

## Gaining Product and Customer Focus through Project Management

Developing a software product is more like:

Category A	Category B
Sending a man to the moon	Manufacturing a disk drive
Building a house	Raising a crop of peaches
Organizing a technical conference	Providing technical support

What do you think?

Category A items have a higher degree of novelty. Category B results are achieved through continuous production of an expected quantity; whereas, Category A results need to be completed at a fixed date. To produce the results in Category A, contributions from people with different, specialized skills are required.

**Software project management is a discipline that harnesses the risks of new technology with the market pressure for on-time delivery. It also creates a synergy among the different experts involved in building a software product.**

Taking a simplified look at project management, the above benefits are achieved through:

- ❖ **Organizing a project team**
- ❖ **Planning**
- ❖ **Executing while comparing the plan with the current status**

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### The Project Organization

The Harvard Business Review article ("*Make Projects the School for Leaders*," September-October 1994), reporting on the HP DeskJet project, explains that early collaboration of all stakeholders and continuous communication amongst them provides better customer focus, increases productivity and improves the quality of the product under development.

Establishing a cross-functional team of experts from different disciplines, such as marketing, engineering, quality assurance, technical documentation, etc., enables synergy. Such a cross-functional team is a temporary organization of experts assembled for the sole purpose of a particular project; the project manager is responsible for directing the effort of the team and is held accountable for the results produced. The project team has joint ownership of the product. The team members are dedicated to the singular goal of producing a particular software product.

In contrast, a functional organization consists of departments for each discipline. Each department has the responsibility of achieving mastery in its discipline. For example, the quality assurance department may have the responsibility for developing an automated regression test suite, and the engineering department may be responsible for establishing a code inspection practice. A functional department is responsible for several projects at a time, and a member of the group may work on several projects simultaneously. The functional managers share the accountability for all projects.

Project and functional organizations may co-exist within a company. For example, a company may establish a cross-functional team for developing a new software product, but otherwise rely on a functional organization for developing incremental product releases.

Both types of organizations have strengths and weaknesses. A project organization with a cross-functional team optimizes coordination and communication. Functional organizations are better suited for long-term investments in practices and infrastructure.

## The Plan

Meeting on-time delivery is a principal mandate for software organizations. For product development companies, on-time delivery results in early and increased revenue. For information technology projects, it means cost savings because of improved operations. Project planning and scheduling are the project management techniques that assist in achieving this goal. They require the preparation of a road map and result in the setting of target dates by when each work product, such as the requirements document, a particular software module, or on-line help, will be completed. Without a project schedule, the commitment to a particular target date is a gamble at best. Without a roadmap, project team members don't know what they need to do and whether they have reached the goal or not.

Project planning is not a silver bullet, but requires an investment in developing planning and estimation skills throughout the company; it also requires commitment to a process. Planning is important even in times of rapid change. Project planning does not prevent adaptability to change. How adaptable a software project is depends on the reusability (quality, documentation, accessibility) of the engineering artifacts that are produced.

***"It's the planning, not only the plan."*** The planning process brings information to light, acts as a catalyst for decisions, and draws input from all stakeholders with the result of a defined and understood scope and questions regarding feasibility, completion date, and budget answered.

## The Execution

The name of the game for software project execution is to receive indicators as soon as possible that tell you whether there is a discrepancy between the work plan, including project assumptions and the current status. A significant factor influencing the current status is the technology risk buried in the "unknowns." Lack of knowledge about a particular technology, such as distributed computing in a heterogeneous computing environment, or the novelty of the technology, such as server-side Java, introduces many unknowns. Unfortunately, discovering the status of the technical risk requires the knowledge of technical details and complexities. The common practice is to gather indicators for the technology risk through either direct involvement in the development of the software system or frequent communication

with every developer.

More formal methods for gathering and analyzing metrics, such as earned value, defect count, requirements volatility, etc., are being developed. These metrics reports need to be investigated through focused questioning, as answers to the questions will lead to understanding the cause and being able to take corrective action.

It is not natural to think of people and resources in relationship with metrics. Just as it is important to collect risk and schedule related indicators, it is important to monitor whether team members are satisfied with their work and whether the workload is appropriate for their skills and experience. By walking around, the project manager needs to assess whether communication and coordination is adequate among team members.

Any of the factors mentioned above may have a negative impact on the schedule by delaying the completion of the project. Monitoring schedule adherence is done by comparing discrepancies between scheduled work and actual work completed.

## Project/Software Development Life Cycle Phases and Automated Tools

The project management activities discussed above occur in particular phases of the software development life cycle. The software project life cycle generally is divided into four phases:

- ✧ **Inception phase or feasibility/concept phase**
- ✧ **Elaboration phase or planning/design phase**
- ✧ **Implementation phase or production phase**
- ✧ **Termination or closeout phase**

The project organization gets established during the inception phase. The plan needs to be completed in the elaboration phase, and the management focus for the implementation phase is on project execution.

Automated project management tools exist to support management activities in the different life cycle phases. The tools described below can help managers with decision making related to **product strategy, project planning and monitoring.**

P2E manages projects and we provide training.  
Whatever you need! Learn more about P2E.  
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or E-mail: [UllaMerz@aol.com](mailto:UllaMerz@aol.com).

## Omni-VistaSP

Omni-VistaSP assists in gathering and analyzing the parameters that influence the product strategy decisions during the inception phase. During this phase, development costs, schedules and technical risks need to be evaluated. At the same time, marketing data, such as the desired product release date, product price, market potential, etc., need to be collected. Information on revenues, profit and the return on investment need to be taken into account when deciding on a product strategy.

