QSM® The Intelligence behind Successful Software Projects

Deploying and Using SLIM-Suite in a Global Environment

Introduction

The SLIM Suite of applications includes SLIM-Estimate, SLIM-Control, SLIM-Metrics, SLIM-DataManager and SLIM-MasterPlan. Our clients use SLIM tools to estimate, track, forecast and benchmark software development projects. The tools function well either individually or as an integrated suite; they can be installed as standalone desktop applications or deployed over a network. Prospective users often have questions about deployment and data sharing in a network environment. This document attempts to address these concerns.

System Requirements

To install and run the SLIM 8.1 Tool Suite, you will need:

- Microsoft Windows XP, Vista, 7 or 8.
- 200-810 MB hard disk space, depending upon which applications are installed. As SLIM Suite applications require additional disk space to store and work with your files, we recommend keeping at least 100 MB free space on your hard disk at all times.

The following table provides the disk space required for both individual component and installed applications:

Component Installed	Space Needed
SLIM-Estimate	125 MB
SLIM-Control	90 MB
SLIM-DataManager	65 MB
SLIM-Metrics	67 MB
SLIM-MasterPlan	330 MB
SLIM Manuals and Training	130 MB
Workstation Setup	32 MB

- At least 128 MB RAM for Windows XP systems, 512 MB RAM for Windows Vista, Windows 7 or Windows 8 systems. Having more memory than the minimum required will result in better performance.

- A monitor capable of displaying at least 1024 x 768 with 256 colors and 96 dpi fonts (default small fonts).
- Access to the internet to downloaded from the QSM Support | Downloads web page, or a CD-ROM drive. Instructions are provided in your license email. Please call QSM (800-424-6755) for download instructions and information, or to request a CD.

Optional, but highly recommended:

- A Windows-supported color or black and white printer.
- A mouse.

Application Architecture

Each individual SLIM-Suite application resides in a Microsoft Windows executable file with an .exe file extension. The entire suite consists of five executable files and five small sets of runtime support files that take up a total of 37 MB in disk space. SLIM-Suite also requires the presence of several Microsoft Windows dynamic link libraries (dll files). Though these files are already present in the System folder of most Windows computers, they are installed during setup if needed. An extensive library of sample workbook and template files is also available to licensed users:

- Samples: 33 MB
- Templates: 62
- MasterPlan Templates: 217 MB
- Training Files: 99 MB

Users can install one or more of these optional application support libraries to dedicated folders inside the application directory.

Workbooks

Each SLIM-Suite application has its own workbook format and uses the following file extensions:

- .sew (SLIM-Estimate workbooks)
- .spw (SLIM-MasterPlan workbooks)
- .scw (SLIM-Control workbooks)
- .smw (SLIM-Metrics workbooks)
- .smp (SLIM-DataManager workbooks)

Workbooks typically consume from one to four MB of disk space. Users can freely exchange workbooks with each other, import or export workbook components. Many clients use the QSM sample files provided during setup to create fully customized templates calibrated to their organizational nomenclature, life cycle, and historical productivity. These templates can be stored in a read only folder and are small enough to be compressed and emailed.

QSM Industry Database

One key benefit provided by SLIM-Suite tools is the ability to benchmark or compare any given software project against hundreds or even thousands of other completed software projects. This kind of industry benchmarking is accomplished using trend line statistics synthesized from the QSM master database of nearly 9000 completed projects. QSM industry statistics are summarized and stored in the runtime support files that accompany each application. They are also present in new workbook files created by users. It is important to understand that *only summary statistics are distributed to QSM clients*. The actual QSM database (which contains sensitive proprietary information) is not distributed with SLIM-Suite products. This use of summarized industry data allows substantial savings in disk space and enhanced computational performance. As updated industry data becomes available, it is made available to licensed users.

Building a Corporate Database

In addition to benchmarking projects against QSM industry data, SLIM users can also calibrate estimates and benchmark completed projects against their own completed projects. The details of these projects are stored in one or more DataManager files with an smp file extension (e.g. MyProjects.smp). A typical large QSM client may have up to 250 projects in their corporate database (though no real limit exists).

As a best practice, we recommend that a database administrator be appointed to gather and validate data in the corporate repository and publish updates to appropriate end users. A corporate project database of 250 or fewer projects typically consumes up to 25 MB of disk space. Regular use of the compression utility built right into DataManager will result in smaller files that run faster, but compacting database files is entirely optional.

