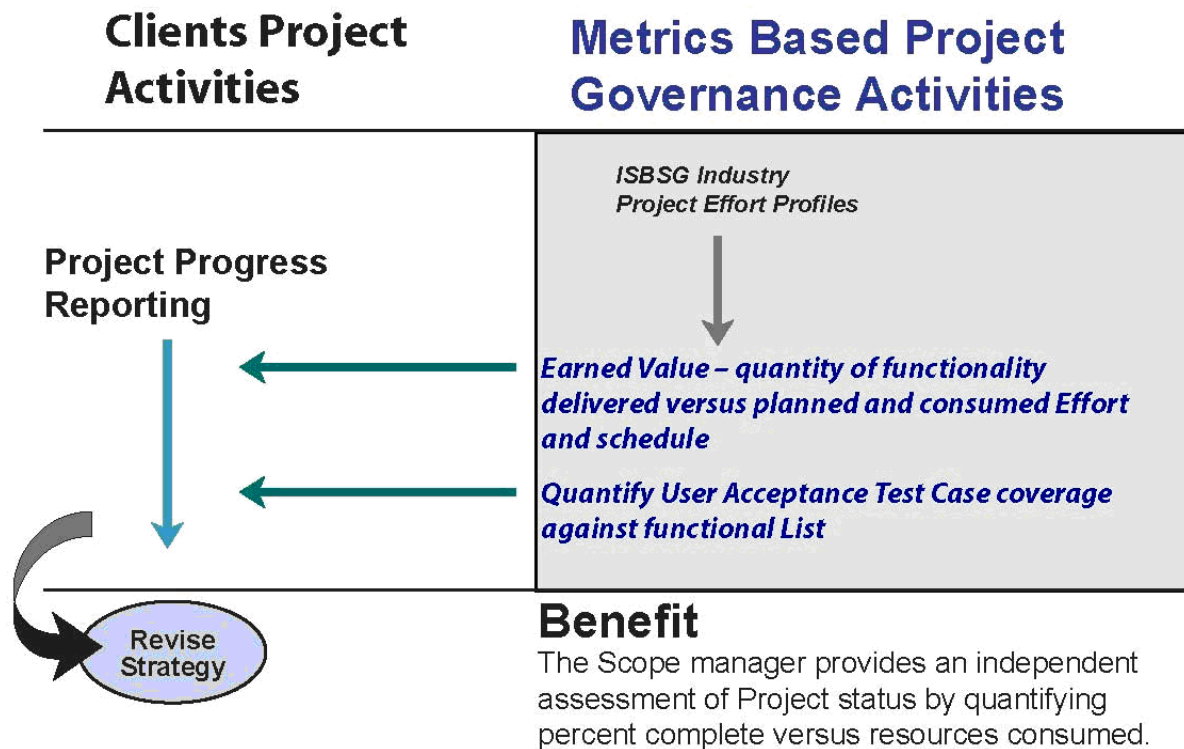


### Ongoing Project Monitoring

The Functional Size Model provides input into the quantitative monitoring of project status using an 'earned' value type of reporting [2], [3]. I.e., the **SCOPE** Manager provides independent project status reports based on the amount of functionality delivered, versus functionality planned to be delivered, within each reporting period. This is an 'output based' metric for project reporting that is more meaningful to the business client rather than an input based metrics of budget or effort consumed. I.e., status reporting is based on the amount of product delivered (function points) to each stage of completeness. This contrasts with traditional approaches of monitoring status based on resources and schedule consumed.

The status report provides the client with detailed objective independent assessment about which functions of their software have been developed to what stage. The increased visibility of project status gives early warning of project slippage.

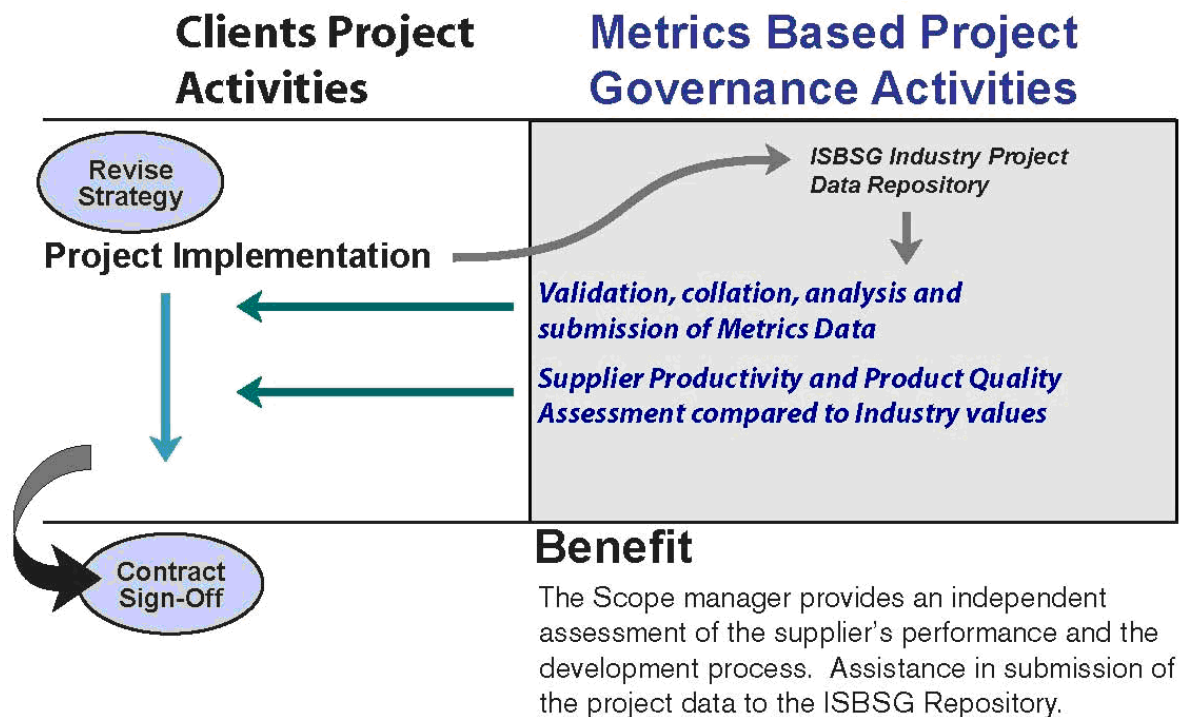




### Project Implementation

On project completion the **SCOPE** Manager quantifies and maps the functionality implemented versus functionality contracted to be delivered, for input into final payment negotiations. This enables the client to verify, against the traceable list of requirements, which functions have been satisfactorily delivered. The quantification of the delivered functionality enables objective discussions on payments due.

The **SCOPE** Manager provides advice on the project metrics to collect, analyse and report, and ensures that they are consistent with the organisations internal standards or those of ISBSGs. The **SCOPE** Manager can assist with the submission of the project data to the ISBSG repository and provide an independent assessment of the developer's productivity and product quality.



