alodar systems™

Integration Tip

WHITE PAPER

Mine the Process

Capturing and documenting your business processes is a powerful tool for increasing efficiency and reducing operating costs. With it you can:

- Diagnose the root cause of known problems
- Eliminate and combine steps and eliminate bottlenecks
- Converge multiple parallel processes into one
- Enable Sarbanes-Oxley compliance
- Reduce the time and cost of initiatives
- React to change faster
- Enable cost-effective collaborations with business partners

There are two traditional approaches for process capture -- group sessions and interviews. In the group session approach representatives from each department or organization are selected. They meet as a group to diagram all the steps that take place from the beginning of a process to the end, for example from "Customer places order" to "Order is delivered". In the interview approach selected representatives are interviewed in depth at their work stations, and then all of the interview material is merged together. Since these activities pull people away from their normal job assignments, outside consultants are sometimes employed to facilitate the group meetings or conduct and merge the interviews. See our companion white paper, Capture the Process, available at http://www.alodar.com under Solutions for more details about traditional approaches.

For smaller businesses the traditional ways of process capture can work well, but larger businesses often find that they do not scale. If a workshop approach is used you might find the following problems:

- Meetings are hard to schedule
- Meetings are time consuming and expensive
- Difficulty with documenting on the fly when everyone is contributing at once
- Difficulty in overcoming hidden agendas

If an interview approach is used you might find problems as well:

- Inconsistencies between data provided by interviewees
- Incompleteness of data --- missing steps and branches
- No capture of the big picture

For either approach the impact upon normal operations can be disruptive and the cost prohibitive. The infusion of computer based systems throughout business, however, presents the opportunity for another way to capture processes -- a way that does not suffer from these scaling difficulties. It is called Process Mining.

Process Mining is an automated approach that relies upon examining the transaction logs normally generated by software applications such as Oracle Financials or SAP as part of their usual day to day running. Workgroup meetings or extensive interviews are not needed in order to capture the underlying business processes.

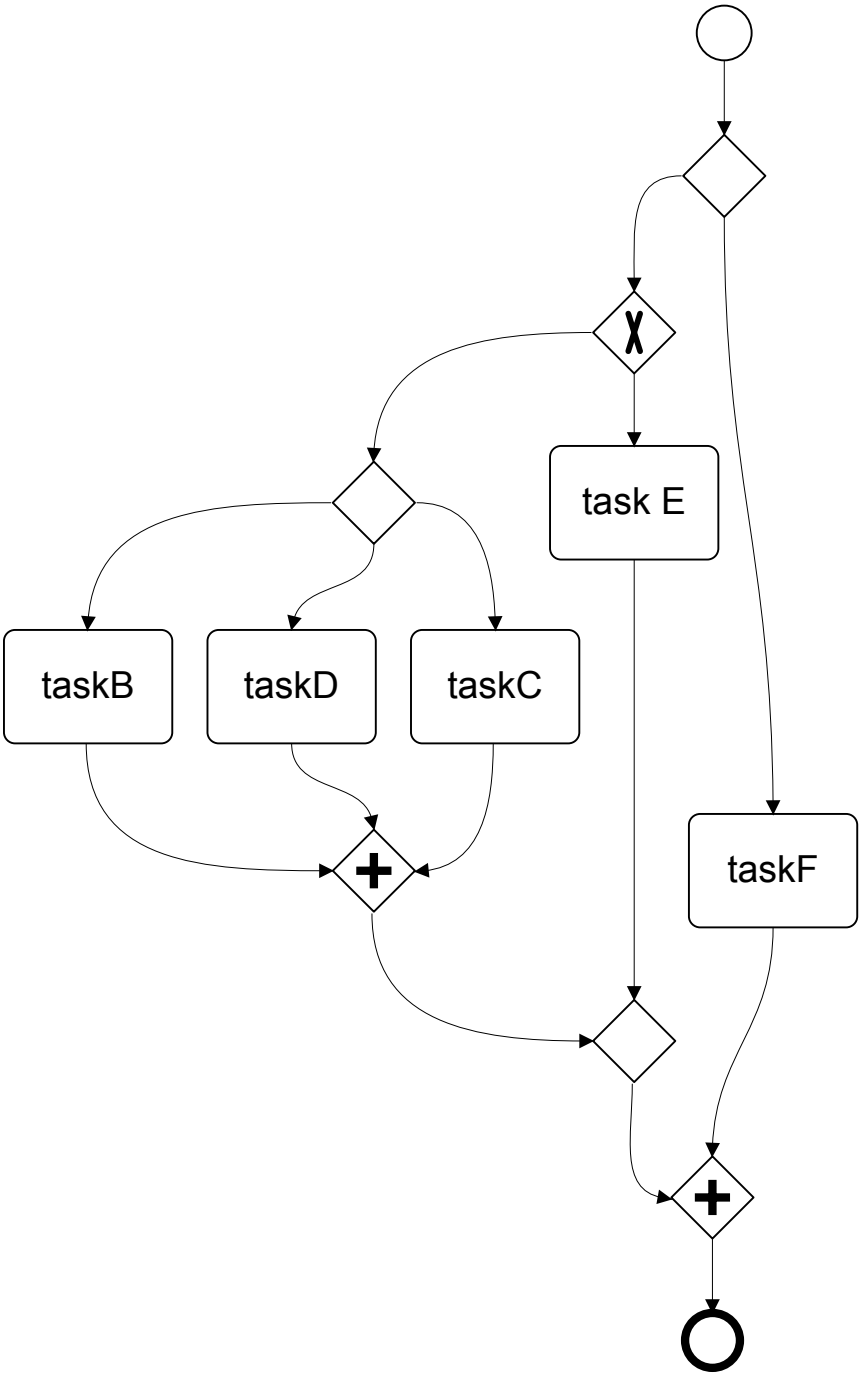
For the purposes of illustrating process mining in this white paper we will use a hypothetical log, a portion of which is shown below.