Users and administrators have great flexibility in how corporate databases are maintained. Some clients prefer to maintain a single read-only copy of the database on a central file server and allow workbook users to query and extract information from this database as needed. Other clients subdivide the central database (Realtime systems, Business systems, Division A, Division B, etc.) and distribute these smaller, more narrowly focused copies to selected users. Either way, the interaction between users and the central database is not a client-server transaction, but rather a one-way extraction of data from the corporate database to the local

workbook. For planning purposes, system administrators can assume minimal network traffic between the central file server and individual workstations.

Network or Standalone Mode

One question we often get from SLIM users is, "What's the best way to deploy SLIM Suite tools in a distributed environment?" The answer to that depends to some extent upon how you intend to use the applications and the needs of your user community. SLIM applications can be installed in **standalone mode** (the local workstation install) or **over a network** (the network install). You can also have a parallel or hybrid configuration (i.e., users can run the tools over a network when at work, but use the standalone version when they are on the road).

There are advantages and drawbacks to each type of configuration:

Standalone mode: runs faster because workbook files are stored and opened locally. You also won't have to worry about multiple users possibly overwriting each other's changes in the same file: this can be a problem in a shared network environment. Though no two users can open and modify the same file at the same time, there is nothing to prevent User 1 from modifying a workbook just after User 2 saves changes to that file and closes it. Standalone installations are also more convenient for laptop users who travel frequently or work at home. Even with a VPN, users will generally find that SLIM Suite performs more snappily when the applications are installed locally.

Network installations are easier to maintain when it comes time to administer annual license updates or patches. For this reason alone, large corporations with many users may find a network configuration more suitable. Since the QSM tools are not client-server applications, they do not require a dedicated network. Data sharing (via workbooks) can be achieved via email attachments, file transfer protocols, or by simply publishing the files to a shared network folder.

Hybrid or dual installations allow administrators to push upgrades out quickly while giving users the freedom to travel and work remotely or when no connection to the network is available.

A related question deals with file storage: where is the best place to keep various types of SLIM files? Again, it depends. The important considerations are:

- Who needs to *edit or update* the file?
- Who needs *access to* the file?
- Do they really need *access to the original data* (and do you really want multiple users updating it)? Or would it be better to have one person manage the file and make reports available to multiple users?

The following example may help you answer these questions.

Clients and new users often express a desire to centralize their corporate **DataManager repository** and allow distributed users to add projects to it remotely at will. They believe unrestricted data entry will help their data repository grow swiftly and allow the entire enterprise to benefit from immediate access to new data. Unfortunately, allowing universal access and data entry does not promote (and may degrade) the accuracy and integrity of your corporate database.

Newly submitted project data is rarely accurate and complete in its first iteration. At the end of a project, it is not at all uncommon for project managers to enter the best information they have at the time. They fully intend to update partial or incorrect data once better information becomes available. In a perfect world, such users would mark such projects clearly to prevent third parties from using it in queries, benchmarks, or to calibrate new estimates. But in the real world, people are frequently interrupted. They get distracted by other work, or a new project takes priority over completing the project closeout.

Busy people make mistakes. They procrastinate or are transferred to new jobs, leaving their unfinished work to someone who is untrained, inexperienced, or even unaware of its existence!