### Conclusion

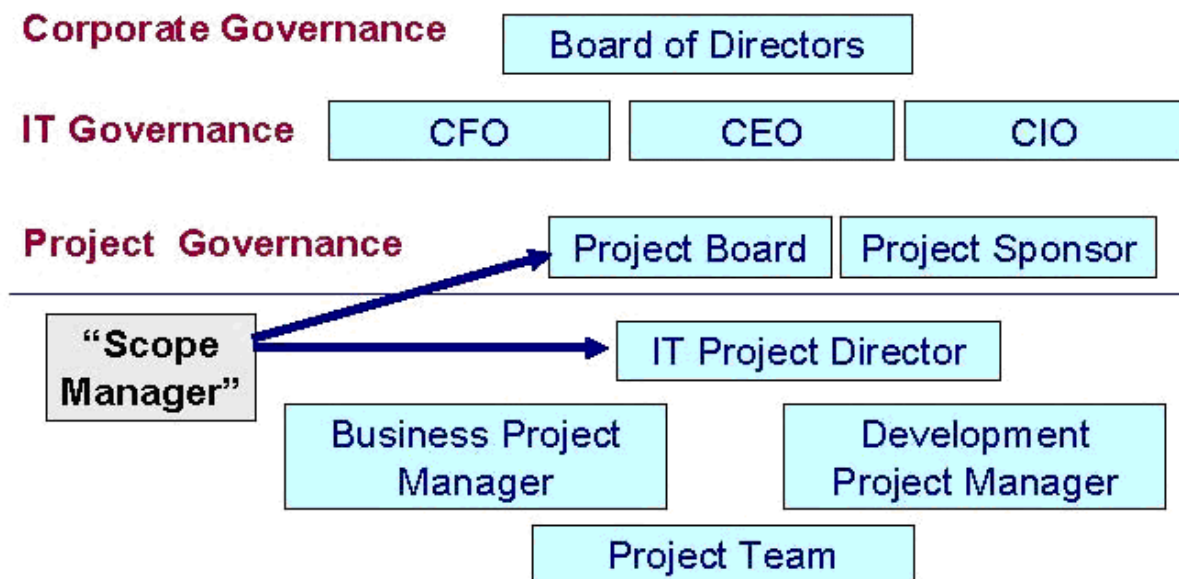
The **SCOPE** Manager focuses on the effective management and control of the project and uses their metrics skills to provide objective evidence of their observations, shifting the focus from measurement to project governance.

## The Role of the **SCOPE** Manager in Project Governance

The role of Project Governance is to balance the risk of the organisation's investment against the opportunities and benefits that the outcomes will provide the business. It addresses the risks to ensure that the software provides value to the organisation and that the risks are properly mitigated.

For IT projects it is about providing the client with the capability to monitor the project status and control the risk of the project not delivering the business value they require within the time and budget available. Project governance is about understanding the business opportunities that the project can deliver, but also appreciating the consequences of failure and putting in place strategies to minimise the risk and optimise the investment so that business goals are achieved.

## Governance



The **SCOPE** Manager provides metrics based project governance. We have found this approach to be very successful in objectively quantifying key project attributes to enable informed decision making with respect to project estimates and project risk.

The **SCOPE** Manager is typically a metrics specialist who has excellent skills in business analysis, project estimation and functional size measurement. They need to be independent of the project team and not be connected to either the IT developers or the business client. They have to be able to report the status of the project objectively without bias, to a management level that has the authority to proceed, change direction or cancel the project.

The **SCOPE** Manager provides a key role in that their reports can provide early warning of project failure. In the past it was often not until major project milestones were missed that senior management had an indication that their investment was at risk. The following sections describe the role of the **SCOPE** Manager over the life cycle of the project and how they use metrics as a basis for their recommendations.

## Uses and Benefits of Sizing

### Introduction

Industry experience has shown that an emphasis on project management and control offsets much of the risk associated with software projects. One of the major components of better management and control of both in-house development and a package implementation is **measurement**.

This includes measurement of:

- The **SCOPE** of the project e.g.
  - *software units to be delivered*
- -performance indicators of efficiency and cost effectiveness e.g.:
  - *cost per unit of software delivered*
  - *staff resources per unit of software delivered*
  - *elapsed time to deliver a unit of software*
- quality indicators e.g.:
  - *number of defects found per unit of software delivered*

The outcome of a Function Point count provides the metric 'unit of software delivered' and can be used to assist in the management and control of software development, customisation or major enhancements from early project planning phases through to the ongoing support of the application.

Knowing the software size facilitates the creation of more accurate estimates of project resources and delivery dates and facilitates project tracking to monitor any unforeseen increases in **SCOPE**. The measurement of the performance indicators enables benchmarking against other development teams and facilitates better estimating of future projects. These are only some of the ways in which Function Point Analysis (FPA) can assist IT management. These and other lesser known ways in which FPA can assist IT to move towards 'best practice' in the management of their software products and Processes, are discussed in the following sections.

The benefits of using measurement to support management decision-making, can only be achieved if the information supporting these decisions is relevant, accurate and timely. In order to ensure the quality of their measurement data, organisations need to implement a 'measurement Process'. The cost of implementing the activities, procedures and standards to support the function point counting Process will depend on the size and structure of the organisation and their measurement needs. These considerations are discussed in the last section **Costs of Implementing Function Point Analysis**.

## Customising Packaged Software

### Background

For selected MIS applications, implementing a packaged 'off the shelf' solution is the most cost effective and time efficient strategy to deliver necessary functionality to the business.

All of the benefits and uses of Function Point Analysis which applied to in-house development projects as described in the previous section can also apply to projects which tailor a vendor supplied package to an organisations specific business needs.

Experience shows that Function Point Counting of packages is not always as straightforward as sizing software developed in-house, for the following reasons:

- Only the physical and technical functions are visible to the counter. The logical user view is often masked by the physical implementation of the original logical user requirements.
- In most cases the functional requirements, functional specifications, and logical design documentation are not delivered with the software. The counter may have to rely on the User Manual or on-line help to assist in interpreting the user view.

The modelling of the logical business transactions often requires the function point counter to work with the client to identify the logical transactions. They do this by

investigating the user's functional requirements and interpreting the logical transactions from the package's physical implementation.

- In most cases the names of the logical files accessed by the application's transactions are not supplied by the package vendor.

*The function point counter will need to develop the data model by analysing the data items Processed by the application.*

However, with sufficient care a reasonably accurate function point count of packaged applications can usually be obtained.

### Estimating Package Implementations

The project estimates for a package solution need to be refined for each implementation depending on the percentage of the project functionality which is:

- native to the package and implemented without change
- functionality within the package which needs to be customised for this installation
- functionality contained with the organisations existing applications which needs to be converted to adapt to the constraints of the package
- to be built as new functions in addition to the package functions
- to be built to as new functions to enable interfacing to other in-house applications
- not to be delivered in this release

The productivity rates for each of these different development activities (to implement, customise, enhance or build) are usually different. This complexity of assigning an appropriate productivity factor can be compounded when the package provides utilities which enable quick delivery based on changes to rule tables.

**Change Requests**, which can be implemented by changing values in rule-based tables, can be implemented very efficiently compared to a similar user change request that requires source code modification. It is recommended that these different types of activities are identified and effort collected against them accordingly so that productivity rates for the different activity types can be determined.

The functions can be Flagged for their development activity type and their relative contributions to the Functional Size calculated. This will enable fine-tuning of the project estimates.

Another area of concern when developing estimates for package integration is the need to determine the extent that the application module needs to interface with existing functionality. The function point count measures the External Files accessed by transactions within this application. A high percentage of interface files (>10%) suggests a high degree of coupling between this application and existing applications. A high degree of interfacing tends to have a significant negative impact on productivity rates and needs to be considered when developing estimates.

## Summary

Function Point Analysis is a technique that until now has been restricted within many organisations to only be used for better estimating or input into benchmarking productivity rates. The above examples illustrate a wider range of uses where it can contribute to the better management and control of the whole software production environment.

