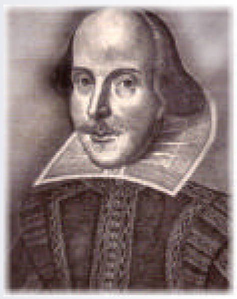
IMSI news & views

PROJECT PLANNERS & MANAGERS

Selected Articles Edition 3

Good Question!



A project was created to complete sixty (60) drawings for five (5) man-hours each and in a total of ten (10) days.

Bill took over the project at the beginning of Day 6 and met with the team. They had been working on one drawing at a time and had just finished twenty (20) drawings.

Following his meeting with the team, Bill bumped into his new manager who revealed that, in fact, the team had been taking six (6) man-hours each.

The manager asked two questions:
1. "If I don't give you any more people, when will you finish?"
2. "How many more people will you need to finish on time?"

Bill thought to himself, "Good questions!" How should he respond?

Answers below:

1. "If I don't give you any more people, when will you finish?" A third of the drawings were finished in one (1) week. Without increasing the staff, Bill will finish in an additional two (2) weeks, or by the end of Day 15.
2. "How many more people will you need to finish on time?" With forty (40) drawings left at six (6) man-hours/drawing, there are 240 man-hours of work remaining. To complete this work by the end of Day 10, it would take six (6) people. To complete twenty (20) drawings at six (6) man-hours/drawing during the first week, it required three (3) people. Therefore, Bill needs an additional three (3) people.

MSProject/Access Integration

by Steve Zaszczurynski, IMSI

During the last three years IMSI has developed various applications that integrated Microsoft Project and Access functionality. Our applications have improved with experience and, especially, the recent releases of Access 97 and Project 98.

A relatively seamless interface between these packages has been enabled by two fundamental enhancements:

- A common programming language (VBA – Visual Basic for Applications)
- Project 98's ability to save to and read from Access databases.

IMSI has used these enhancements on a recent Ford application.

What's it good for?

The strategy allows each package to do what it does best: Project (schedule calculations, schedule graphics) and Access (custom data maintenance and reporting). It avoids the need for cumbersome im/exporting or copy/pastes and provides:

- A single Access file for all project data, simplifying file management/backup processes and providing a single portal to all data for maintenance and reporting.
- The ability to launch Project via pick lists of projects.
- A customized summary reporting capability in Access for all projects.
- The ability to link non-schedule data in Access (e.g. PMbase issues, deliverables, part/tool lists) to schedule data (tasks) in Project.
- A multi-user capability allowing people to run reports while others edit the same project.
- An easier path for upsizing Access databases to more powerful data engines (e.g. Oracle, SQL Server).

Where does it fit?

This integration structure fits well when you:

- Have multiple similar projects and wish to periodically add new ones via standard templates.
- Wish to maintain non-schedule data outside of Project.
- Have similar project data structures and wish to do multi-project summarization.
- Wish to customize schedule and non-schedule data structures and reports.

What are some risks?

- Users can accidentally wipe out the entire database when saving new projects. (Using ODBC resolved this problem.) continued on next page

- Performance degrades with larger projects greater than 50-100 tasks.
- Performance degrades when using custom Project data fields (e.g. Dates 1-20, Text 1-20). (Better to use Access to maintain additional data elements.)

Die Cost

The cost of dies for body panels is a major element of the investment cost of developing a new model. Our field work corroborates other research that suggest that die cost accounts for half the capital investment for a new model that uses existing power trains and is produced in an existing plant.

The cost of body dies depends on the average cost of a die and the number of dies required to produce the body. Average cost and total number of dies is determined not only by die size and complexity, number of backup dies, and pattern of body-panel partition, but also by manufacturing capability as it affects two critical determinants of die cost: number of "shots" per panel and cost of engineering changes.

Shots per panel. A sheet of steel is transformed into a body panel through a series of stamping operations, each of which uses a different die (e.g., trim die, draw die, flange-up die, and pierce die) to work the metal in a particular way. The number of dies required for a given panel metal is determined by the number of shots required to obtain the desired shape and properties (e.g., strength). Through continuous improvement of stamping practices – including operating practices, modifications to equipment, changes in the surface quality of steel, and attention to lubricants – better Japanese shops are able to use large presses to stamp more complex dies and still achieve a high level of machine uptime and product quality. The result is that a typical Japanese body stamping plant needs only five shots (five dies and five tandem press machines) to make a complicated body panel (such as a quarter panel) that would require seven shots in a typical U.S. or European operation. A higher level of manufacturing capability – in this case process control in commercial production – can yield a significant advantage in development productivity.

Cost of an engineering change. If there were no design changes, the cost of a die set would be determined by the number of dies and the labor, materials, and capital involved in manufacturing them once. But despite the best efforts of body designers, prototypes almost invariably turn up problems with fit, appearance, or structural integrity that necessitate changing a die's design – sometimes several times.

In the United States, engineering changes account for 30 – 50 percent of the cost of a die; in Japan, such changes account for at most 20 percent. This difference is attributable to both the number of engineering changes and the cost of making changes, both of which are lower in Japan.

The Japanese cost advantage comes not from lower wages or lower material prices, but from fundamental differences in the attitudes of designers and tool and die makers toward changes and the way changes are implemented. There seems to be in Japanese firms a tacit guideline, subscribed to by designers and tool makers alike, that the cost of engineering changes should be no higher than 10 – 20 percent of the initial cost of the die. In the United States, by contrast, engineering changes have been viewed as profit opportunities by tool makers. Some contracts called for the die maker to charge the auto company a pre determined fee whenever an engineering change occurred, without any guideline for overall change cost. Under other contracts, the price for changes was attended by a much higher markup than that found in the original contract price.

These differences in attitude also show up in approaches to implementation. In Japan, when a die is expected to exceed its cost target, die engineers and tool makers work to find ways to compensate in other areas. For example, the die engineers may allow deviations from the design in non-critical areas that will enable the tool maker to reduce machining and fitting time. Even more fundamentally, the emphasis in the Japanese system on direct working relationships between engineers and long-term involvement helps to reduce mistakes and rework and enables tool and die shops to handle changes with fewer transactions and less overhead. The traditional supplier relationship in the United States – arm's-length, adversarial, short term, and bureaucratic – gives rise to a more complex and expensive process because it offers less incentive to adapt and cooperate.

Once again we see the power of manufacturing capability, in particular the power of manufacturing capability in the Japanese supplier base. In both lead time and die cost, an integrated network of highly capable tool and die manufacturers creates a significant advantage for the Japanese auto makers, which organize and manage their own internal operations to capitalize on the capability of these suppliers. The effect is a die manufacturing system that in the very best firms produces dies at half the cost and in half the time compared to U.S. and European systems.

From Product Development Performance, *Manufacturing Capabililty: A Hidden Source of Advantage* By: Kim B. Clark and Takahiro Fujimoto