Omni-VistaSP captures the parameters and their relationships that influence the product strategy. It provides “what-if” analysis through charts and graphs to allow for an informed decision regarding the project scope and requirements. In turn, the product features determine the customer’s satisfaction, which translates in a return on the investment. For further information on how to decide on the “correct” software product, see *“Software Product Planning”* by Alan Davis, Richard Fairley and Ed Yourdon, available at [www.omni-vista.com](http://www.omni-vista.com).

## Microsoft Project

Most organizations use an automated scheduling tool for preparing the project schedule. Such a tool is indispensable for projects that exceed three months and three to five resources. The tool captures all the tasks and calculates their start and end dates. It also calculates the project duration and provides the necessary information for allocating resources according to their availability. Microsoft Project is an automated scheduling tool that is commonly used in software organizations. For more information on Microsoft Project, see [www.microsoft.com/project](http://www.microsoft.com/project).

## Project Control Panel

The Project Control Panel is a visual dashboard that displays project metrics for interpreting the health of the project. These metrics are based on recommendations published in *“The Program Manager’s Guide to Software Acquisition Best Practices”* published by the Software Program Managers Network. The metrics fall into five categories and two subcategories: Progress, Productivity, Completion, Change, Staff, Risk and Quality. The Project Control Panel is an example of formalizing indicators and providing automated support for their monitoring. See [www.spmn.com](http://www.spmn.com) for further information and a free copy of the Project Control Panel.



## Project Management a Good Fit for Software Product Development

Project management is the management practice that is ideally suited for developing software products, especially for new product development. Its techniques are tailored to the uniqueness of new technology, the stringent requirement for on-time delivery, and the complexity of orchestrating a team of experts from different disciplines.

**Project management is based on the principles of the dedicated, temporary organization of a project team, the practice of planning, and the informed decision-making based on historical data and metrics collected during the different phases of the project. Its focus is on a singular delivery point, which consists of a product that meets the customer’s needs at a fixed completion time.**

## What’s New in Microsoft Project2000

Microsoft Project Central, with its Web-based client interface, is the major new feature in Project2000. In addition, many of the existing features have been enhanced providing improved functions for analyzing the project data. “Grouping” and “Custom Field Enhancement” are two of these improvements.

## Grouping

Grouping allows you to view tasks or resources in groups that you define. For example, you may want to see which functionality/feature is delivered for a particular build. If your company integrates newly developed source code once a week into the existing code base, you can define a group in MS Project2000 and call it “Actual Build.”

In cases where you are grouping on fields such as the finish date of source code included in a build, it may not make sense to see a group for each unique finish date. Instead, you want to show groups that span an interval.

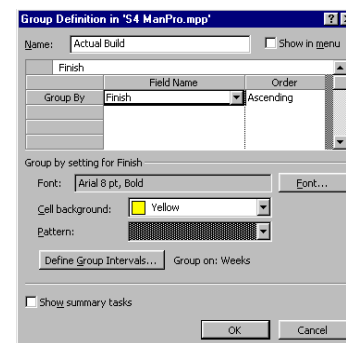


Figure 1: Group Definition Dialog

## Custom Field Enhancements

Although Project users have had the ability to store custom data within a project file, up until now they have not had the ability to manipulate that data. MS Project2000 supports pick-lists for easier and more accurate data entry, user-defined formulas for doing calculations on custom data, and graphical indicators to represent data in a custom field. To work with custom fields, point to Customize on the Tools menu and click Fields. Doing so provides the following dialog:

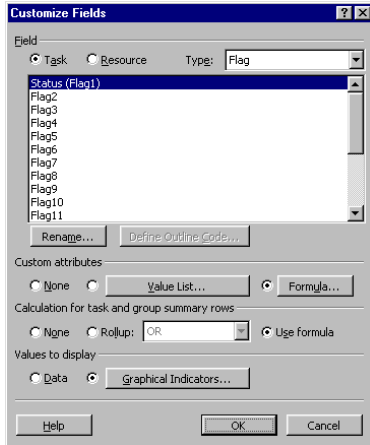


Figure 2: Customize Fields Dialog

If you want a status indicator that tells you whether the completion of a task is on or behind schedule, you have to customize a flag field with a formula instead of a value list.

Finally, instead of displaying the value for the flag, you can define a graphical indicator. For example, a red light highlights late tasks, and a green light shows tasks on schedule. When you combine grouping by build date with an indicator showing the status of each task, you get a quick overview of what is delivered on time or behind schedule.



Figure 3: Gantt chart grouped by build

## P2E Calendar of Activities

- ❖ **Wednesday, April 12, 2000**—"Gaining Product and Customer Focus through Project Management," Ulla Merz, Boulder Software Club. For time and place, visit [www.dimensional.com/~sms/bsc](http://www.dimensional.com/~sms/bsc).
- ❖ **Tuesday, April 25, 2000**—"Real-Time Web Data Delivery Using XML ", Henry Bequet, Boulder Chapter of the ACM. Location: ECCR 151, Engineering Building CU campus. Time: 7:30 p.m. For more information, contact Ulla Merz at [UllaMerz@aol.com](mailto:UllaMerz@aol.com).
- ❖ **Saturday, May 13, 2000**—"Technical Overview of XML (eXtensible Markup Language)," Tom Cargill, Professional Development Seminar, Boulder Chapter of the ACM. Cost: \$90. For more information, visit [www.cleansoft.net/acm/acm-pds.html](http://www.cleansoft.net/acm/acm-pds.html) or contact Ulla Merz at [UllaMerz@aol.com](mailto:UllaMerz@aol.com).

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