- International Software Benchmarking Standards Group (ISBSG) is an international group of representatives from international metrics organizations who collect project data from countries including Australia, Austria, Canada, Denmark, Germany, Hong Kong, India, Japan, New Zealand, Norway, Poland, United Kingdom and the United States.
- Data within the ISBSG Repository Release 11 supports the premise that smaller projects are successful. Over 65% of the projects in the repository are less than 500 function points and 93% of the projects are less than 2000 function points. The repository is populated by industry projects, voluntarily submitted by organizations that want to benchmark their project's performance against industry projects with a similar profile. Consequently organizations tend to submit successfully completed projects which have better than average performance i.e. the ones which did not 'fail'.
- Software Productivity Research
- At a median industry cost of \$716/fp delivered, a 5000 function point project is risking \$3.5 million dollars.
- Industry experience suggests that the best managed projects which deliver quality software on time and within budget tend to less than 700 function points and up to 1500 function points.



- The Victorian State Government in Australia has adopted a recommended policy for Government departments to manage and control government out-sourced development projects using Function Points. Suppliers tender for the development based on a fixed price in dollars per function point. **SCOPE** changes are automatically charged by the supplier at a pre-determined contracted charge-rate based on the number of function points impacted and the stage at the life cycle when the change was introduced. The government policy underpinning this approach is called 'Southern **SCOPE**'. More information is available at:  
<http://www.egov.vic.gov.au/victorian-government-resources/e-government-strategies-victoria/southernSCOPE/southernSCOPE-avoiding-software-budget-blowouts.html>
- Where maintenance and support includes defect repairs and very minor enhancements.
- Capers Jones – Applied Software Measurement – Assuring Productivity and Quality – McGraw Hill – Software Engineering series 1991 – Chapter 3 Page180.

## FPA Uses and Benefits after Software Implementation

### Planning Support Resources and Budgets

The number of personnel required to maintain and support an application is strongly related to the application's size. Knowing the Functional Size of the application's portfolio allows management to confidently budget for the deployment of support resources. The following figure demonstrates this relationship as demonstrated within an Australian financial organisation. The average maintenance assignment **SCOPE** (number of function points supported per person) for this organisation is 833 function points per person. The assignment **SCOPE** has been found to be negatively influenced by the age of the application and the number of users, i.e. as both these parameters increase the assignment **SCOPE** decreases. 12Capers Jones figures show similar assignment **SCOPEs** where for ageing, unstructured applications with high complexity an assignment **SCOPE** of 500 function points per person is not unusual whereas newer, structured applications, skilled staff can support around 1500 – 2000 function



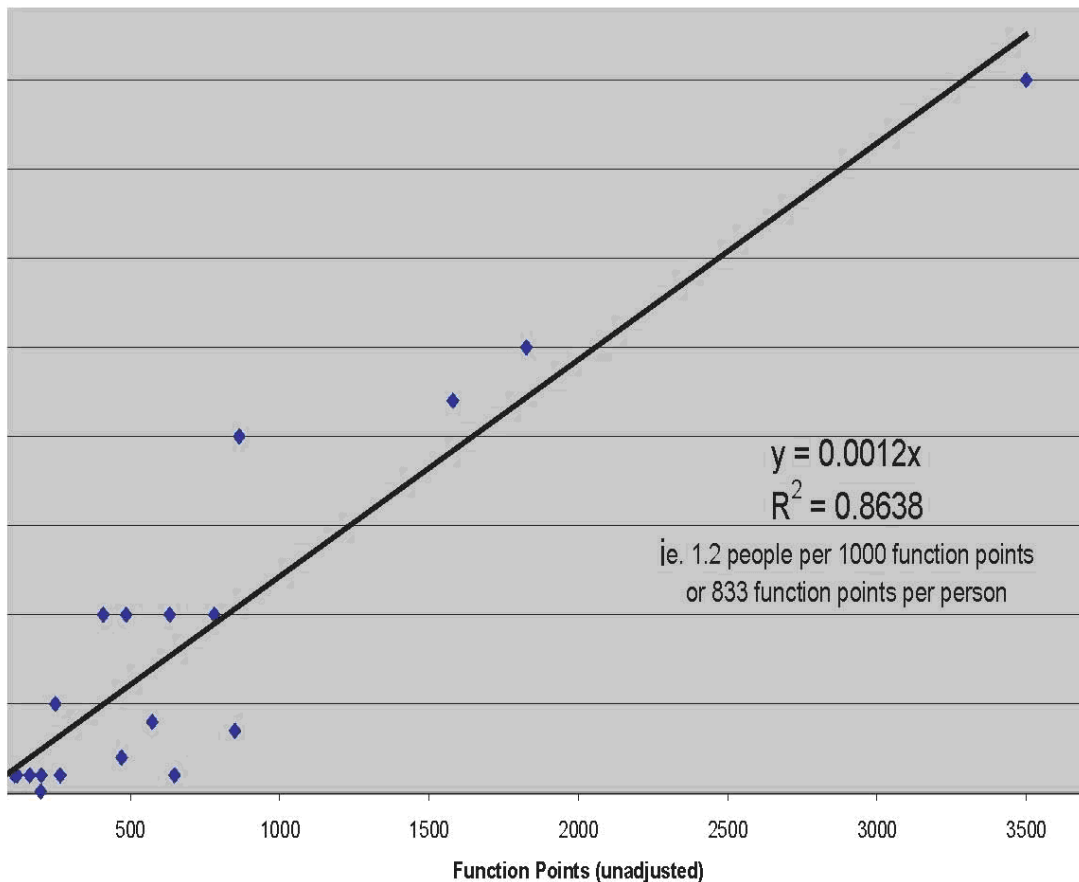


Figure 8-2 Relationship between the Size of an Application and the Number of Support staff (Source - Total Metrics 1999)

Once implemented, applications typically need constant enhancement in order to respond to changes in direction of an organisation's business activities. Function points can be used to estimate the impact of these enhancements. The baseline function point count of the existing application will facilitate these estimates. As the application size grows with time the increasing assignment **SCOPE** will provide the justification to assign more support staff.

### Benchmarking

The function point count of delivered functionality provides input into productivity and quality performance indicators. These can then be compared to those of other in-

house development teams and implementation environments. Benchmarking internally and externally with industry data enables identification of best practice. External benchmarking data is readily available in the ISBSG Repository (International Software Benchmarking Standards Group).

### **Identifying Best Practice**

Project managers seeking 'best practice' in their software development and support areas recognise the need to adopt new tools, techniques and technologies to improve the productivity of the Process and quality of the products they produce.

Baselining current practice enables management to establish current status and set realistic targets for improvement. Ongoing measurement of productivity and quality key performance indicators enable management to assess the impact of their implemented changes and identify where further improvements can be made.

Function points are the most universally accepted method to measure the output from the software Process. They are a key metric within any Process improvement program because of their ability to normalise data from various software development environments combined with their ability to measure output from a business perspective as compared to a technical perspective.

### **Planning New Releases**

The functional hierarchy of the functionality delivered by an application can also assist the support manager in planning and grouping change requests for each new release of the application. The hierarchy illustrates closely related functions and their relative size. If the impact of change is focused on a group of related functions then development effort will be reduced particularly in the design, testing and documentation stages of the project. This strategy of evaluating the **SCOPE** of impact of a change request also reduces project risk by restricting projects to a manageable size and focusing change on a restricted set of related business functions.

### **Software Asset Valuation**

Function Point Analysis is being used increasingly by organisations to support the 'valuation of their software assets'. In the past, software has been considered an expense rather than a capital asset and as such was not included in an organisations asset register. The most commonly used software valuation method is based on the 'deprival method'. This method values the software based on what it would cost to replace in today's technical environment rather than what it cost originally to build. The industry build rate (dollar cost per function point) is determined and the total replacement value is calculated based on the current Functional Size of the application.