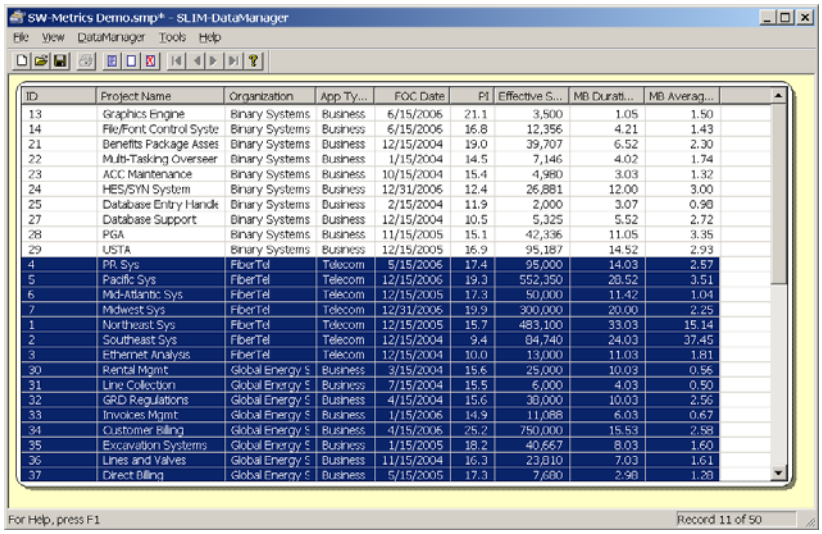
For all these reasons, **QSM strongly advises our clients to appoint a database administrator to validate all incoming project data**. Requiring users to submit their data to a central administrator for inspection and validation against a uniform corporate standard *is a best practice that cannot be violated without risking the integrity of the data*. Once incoming projects have been examined and validated, the database administrator can publish periodic updates to the central repository. This method lessens the risk that incomplete or inaccurate data will be used for validating estimates and benchmarking. As each new database update is published, the database administrator should ask all users to replace any local copies of the database with the newest version.

Though we recommend providing distributed users with an officially published and validated corporate repository, **smaller, specialized databases** can reside on local machines for individual use in estimation support or benchmarking analysis. These databases can easily be created via the query and database export features on the File menu in SLIM-Metrics.

Users who don't have a SLIM-Metrics license can create subsets of their master database manually via the **Project View Layout** feature in DataManager. The method is suitable for simple queries that combine conditions using an "and" condition (for example, you want a database of all projects from a specified organization completed after a specified cutoff date). The list of columns and fields is fully customizable – just insert the desired metrics from the **Master List** into the **Metrics to Display on View/Report** window. Up to 15 metrics can be displayed at a time.

The resulting columns will then appear on the **Project List view** in DataManager.

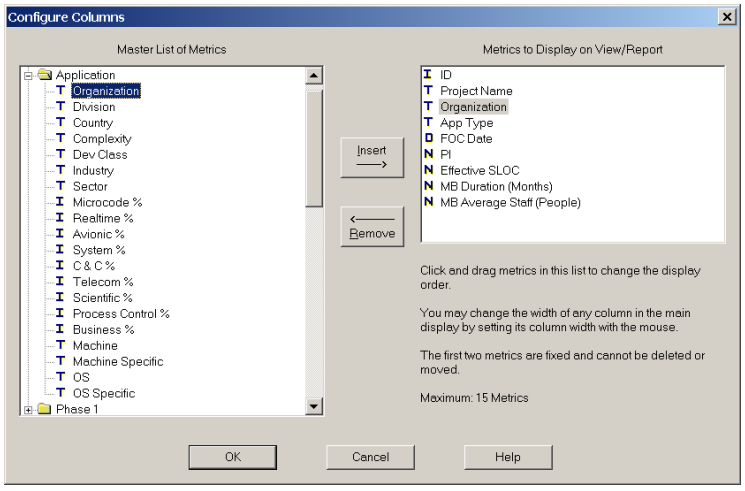
In this example I will use one of our sample files (SW-MetricsDemo.smp) to show how it's done. First you should save your database using a new name. You want to select all projects completed by Binary Systems after January 1st, 2005. The first step is to sort the Organization column (just click the column heading) so the Binary Systems projects are grouped together:



