The planning and scheduling of project tasks and resources is an essential component of any successful organization. It is especially critical for companies that provide services on a contract basis. Analysis of the time to complete current projects, especially critical for companies that provide services on a contract basis. Resources can be adjusted to control the time and cost required to complete a project.

SELECTING A TIMELOG SYSTEM

A primitive start towards the development of a time tracking system would be to simply require employees to log their activities on a sheet of paper. This simple system is most effective in a small organization. It requires little or no training and practically everybody is willing to use pen and paper. Several drawbacks arise from such a system. It is often left to the discretion of the employee as to how detailed or vague the description of work activities should be. Standards are difficult to establish and further errors will be introduced when the data is gathered by an entry specialist, if it is entered at all! A company with any substantial size would soon be overwhelmed with large stacks of useless paper.

A better attempt at designing a time tracking system might be to enable the end-user to log their times at the computer. One level of error reduction would be saved by requiring all employees to enter their own time. Standards could be established using lookup tables and acceptable output of data would be easy. However, if the system was not deemed "user-friendly", extra time and resources would have to be spent in training employees to use it. To save valuable time on the analysis of past or future projects, a reporting facility should be built in to compile and analyze the data.

STATPROBE has developed a TIMELOG system based on this list of user requirements. The system developed is a user-friendly system, acceptable to all audiences, that is practical, useful, and requires limited training and maintenance.

STATPROBE TIMELOG SYSTEM

The STATPROBE TIMELOG system was developed using the SAS/AF Frame technology with OS/2® as the operating system. To gain organizational acceptance, an emphasis was placed on making the application user-friendly. It needed to "look and feel" like the current operating environment and mimic everyday functions and objects such as mouse-clicks, scrollbars, sliders, etc. The focus of this paper will be to provide an overall description of the STATPROBE TIMELOG system, with a brief introduction of the end-user interface.
PROJECT MANAGEMENT DATABASES

Department Database
A list of departments.

Employee Database
A list of employees to which assignments to a department.

ACCESS CONTROL DATABASES

Security and Password Databases
Security level and encrypted password assigned to each employee to allow access to management functions.

Entry Log Database
Data entered by user detailing client, project, date, hours, task, activity, and comments.

USER INTERFACE

The user interface was designed to make it easy for all audiences to use the TIMELOG system. Wherever possible, graphical icons and control objects such as drop-down list boxes, navigation arrows, and push buttons were used. By using drop-down list boxes, the user can fill in most of the information without having to type at the keyboard.

Each user must correctly enter a password before entering the TIMELOG system. After they are successfully logged on, various icons representing the system functions will appear according to the user’s security level. Figure 1 illustrates a user with access to both end-user functions and managerial functions.

Figure 1 End-User and Managerial Functions

An employee with a lower security level would only see the end-user functions described earlier, namely posting time, changing the password, and running user reports. The rest of the discussion will cover the user interface of ‘Post Time’ and ‘Timelog Setup’. Refer to “Time and Costs Tracking Using the TIMELOG System” , a SUGI 20 paper by Matthew Becker, for more information on how the reporting functions are addressed.

LOOKUP TABLES

Drop-down list boxes are used for accessing lookup tables for the client, project, task, and activity fields. The end-user can simply choose an object provided from the lookup tables to fill the required fields. If a category does not exactly fit the desired description for a particular field, a user may enter additional information in the comments section. A request may also be made to a manager to add or modify the lookup tables.

Figure 2 End-User Interface

Figure 2 illustrates the user interface for posting times. When posting times, all fields are required with the exception of the comments section. A user may not add a new entry, copy an entry, or quit the system without supplying all of the required data. A user can, however, delete an entry at any time, even if all required fields are not entered. The upper left-hand corner displays the user name of the employee posting the TIMELOG data. This field is filled automatically according to the password entered during logon verification. For new entries, the date field defaults to the current date, although it can be changed manually or with control arrows to allow posting of “back-dated” times.

Control arrows are provided at the bottom of the screen to allow easy navigation through the entries. The ‘Entry’ field at the bottom of the screen reveals the total number of entries the user has logged and the current entry number that is being displayed. A user may go to the first entry, previous entry, next entry, and last entry respectively. In addition, a GOTO button allows the user to specify and then go to any entry screen on demand.

New entries can be easily added by clicking on the Add New Entry icon. An entry containing a repetitive task can easily be copied by clicking on the Copy Entry icon. All required fields must first be entered before a user can add a new entry or copy a new entry. Entries can be deleted at any time by clicking on the Delete Entry icon.
Figure 3 List Box for Lookup Table

Figure 3 illustrates a drop down list that appears when the user clicks on the down control arrow. A selection of the various tasks from which a user can choose is also shown.

Figure 4 Timelog Setup

TIMELOG SETUP

Figure 4 illustrates the screen used for TIMELOG administration. Using radio boxes and list boxes, a manager may make modifications to clients, projects, tasks, activities, departments, or employees. These changes are made directly to the lookup tables that the end-user sees when logging times.

The interface to the ‘Rates’ and ‘Manager Reports’ functions are quite similar. A manager is able to make modifications to all of the Project Management Databases through push buttons, list boxes, and list boxes.

CONCLUSIONS

Several additions and enhancements are being planned for the next TIMELOG system generation. Careful planning of the database design will enable STATPROBE to package new features to the current system with minimal programming. Databases under development include:

Assignments Database
Budget amounts of time for each task within a project assigned by employee.

Rate Database (Project)
An actual billable rate assigned to each task within a project. These rates will be used to determine whether the project is over or under budget.

Rate Database (Employee)
Rate assigned to each employee based on annual salary. These rates will be used to determine if expensive resources have been assigned to less valuable tasks.

Currently, project proposals are submitted to clients by STATPROBE using third party products such as Microsoft Project®. Tasks and activities must be entered manually and should equate one-to-one with tasks and activities for that project in the TIMELOG system. To reduce errors and save time, future implementations are being planned to link data among TIMELOG, Microsoft Project, and other third party applications. In addition, graphing, plotting, and charting functions will be added to TIMELOG to give more sophisticated report summaries. All entries are currently sorted by the posted date. An option to allow the user to sort on other keys such as client, project, or activity is being planned. Furthermore, the ability to search entries based upon the same keys will also be an option.

REFERENCES


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