Since FPA provides a means of reliably measuring software, some organisations have implemented accrual budgeting and accounting in their business units. Under this directive, all assets must be valued based on deprival value and brought to account, thus ensuring better accountability of the organisations financial spending. Funding via budget allocation is based on assets listed in their financial accounts and their depreciation. In the past, the purchase price of the software recorded as an expense within an accounting year. These more recent accounting practices mean that it can now be valued as an asset and depreciated.

Publicly listed organisations have found that by using this accrual accounting method of measuring software as an asset rather than an expense they can amortise the depreciation over five years rather than artificially decrease the current year's profit by the total cost of the software. This strategy has a dramatic effect on their share price since once their software is listed as a capital asset it contributes to the overall worth of the company and the total cost of that asset has a reduced impact on the current year's reported profit.

### **Outsourcing Software Production and Support**

The benefits of Functional size measurement in outsourcing contracts, is that Functional Size enables suppliers to measure the cost of a unit of output from the IT Process to the business and enables them to negotiate on agreed outcomes with their client.

Specifically these output based metrics based on function point analysis has enabled suppliers to:

- Quantitatively and objectively differentiate themselves from their competitors.
- Quantify extent of annual improvement and achievement of contractual targets.
- Negotiate price variations with clients based on an agreed metric.
- measure financial performance of the contract based on unit cost of output.
- At contract renewal be in a stronger bargaining position supported by an established set of metrics.

Conversely these output based metrics based on function point analysis has enabled clients to:

- Objectively assess supplier performance based on performance outputs delivered rather than concentrating on inputs consumed.
- Establish quantitative performance targets and implement supplier penalties and bonuses based on achievement of these targets.
- Measure the difference between internal IT costs compared to the cost of outsourcing based on similar output.
- Quantitatively compare competing suppliers at contract tender evaluation stage.

Most of the international outsourcing companies use function point based metrics as part of their client service level agreements. Whilst this method of contract management is relatively new its proponents are strong supporters of the usefulness of the technique. In our experience once an outsourcing contract has been based on Function Point metrics subsequent contract renewals expand on their use.

Metrics initiatives have a high cost and need substantial investment, which is often overlooked at contract price negotiation. Both the supplier and the client typically incur costs. However, given the size of the penalties and bonuses associated with these contracts it soon becomes obvious that this investment is necessary.

# FPA Uses and Benefits in Project Construction

## Monitoring Functional Creep

Function point analysis provides project management with an objective tool by which project size can be monitored for change, over the project's lifecycle.

As new functions are identified, functions are removed or changed during the project the function point count is updated and the impacted functions appropriately Flagged. The 10project **SCOPE** can be easily tracked and reported at each of the major milestones.

If the project size exceeds the limits allowed in the initial estimates then this will provide an early warning that new estimates may be necessary or alternatively highlight a need to review the functionality to be delivered by this release.

## Assessing and Prioritizing Rework

Function Point Analysis allows the project manager to objectively and quantitatively measure the **SCOPE** of impact of a change request and estimate the resulting impact on project schedule and costs. This immediate feedback to the user on the impact of the rework allows them to evaluate and prioritise change requests.

The cost of rework is often hidden in the overall project costs and users and developers have no means to quantify its impact on the overall project productivity rates. Function point analysis enables the project manager to measure the functions that have been reworked due to user-initiated change requests. The results provide valuable feedback to the business on the potential cost savings of committing user resources early in the project to establish an agreed set of requirements and minimising change during the project lifecycle.

# Managing Project Development

## FPA Uses and Benefits in Project Planning

## Project Scoping

A recommended approach for developing function point counts is to first functionally decompose the software into its elementary functional components (base functional components). This decomposition may be illustrated graphically on a **Functional Hierarchy**. The hierarchy provides a pictorial 'table of contents' or 'map' of the functionality of the application to be delivered. This approach has the advantage of being able to easily convey the **SCOPE** of the application to the user, not only by illustrating the number of functions delivered by each functional area, but also a comparative size of each functional area measured in function points.

## Assessing Replacement Impact

If the software to be developed is planned to replace existing production applications it is useful to assess if the business is going to be delivered more, less or the same functionality. The replacement system's functionality can be mapped against the functionality in the existing system. A quantitative assessment of the difference can be measured in function points. Note, this comparison can only be done if the existing applications have already been sized in Function Points.

## Assessing Replacement Cost

Multiplying the size of the application to be replaced by an estimate of the \$ dollar cost per function point to develop, enables project sponsors to develop quick estimates of replacement costs. Industry derived costs are available and provide a ballpark figure for the likely cost. Industry figures are a particularly useful reference if the re-development is for a new software or hardware platform not previously experienced by the organisation. Ideally organisations should establish their own 'cost per function point' metrics for their own particular environment based on project history.

If you are considering implementing a 'customised off the shelf' package solution then this provides a quick comparison of the estimated package implementation costs to compare with an in-house build. Package costs typically need to include the

cost of re-engineering the business to adapt the current business Processes to those delivered by the package. These costs are usually not a consideration for in-house developed software.

### **Negotiating SCOPE**

Initial project estimates often exceed the sponsors planned delivery date and budgeted cost. A reduction in the **SCOPE** of the functionality to be delivered is often needed so that it is delivered within a predetermined time or budget constraints. The functional hierarchy provides the 'sketch-pad' to do **SCOPE** negotiation. I.e. it enables the project manager and the user to work together to identify and Flag (label) those functions which are:

- mandatory for the first release of the application
- essential but not mandatory
- optional and could be held over to a subsequent release

The **SCOPE** of the different scenarios can then be quickly determined by measuring the Functional Size of the different scenarios. E.g., the project size can be objectively measured to determine what the size (and cost and duration) would be if:

- all functions are implemented
- only Mandatory functions are implemented
- only Mandatory and Essential functions are implemented

This allows the user to make more informed decisions on which functions will be included in each release of the application based on their relative priority compared to what is possible given the time, cost and resource constraints of the project.

### **Evaluating Requirements**

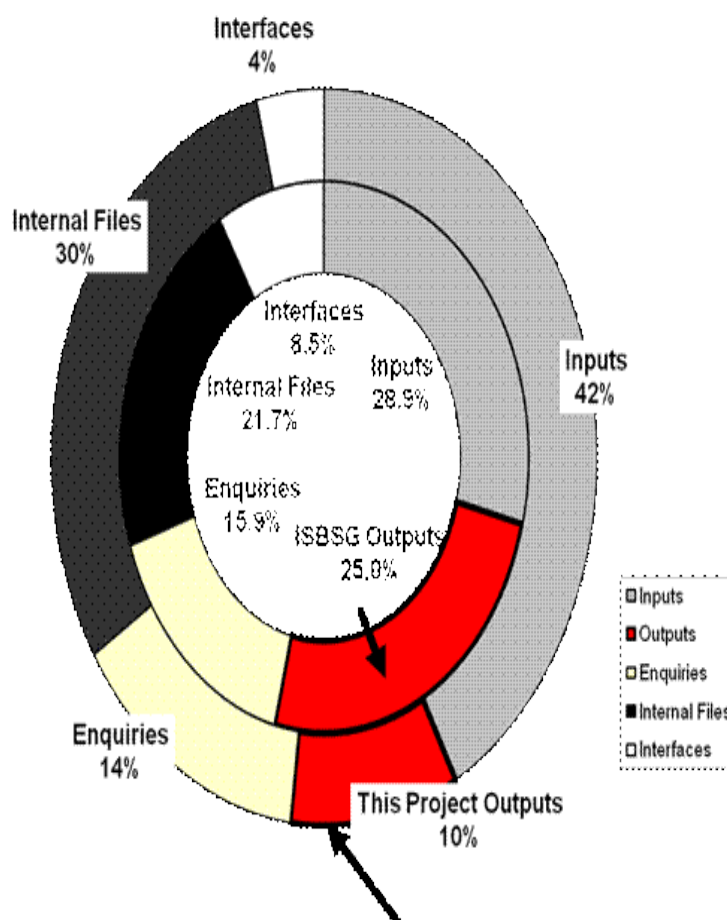
Functionally sizing the requirements for the application quantifies the different types of functionality delivered by an application. The function point count assigns function points to each of the function types, **External Inputs**, **Outputs** and **Inquiries** and **Internal** and **External Files**.