ID	Project Name	Organization	App Ty...	FOC Date	PI	Effective S...	MB Durati...	MB Averag...
13	Graphics Engine	Binary Systems	Business	6/15/2006	21.1	3,500	1.05	1.50
14	File/Font Control Syste	Binary Systems	Business	6/15/2006	16.8	12,356	4.21	1.43
21	Benefits Package Asses	Binary Systems	Business	12/15/2004	19.0	39,707	6.52	2.30
22	Multi-Tasking Overseer	Binary Systems	Business	1/15/2004	14.5	7,146	4.02	1.74
23	ACC Maintenance	Binary Systems	Business	10/15/2004	15.4	4,980	3.03	1.32
24	HES/SYN System	Binary Systems	Business	12/31/2006	12.4	26,881	12.00	3.00
25	Database Entry Handk	Binary Systems	Business	2/15/2004	11.9	2,000	3.07	0.98
27	Database Support	Binary Systems	Business	12/15/2004	10.5	5,325	5.52	2.72
28	PGA	Binary Systems	Business	11/15/2005	15.1	42,336	11.05	3.35
29	USTA	Binary Systems	Business	12/15/2005	16.9	95,187	14.52	2.93
4	PP Sys	FiberTel	Telecom	5/15/2006	17.4	95,000	14.03	2.57
5	Pacific Sys	FiberTel	Telecom	12/15/2006	19.3	552,350	20.52	3.51
6	Mid-Atlantic Sys	FiberTel	Telecom	12/15/2005	17.3	50,000	11.42	1.04
7	Midwest Sys	FiberTel	Telecom	12/31/2005	19.9	300,000	20.00	2.25
1	Northeast Sys	FiberTel	Telecom	12/15/2005	15.7	483,100	33.03	15.14
2	Southeast Sys	FiberTel	Telecom	12/15/2004	9.4	84,740	24.03	37.45
3	Ethernet Analysis	FiberTel	Telecom	12/15/2004	10.0	13,000	11.03	1.81
30	Rental Mgmt	Global Energy S	Business	3/15/2004	15.6	25,000	10.03	0.56
31	Line Collection	Global Energy S	Business	7/15/2004	15.5	6,000	4.03	0.50
32	GRD Regulations	Global Energy S	Business	4/15/2004	15.6	38,000	10.03	2.56
33	Invoices Mgmt	Global Energy S	Business	1/15/2006	14.9	11,088	6.03	0.67
34	Customer Billing	Global Energy S	Business	4/15/2006	25.2	750,000	15.53	2.58
35	Excavation Systems	Global Energy S	Business	1/15/2005	18.2	40,667	8.03	1.60
36	Lines and Valves	Global Energy S	Business	11/15/2004	16.3	23,010	7.03	1.61
37	Direct Billing	Global Energy S	Business	5/15/2005	17.3	7,680	2.98	1.28

Click on the first record you want to delete and shift/click the last record, then click the **Delete Project(s)** button in the toolbar. Next, can sort the FOC Date column or simply ctrl/click any projects that completed before January 1st of 2005 and hit the delete button.

More complex queries are best handled in SLIM-Metrics, but this method is fine for simple sorting jobs or whenever you want to create a smaller, specialized database using a fairly simple set of selection criteria.



Concurrency

Users often ask, “Assuming we decide to maintain one central project database, how many users can access the database at the same time?”

The only time simultaneous access to the central project database is of concern is during data entry and editing of historical projects. A typical large organization might enter several hundred projects into the corporate database. The database administrator can perform this task manually or programmatically (using scripts from existing data repositories such as Excel or Oracle). After the initial loading of existing projects, additional completed projects can be appended on an ‘as needed’ basis. Even a busy organization typically completes no more than a few projects per month, so the central database can be viewed as a fairly static file. Average users of the QSM tools will access the central database on a read-only basis for a few fractions of a second at most. Therefore it is safe to assume that file contention and file lockout will occur rarely, if at all. The QSM tools allow for and handle file contention issues and thereby insure the integrity of the central database.

A typical SLIM-Estimate, SLIM-Control or SLIM-MasterPlan workbook actually embeds selected subsets of the corporate database into the user’s workbook. This increases performance, reduces network traffic and provides greater flexibility in the creation and sharing of project information. Even SLIM-Metrics users will pull information from the central database in a download direction for a few fractions of a second. Many organizations prefer to distribute local copies of their corporate database (or subsets thereof) to facilitate performance and added ease of use.

The QSM tools follow the typical Microsoft Office application model; i.e., one executable file per application with user data stored in individual workbooks. There is no client-server database engine required so network traffic is minimal and installation configuration is extremely flexible.

The sharing of user data is usually achieved by copying individual workbooks. These workbooks are small enough to be copied over the network or emailed. A corporate project database of your company’s systems can be maintained centrally or sub divided, cloned and distributed to appropriate users with simple file transfer mechanisms or email.

User workbooks are automatically upgraded as new versions of the applications become available in much the same way Microsoft Office users upgrade spreadsheets and document files. SLIM-Suite workbooks are forward (but not backward) compatible; once upgraded, they can no longer be opened by previous versions of SLIM-Suite.

Commercially available application control packages can be used to monitor the number of users running the product across any network.

Since the QSM suite is not a true client-server architecture, backup and recovery procedures are fairly simple. Users are responsible for saving their own individual workbooks in the same way they would save any spreadsheet or document file in MS Office.