myCompany	myUser	myDepartment	taskF	job1	START	2006-09-13 10:22:00
myCompany	myUser	myDepartment	taskE	job1	START	2006-09-13 10:22:56
myCompany	myUser	myDepartment	taskF	job1	END	2006-09-13 10:25:00
. . .						
myCompany	myUser	myDepartment	taskF	job2	START	2006-09-13 10:31:00
myCompany	myUser	myDepartment	taskD	job2	START	2006-09-13 10:32:00
myCompany	myUser	myDepartment	taskC	job2	START	2006-09-13 10:42:00
myCompany	myUser	myDepartment	taskB	job2	START	2006=09-13 10:57:00
. . .						
myCompany	myUser	myDepartment	taskC	job6	END	2006-09-13 11:23:00

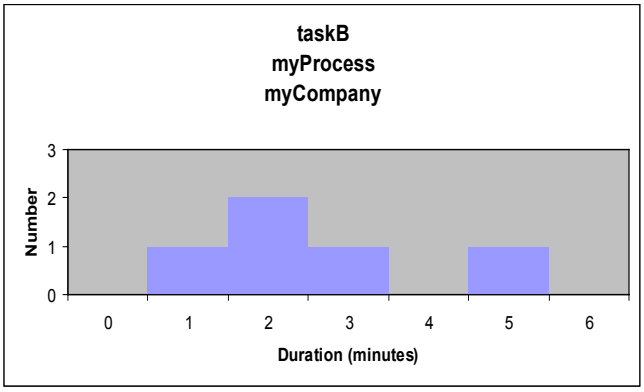
The names for the company, user, department, task, and job are not terribly descriptive but they are the kinds of things that would naturally be logged by a business application. What is important is that sufficient data is collected so that all of the alternative paths through the process are recorded at least once. Each of these alternate paths is keyed by the job entry. For this example, for job1 taskF and taskE are the only tasks that are performed. For job2, taskF is also performed, but not taskE. Tasks B, C, and D are instead.