Industry figures available from ISBSG Repository for projects measured with IFPUG function points indicates that 'complete' applications tend to have consistent and

predictable ratios of each of the function types. The profile of functionality delivered by each of the function types in a planned application can be compared to that of the typical profile from implemented applications, to highlight areas where the specifications may be incomplete or there may be anomalies.

The following pie chart illustrates the function point count profile for a planned Accounts Receivable application compared to that from the ISBGS data. The reporting functions (outputs) are lower than predicted by industry comparisons. Incomplete specification of reporting functions is a common phenomena early in a project's lifecycle and highlights the potential for substantial growth creep later in the project as the user identifies all their reporting needs.

#### Checking completeness of project requirements Industry Figures





The quantitative comparison below shows that the reporting requirements were lower than expected by about half (14% compared to the expected 23% of the total function points). The project manager in this case verified with the user that the first release of the software would require all reporting requirements and the user indicated that more reports were likely to be specified. The project manager increased the original count to allow for the extra 9% and based his early project estimates on the higher figure that was more likely to reflect the size of the delivered product. The function point measurement activity enabled the project manager to quantify the potential missing functionality and justify his higher, more realistic estimate.

### **Estimating Project Resource Requirements**

Once the **SCOPE** of the project is agreed the estimates for effort, staff resources, costs and schedules need to be developed. If productivity rates (hours per function point, \$cost per function point) from previous projects are known, then the project manager can use the function point count to develop the appropriate estimates. If your organisation has only just begun collecting these metrics and does not have sufficient data to establish its own productivity rates then the ISBGS industry data can be used in the interim.

### **Allocating Testing Resources**

The functional hierarchy developed as part of the function point count during project development can assist the testing manager to identify high complexity functional areas which may need extra attention during the testing phase. Dividing the total function points for each functional area by the total number of functions allocated to that group of functions, enables the assessment of the relative complexity of each of the functional areas.

The effort to perform acceptance testing and the number of test cases required is related to the number and complexity of the user functions within a functional area. Quantifying the relative size of each functional area will enable the project manager

to allocate appropriate testing staff and check relative number of test cases assigned.

### **Risk Assessment**

Many organisations have large legacy software applications, that due to their age, are unable to be quickly enhanced to respond to the needs of their rapidly changing business environments. Over time these applications have been patched and expanded until they have grown to monstrous proportions. Frustrated by long delays in implementing changes, lack of support for their technical platform and expensive support costs, management will often decide to redevelop the entire application. For many organisations this strategy of rebuilding their super-large applications has proved to be a disaster resulting in cancellation of the project mid-development.

Industry figures show that the risk of project failure rapidly increases with project size. Projects less than 6500 function points have a risk of failure of less than 20% in comparison with projects over 5000 function points which have a probability of cancellation close to 40%<sup>7</sup>. This level of risk<sup>8</sup> is unacceptable for most organisations.

Assessing planned projects for their delivered size in function points enables management to make informed decisions about the risk involved in developing large highly integrated applications or adopting a lower risk phased approach described below.

### **Phasing Development**

If the project manager decides on a phased approach to the project development then related modules may be relegated to different releases. This strategy may require temporary interfacing functionality to be built in the first release to be later decommissioned when the next module is integrated. The function point count allows project managers to develop 'what if scenarios' and quantify the project **SCOPE** of each phase as a means of making objective decisions. Questions to which quantitative answers can be provided are:

- How much of the interfacing functionality can be avoided by implementing all of the related modules in release one?
- What is the best combination of potential modules to group within a release to minimise the development of temporary interfacing functions?

If it is decided to implement the application as a phased development then the size of each release can be optimised to that which is known to be manageable<sup>9</sup>. This can be easily done by labelling functions with the appropriate **Release** and performing 'what-if' scenarios by including and excluding functions from the **SCOPE** of the count for the release.

## References and Recommended Reading

1. ISBSG data Benchmark Industry Reports - <http://www.isbsg.org/>
2. Morris P. M - Case Study of a Successful Measurement Program 2007 - <http://www.totalmetrics.com/total-metrics-articles/Software-Measurement-Case-Study.pdf>
3. Morris P.M - Metrics for Project Governance 2004 - <http://www.totalmetrics.com/function-point-resources/downloads/Software-Measurement-Project-Governance.pdf>
4. Software Productivity Research (Capers Jones) - Softwares Chronic Crisis W. Gibbs Scientific American September 1994
5. Southern**SCOPE** Project Management Methodology developed by the Australian Government (State of Victoria). - <http://www.mmv.vic.gov.au/>
6. American Programmer, Cutter Information Corp, vol. 8, no. 7, July 1995, 37 pp.
7. DeMarco, T., and Lister, T., Peopleware, Dorset House Press, New York, 1987, 189 pp.
8. Garmus, D., and Herron, D., Measuring the Software Process: A Practical Guide to Functional Measurements, Prentice Hall PTR, 1996.
9. Garmus, D., and Herron, D., Function Point Analysis: Measurement Practices for Successful Software Projects, <http://www.aw.com/cseng/>

10. Goodman, P., Practical Implementation of Software Metrics (International Software Quality Assurance Series) McGraw Hill, London, 1992.
11. Humphrey, Watts, Measuring the Software Process, Addison-Wesley, Reading, Mass, 1989, 489 pp.
12. IEEE Recommended Practice for Software Requirements Specifications, IEEE Computer Society, Institute of Electrical and Electronics Engineers, Inc., New York, April 1994, 26 pp.
13. International Function Point Users Group, IT Measurement, Pearson Education Corporate Sales Division, ISBN 0-201-74158-x (pbk.)
14. Jones, Capers, Applied Software Measurement - Assuring Productivity and Quality, Software Productivity Research, Inc., Burlington, Mass, 1991, ISBN 0-07032813-7.
15. Jones, Capers, Programming Productivity, McGraw-Hill, New York, 1968, 280 pp.
16. Jones, Capers, "Measuring Software Productivity," CASE Trends, vol. 2, no. 1, Jan/Feb 1990, pp. 17-24.
17. Jones, Capers, Table of Programming Languages and Levels, Software Productivity Research, Inc., Burlington, Mass, 1988, 35 pp.
18. Jones, Capers, A Short History of Function Points and Feature Points, Software Productivity Research, Inc., Burlington, Mass, 1988, 45 pp.
19. Symons, Charles, Software, Sizing and Estimating, Mk II FPA, John Wiley, New York.
20. System Development, Function Points Applied Computer Research, Inc., Phoenix, August 1989, 20 pp.
21. 'American Programmer' – vol.10, no. 11: Adapting Function Points to Real-time Software:
22. Stephen Treble & Neil Douglas, Sizing and Estimating Software in Practice: Making Mk11 Function Points Work, McGraw-Hill Book Company, 1995, ISBN: 0-07-707620-
23. Morris, P M Forgotten Aspects of Function Point Analysis: Digest Magazine "Project and Profits" April 2003 Issue

24. Morris, P. M Using Function Points to get Projects Back on Track:  
Proceedings of the International Function Point Users Group Conference,  
April 1994.
25. Morris, P.M, IFPUG's Involvement in ISO Function Point Standards:  
Proceedings of the International Function Point Users Group Conference,  
April 1995.
26. Morris, P.M, Desharnais, Jean-Marc, Validating Function Points: Proceedings  
of the International Function Point Users Group Conference, April 1996.
27. Desharnais, Jean-Marc, Morris, P.M., Validation Process in Software  
Engineering: An example with Function Point. Software Metrics: Research  
and practice in Software Measurement 3-8244-6518-3 (1997).
28. Desharnais J.-M., Morris P., Post Measurement Validation Procedure for  
Function Point Counts, Position Paper Forum on Software Engineering  
Standards Issues, October, 1996.
29. Wittig GE Morris PM Finnie GR Rudolph EE Formal Methodology to Establish  
Function Point Coefficients: Proceedings of the International Function Point  
Users Group Conference, September 1998.
30. Oigny, Serge, Abran, Alain, Desharnais, Jean-Marc, Morris, PM, Functional  
Size of Real Time Software: Overview of Field Tests 13th International Forum  
on COCOMO and Software Cost Modelling – Los Angeles, October 1998.
31. E.E. Rudolph, G.E. Wittig, G.R. Finnie, P.M. Morris Verifying Function Point  
Values IFPUG International Function Point Users Group Conference - Arizona  
USA, September, 1997.
32. Desharnais J.M., Morris P, Measuring ALL the Software not just what the  
Business UKSMA Software Measurement in Practice Conference - London  
October 1998.
33. IT Measurement: Practical Advice from the Experts (Pam Morris contributed a  
Chapter on Benefits and Uses of Function Point Analysis and the  
infrastructure required to implement Function Point Analysis within an  
organisation. ( International Function Point Users Group) Addison Wesley  
2002 ISBN: 020174158X

# About SCOPE

## Installation

### To Install SCOPE

Download **SCOPE** from the Total Metrics WWW site using the User ID and Password provided by Total Metrics.

Before you can install **SCOPE** you must save the downloaded files to your hard drive.

Before you use **SCOPE**, you must install the **SCOPE** program. If you have received **SCOPE** on a CD then it must first be saved to your computer's hard drive, it cannot be executed from the CD-ROM.

### Instructions for Installation from Hard Drive

1. If the program does not start automatically, go to the drive where you saved **SCOPE** and select "Press Me to Install **SCOPE** 4\_0.bat"
2. Follow the prompts.

### Instructions for Installation from CD

1. Place **SCOPE** Installation CD in the CD-ROM drive.
2. If the program does not start automatically, go to Start / Run and type "x:\ Press Me to Install **SCOPE** 4\_0.bat" (where x is the letter of your CD-ROM).
3. Follow the prompts.

### Changes to your Computer

**SCOPE** installs a run-time version of Microsoft ACCESS XP<sup>®</sup>. If you decide to move the location of the ACCESS XP<sup>®</sup> runtime program then you need to enter the new pathname in **SCOPE** under View, Screen Display Options in the Main Menu. The standard set up path is : C:\Program Files (x86)\Microsoft Access Runtime\Office10  
**SCOPE** utilises the MS product Snapshot Viewer<sup>®</sup> to display its reports online. In some instances when MS Office is re-installed on a computer, the Microsoft install

process overwrites the link between **SCOPE** and Snapshot Viewer<sup>®</sup>, so the reports will no longer display. Just uninstall and re-install **SCOPE** and the problem is fixed.

See also [SCOPE License Registration](#)

## Machine Requirements

Intel-based personal computer

- Windows XP<sup>®</sup> Service Pack 3
- Windows Vista<sup>®</sup>
- Windows 7<sup>®</sup> Service Pack 1

100 Mb of hard disk space

16 Mb of RAM

## Intended Audience

This User's Guide is intended to be read by software project managers, business analysts, software developers or anyone who intends to use **SCOPE** to:

- Quantitatively size their software using *ISO/IEC 20926 IFPUG 4.3 unadjusted or IFPUG CPM 4.3 functional sizing Methodology*.
- Collect Applications Development and Maintenance and Support Metrics for productivity and quality reporting.
- Quantitatively size their software project for input into project effort, cost and schedule estimates.
- Manage their software application portfolio by recording a quantitative audit trail of functional changes for each release, mapping changes to a specific change request, release or project.
- Graphically model the functionality of their software projects or applications for documentation and **SCOPE** negotiation purposes.

Familiarity with Microsoft Windows® and some familiarity with functional decomposition techniques are assumed. For quantitative sizing some knowledge of the IFPUG Functional Size Methodology is required. See [www.ifpug.org](http://www.ifpug.org)

For more information about ISBSG (International Software Benchmarking Standards Group) see: [www.isbsg.org](http://www.isbsg.org)

## Versions Published

**SCOPE Project Sizing Software™ (SCOPE)** Version 1.6 First Published January 2004.

Upgrades Published:

- Version 1.7 June 2005
- Version 1.8 December 2005
- Version 1.9 May 2006
- Version 2.0 August 2007
- Version 2.1 August 2008
- Version 2.2 June 2009
- Version 3.0 April 2010 - **SCOPE Corporate™** (Multi-User database) and **SCOPE Professional™** (Single User database)
- Version 4.0 July 2011 - **SCOPE Corporate™** , **SCOPE Professional™**, **SCOPE Metrics™**

## Copyright Notice

This User Manual and **SCOPE Project Sizing Software™ (SCOPE Corporate™, SCOPE Professional™ and SCOPE Metrics™)** are copyright © April 2003 to 2011 to Total Metrics Proprietary Limited Australia



Note: Total Metrics has taken all appropriate steps to ensure the accuracy of its published material. Some of the contents of the material may require detailed technical explanation to gain a complete understanding. If you have any concerns you are welcome to advise Total Metrics and Total Metrics will make any necessary explanations, review or changes.

All other Trademarks belong to their respective owners.

# Flash Tutorials

Most of the major functions and features within **SCOPE** are fully explained via a Flash Tutorial on the topic. Please go to

<http://www.totalmetrics.com/function-point-software/SCOPE-project-sizing-software/flash-tutorials>

For Tutorials on how to do the following functions:

- Set Up a New Application
- Set Up a New Release
- Set Up a New Baseline Count
- Set Up an Enhancement Count
- Set Up Multiple Counts on the Same Release
- Import Export Release Counts
- Building Hierarchical Trees
- Counting An Elementary Process
- Counting a Logical File
- Import Count Sessions from other Databases into a Release
- Import a Count from EXCEL
- Import and Export Trees or Parts of Trees
- Documenting Your Count - Notes
- Enhancement Count - Existing Baseline
- Excel Benchmarking Metrics Charts
- Enhancement Count - No Baseline Data Groups
- Enhancement Count - No Baseline Transactions
- Exporting data to ISBSG
- Linking Counts to Projects

- Linking Data to Transactions
- Metrics Reporting - Tabular Data
- NESMA Enhancement Counts
- Quick Early Counting - Template Groups
- Recording Application M and S Metrics
- Recording Project Development and Enhancement Metrics
- Recording Project Metrics
- Reporting Counts
- Set Up New Count - Development Count
- Set Up Project
- Setting up Numerical Attributes
- Setting up User Defaults for Function Point Counting
- Snapshot Applications Releases and Counts
- Update to Baseline
- User Options - Set Defaults for **SCOPE**
- Using the Count for Earned Value Reporting
- Using the Count for Project Estimation
- What is a Benchmark Period
- Assigning Project Metrics to Benchmark Periods
- Import Export Releases

# Glossary

## A

**Application:** Is used synonymously for 'software system', e.g., AMS System. Each set of activities that impacts the application is called a project. Application Counts measure the size of the implemented software product.