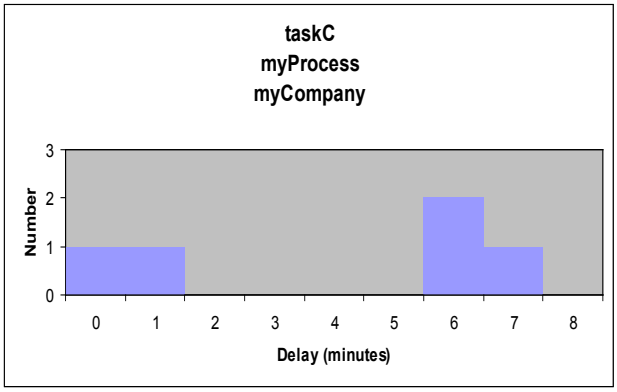
These data can then be input to a "mining" algorithm, such as that developed by the Dutch researcher, W. P. M. van der Aalst, to try to deduce the underlying process. The basic idea of these algorithms is to use simple rules to discover task relationships. For example, if one task starts before another one finishes one can conclude that they can operate in parallel. If two tasks never appear together in any job entry, then they are mutually exclusive. If one task immediately follows another then the first is probably a prerequisite for the second, and so on..

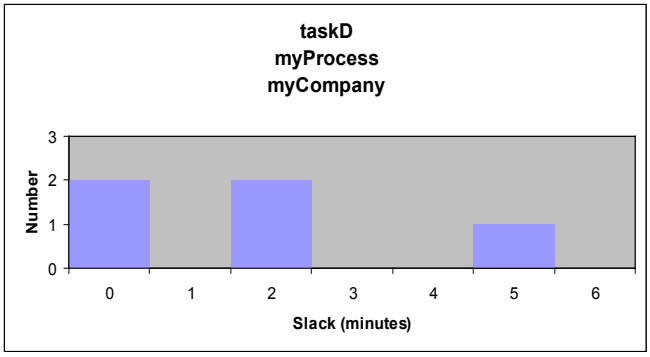
Applying Alodar System's mining algorithm to the data above results in the process flow shown on the next page. With one click of the mouse the information that has been obtained automatically is transformed into a meaningful capture of the underlying business process and presented in graphical form -- in this case using Business Process Modeling Notation (BPMN), an international standard symbology.

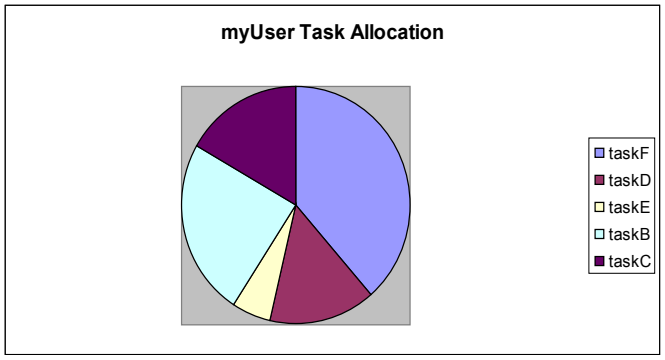

task E
taskB
taskD
taskC
taskF

In addition to providing a means to automatically deduce business process flows, the transaction entries provide other useful information as well. From the time stamps on the individual transaction entries an analyst can compute how long each task takes to execute. From the full set of transction entries minimum, maximum,, and mean execution times can be calculated along with other statistics such as the variation about the mean. Similarly , the percentage of time a user spends on each of several tasks can be computed. The charts below show, for example, the durations of task B, the delays in commencing task C (how much sooner that the task could have been started, the slacks for task D (how much sooner the task finishes compared to other tasks running in parallel), and the percentage of time devoted to each task by myUser.









With charts such as these, the analyst has a head start on spotting inefficiencies and bottlenecks. With minimal intrusion and at a fraction of the cost, business processes can be discovered and quantified automatically. Process Mining is a welcome addition to the analyst's tool kit.