**Attributes:** Attributes are used to Flag functions within the **SCOPE** of the Function Point Count so that these functions may be selectively reported as a group. They enable different size profiles of the software to be measured.

## B

**Boundary:** The application boundary is the conceptual interface between the software under study and its users. A user is any person or anything that communicates or interacts with the software.

## D

**Data Element Type:** A Data Element Type (DET) is a unique user recognisable field, from a business perspective, that participates in a transaction and/or is stored on a logical data file.

**Development Project:** Set of activities that build one or more software applications. These activities primarily 'add' new functionality.

## E

**Enhancement Project:** Set of activities that change one or more existing software applications. These activities change or delete existing functionality or add new functionality to existing applications.

## F

**Files:** Represent the 'Data Business Functions' or 'Data Groups' described in the IFPUG documentation. They are logical groups of data from an external business perspective. They are closely related to, but do not exactly correspond to, entities on a normalised data model that is the logical view of the data from an information technology perspective.

**Function Point:** A unit of measurement of software product and project functional size.

**Function Point Analysis:** A technique used to measure the Functional Size of software products and projects.

**Function Point Count (Noun):** The result of applying the Function Point Analysis technique to software. It is a measure of the Functional Size of the software.

**Function Point Count (Verb):** An activity that applies the Function Point Analysis technique to size software projects or applications.

**Functional Hierarchy:** A diagrammatic representation of the functional decomposition of the business functionality of an application. This representation assists a function point counter in conducting, and validating the completeness of, a Function Point Count.

## G

**General Systems Characteristics:** Fourteen quality and technical features identified to be delivered with the functions of the software. The 14 characteristics (GSCs) or features are assessed for their degree of influence on the software application as a whole and for their impact on the development and maintenance activities for the software. Albrecht's algorithm ( $VAF = 0.65 + [0.01 * \text{Sum GSCs}]$ ) is used to calculate the Value Adjustment Factor for the software.

## I

**IFPUG:** International Function Point Users Group - a US based organisation, with international affiliates, which maintains standards and guidelines for the use of the Function Point Analysis technique.

## R

**Record Element Type:** A Record Element Type (RET) is a user recognisable subgroup of a logical data file. It usually corresponds to the relational tables on the data model, which were grouped together to make up the logical group of data from a business view.

## S

**System:** Is used synonymously for 'application', (see 'application').

## T

**Transactions:** These correspond to 'elementary Processes' in IFPUG terminology. They are the lowest level on a functional hierarchy and represent a discrete event in the users' business Processes. They complete a unit of work and leave the business in a consistent state. E.g.: Update Property Details.

## V

**Value Adjustment Factor:** This represents the quality and technical features of the application delivered to the user. Whereas 'functions' on the hierarchy represent 'what' the user can do with the software the 'features' represent 'how' these functions are implemented and 'how well' they operate. The Value Adjustment Factor (VAF) is calculated from the General Systems Characteristics.

# Index

## A

A Process.....	56	Asset Valuation.....	220
ACCESS .....	235	Attribute .....	4, 24
Access Type.....	4	Attribute Data.....	93
ACCESS XP® runtime .....	235	Attribute FP Size Profiles.....	93
Adjusted Function Point Count.....	188	Attribute Function.....	93
Adjusted Function Points.....	24	Attribute Hierarchy Tree.....	16
Adjustment Factor .....	75	Attribute Note.....	93
AFP .....	188	Attributes.....	16, 36
All Counts for a Release.....	93	Audit .....	112
Allocating Testing Resources.....	226	author .....	90
ALT L.....	118	Author .....	112
Alt+1 .....	118	Author Name.....	124
Alt+2.....	118	Author's name.....	90
Alt+3.....	118	<b>B</b>	
Alt+4.....	118	Baseline Application .....	93
Alt+F.....	118	Baseline Count .....	52
Alt+Ins .....	118	Baseline Counts.....	2
Alt+Ins+Shift.....	118	Baseline Release.....	93
Annotating.....	111	Baseline Release Functional Size .	102
Application Baseline Size .....	99	Baseline Release Report .....	65
Application Function Point Count .....	93	Benchmarking.....	220
approximate size .....	200	Black.....	65
As Displayed .....	107	Budget .....	220
		Business Planning / Feasibility .....	204

**C**

Categories.....	16	Count Session .....	19, 24, 65, 69, 120
Category.....	4	Count Session Impacted Functional Size .....	99, 102
Change Registration Details.....	1	Count Sessions.....	65
Change Request .....	65	Create a new Template Function Group .....	33
Change Requests .....	217	Created.....	124
Changes introduced during the Project Build to Implementation .....	204	CSV .....	84
Changes to your Computer .....	235	Ctrl+C .....	118
Chinese .....	133	Ctrl+N .....	118
Clear All.....	40	Ctrl+O .....	118
CLOSE CURRENT.....	128	Ctrl+P.....	118
CNTR L .....	40	Ctrl+S.....	118
Compact.....	128	Ctrl+V.....	118
Compact Database.....	128	Ctrl+X.....	118
compress.....	128	<b>D</b>	
Configuration Control .....	179	Data .....	24
Conversion .....	179	Data Attribute.....	93
Convert.....	2, 109	Data Element Types .....	16
converted database.....	86	Data Function .....	93
Copy.....	124	Data Group .....	24, 54
Copy 'Links Only' .....	40	Data Group Folder.....	16, 181
Copyright.....	237	Data Groups .....	16
Copyright Notice.....	237	Data Hierarchy Tree .....	16
Cost.....	226	Data Notes.....	93
		Data Tree.....	24, 27, 54

Default Complexity Count.....	196	EIF .....	24
Delete.....	4, 118	Email.....	93, 111
Delete Count Session.....	179	English.....	133
Derived.....	27	Enhancement Counts .....	2
Description Reports.....	93	Enhancement Project Counts .....	99
DET .....	16, 24, 54, 56, 121	Enhancement Project Function Point Count .....	93
Detail .....	4	Enquiries.....	186
Detail Reports .....	93	Esc.....	118
Detailed Analysis and Tracking using Notes and Attributes .....	36	Estimating.....	217
Detailed Count .....	195	Estimating Project Resource Requirements.....	226
Detailed Linked and Flagged Count .....	192	Evaluating Requirements.....	226
Detailed Linked Count.....	194	Example Software Project.....	4
Detailed Recording of Data Groups	181	Excel.....	84, 93, 109
DETs .....	16	EXCEL template .....	84
Development Project Function Point Count.....	93	Exclusive 'AND' Filter .....	104
Development Project Size .....	99	Expand .....	122
Display Links .....	49	Export .....	77, 82, 109
Down Arrow.....	118	Export a Release .....	82
Dutch.....	133	Export a Whole Tree or Part of a Tree .....	82
<b>E</b>		Export Count Session .....	79
Early project estimation .....	200	Export Release .....	82
Ease of Use.....	178	Export to Metrics Repository.....	79
edit tree nodes .....	121	Export to SPR Knowledge Plan .....	78



Export Tree .....	82, 122	FTR.....	56
Export your Template Function Groups .....	130	Function.....	24, 27, 56
Extended Length for Names and Descriptions.....	182	Function and Data Trees .....	27
External File .....	24	Function Attribute.....	93
External Files .....	186	Function Data .....	93
<b>F</b>		Function Hierarchy Tree .....	16
F2.....	118	Function Notes.....	93
F5.....	118	Function Point Analysis .....	185
Filter .....	104	Function Point Count Result Reports .....	93
Filter Mode .....	104	Function Point WORKBENCH .....	86
Filter Set.....	104	Function Tree.....	56
Find .....	124	Functional Components .....	186
First Function Point Count.....	2	Functional Size Measurement .....	190
Flags and Filters.....	104	Functions .....	16, 56
FP Decision Maker .....	191	<b>G</b>	
FPA .....	185	General Characteristics .....	75
FPW .....	86, 166	German.....	130, 133
FPW 4 .....	86	Gold Padlock Icon.....	62
FPW 5 .....	86	Green.....	65
FPW 6 .....	86	Green Padlock Icon .....	62
FPW database .....	86	Grey .....	65
French .....	133	GSC.....	77
From Current Position .....	93, 107	GSCs .....	75
FSM.....	190		

**H**

Hierarchies .....	14
Hierarchy Tree .....	121
Hierarchy Tree Reports .....	93
Hierarchy Trees.....	16
Hold.....	179

**I**

IFPUG 4.2 Function Point Analysis ..	13
IFPUG Terminology.....	93
ILF .....	24
impact type.....	65
Impact Types.....	120
Import.....	77, 82, 84, 86
Import /Export a Whole Release .....	82
Import /Export Whole Trees or Parts of Trees .....	82
Import a Release.....	82
Import a Whole Tree or Part of a Tree .....	82
Import Count Session.....	79
Import from FPW .....	86
Import Release.....	82
Import Tree.....	82, 122
Importing and Exporting Template Function Groups .....	130
Input .....	24

Inputs.....	186
Inquiry .....	24
Insert.....	118, 121
Insert Template Function Group .....	33
Install .....	235
Install <b>SCOPE</b> .....	235
Installation.....	235
Intended Audience.....	236
Internal File .....	24
Internal Files .....	186
ISBSG.....	72, 79
ISO standard 20926 and 14143-1..	188
ISO/IEC 20926 IFPUG 4.1 unadjusted .....	236
ISO/IEC standard for Functional Size Measurement 14143-1  1998 .....	190
Italian .....	133

**J**

Japanese .....	133
----------------	-----

**K**

Korean .....	133
--------------	-----

**L**

Languages.....	133
latest release .....	23, 62
Left Arrow .....	118

Level 1.....	192	Master <b>SCOPE</b> EXCEL Import Template .....	84
Level 2.....	194	Master_ <b>SCOPE</b> _Excel_Import_Templa te .....	181
Level 3.....	195	Merging.....	110, 111
Level 4.....	196	Metrics experts .....	203
Level 5.....	197	Microsoft ACCESS XP .....	235
Level 6.....	198	Modified .....	124
License Registration.....	235	MS Excel.....	84
lifecycle .....	203	MS Office® Image Writer .....	111
Link.....	40	Multi-Lingual .....	15, 133
Link Mode.....	104	Multiplier .....	27
Link Projects to Count Sessions.....	72	<b>N</b>	
Link Type.....	33	Negotiating <b>SCOPE</b> .....	226
Linked Tree List Reports .....	93	new Measurement .....	23
Linked Tree Lists .....	93	New Project .....	74
Links.....	40	new Release .....	64
List of Applications .....	4	NOT Apply .....	179
List of Software Applications .....	59	NOT' Filter .....	104
lock a Release.....	15	Note Sets.....	16
Locked.....	62	Notes .....	4, 16, 24, 36
<b>M</b>		Notes Attribute .....	93
Machine.....	236	Notes Data.....	93
Machine Requirements .....	236	Notes Function.....	93
Main Screen .....	115	Notes Hierarchy Tree.....	16
mandatory column.....	84	Notes Tree.....	48

Install <b>SCOPE</b> .....	235	Project .....	72
Numerical Attributes .....	38	Project and Applications List.....	102
<b>0</b>		Project Delivery Rate .....	72
Office .....	109	Project Details.....	72
Ongoing Project Monitoring.....	204	Project Details Report.....	72
Online Reporting .....	182	Project Details Report.....	74
OR' Filter .....	104	Project Development Count.....	2
Orange .....	65	Project Implementation .....	204
Other Releases .....	62	Project List.....	72
Output .....	24	<b>R</b>	
Outputs.....	186	Rating .....	75
<b>P</b>		READ ONLY .....	4, 40
Paradox.....	86	Record Element Types .....	16
Paste Special .....	84	References .....	232
PDF .....	110	Release Baseline Functional Size ..	99, 102
Phasing Development .....	226	Release Impacted Functional Size .	99, 102
Portfolio Size .....	93	Release Rework .....	93
Portuguese.....	133	Release Rework Repor.....	65
Preview .....	93, 107	Release Reworked Functional Size	99, 102
Previewing and Printing Reports ....	107	Release Status .....	62
printing .....	93	Replace .....	124
Process/Transaction Verbs .....	33	Report.....	93, 110
Processes .....	16	Report Selection .....	93, 109
Production Release .....	19		
Production Releases .....	4, 62		

Reporting Selection .....	24	Search .....	124
Reporting the Functional Size in Function Points .....	102	Select Flagged Nodes .....	93, 107
Reports.....	111, 182	Serial Number.....	1, 10
Requirements Specification Stage .	204	Session .....	65
response times .....	128	Set All .....	40
RET .....	16, 24, 54, 121	Shift Down Arrow .....	118
RETs .....	16	Shift Up Arrow.....	118
Reverse .....	130	Shortcuts.....	118
Reversing the Order of the Verb and Nouns in Template Function Group .....	130	Size Approximation.....	198
Rework .....	65, 225	Snapshot .....	82
rework factor .....	65	SnapShot Viewer .....	110
right Arrow .....	118	Snapviewer .....	111
Risk Assessment.....	226	Software Application .....	59
Rough Count .....	197	Software Applications List.....	4
<b>S</b>		<b>SORT</b> .....	125
Save As Type .....	84	Space bar .....	118
<b>SCOPE</b> Corporate.....	15	Spanish.....	133
<b>SCOPE</b> EXCEL template .....	84	SPR Knowledge Plan .....	78
<b>SCOPE</b> Manager .....	204, 215	Start .....	1, 2
<b>SCOPE</b> Managers.....	203	Start <b>SCOPE</b> .....	1
<b>SCOPE</b> Professional.....	15	Status Line.....	126
<b>SCOPE</b> Proxy™ .....	198	Supplier Selection Stage .....	204
<b>SCOPE</b> Viewer .....	87	<b>T</b>	
		Template Function Groups .....	33
		Template Setup Options .....	33, 130

To Flagged Nodes.....	40	<b>V</b>	
Toolbar .....	127	VAF .....	77
Tracks Rework for Enhancement ...	180	Value Adjustment Factor .....	24, 75, 77
Training .....	20	Verbs .....	33
Tutorials .....	128	Version .....	237
Type of Impact .....	65	<b>W</b>	
<b>U</b>		Weighting of Functional Components .....	187
UFP .....	188	Windows Vista .....	236
Unadjusted Function Point Count...	188	Windows XP .....	236
Unflagged Nodes .....	40	WORD .....	93, 109
Unlocked .....	62	Work In Progress Release .....	2, 62
Up Arrow .....	118	Work in Progress Releases ...	4, 19, 62
Update.....	4	WORKBENCH .....	86, 150
update rights .....	23, 62	<b>SCOPE Viewer</b> .....	112
UPDATED .....	40		