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Effective Project Management for Software Development

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Introduction

As businesses are becoming more dependent on information technology for their operations, IS departments are faced with increasing pressure for delivering quality applications software on time and within budget. This means that in addition to their technical skills, they must develop the necessary management skills for leading and controlling software development projects.

The development of information systems, and software in particular, can benefit enormously from sound project management. Information systems are generally complex and their development takes place in a dynamic environment where business conditions and technologies change rapidly. In addition, users are often unsure of their needs and often changing requirements midway through the project. As a result, the whole software industry is plagued by cost overruns, late deliveries, poor reliability, and user dissatisfaction (Abel-Hamid and Madnick, 1991).

The consequence of these problems are enormous. Late deliveries and operating problems of systems critical to firm's business strategy means lost revenues, lost market share, and even business failures. The total loss from these problems is estimated to cost U.S. businesses and government agencies $145 billion annually (Field, 1997).

Although some projects fail for technical reasons, most project failures are caused by poor management. While the potential for problems due to the inherent nature of software cannot be eliminated, most management related problems can be avoided by adhering to sound project management principles.

Issues and Challenges

Practically all software projects run into trouble because of a failure in one or more of the following areas of project management:

- Project planning
- Project tracking and control
- Change control
- Project leadership
- Risk management
- Team building and development
- Communications
- Best practices

The purpose of this tutorial is to familiarize the participants with the fundamental concepts of modern project management and show how these concepts can be applied to a variety of software development projects. The tutorial presents a broad overview of current software practices and techniques from the manager's rather than from the developer's perspective.

In addition, the tutorial shows how to introduce IS project management courses into business school curricula and provides guidance for developing an IS project management course.

Tutorial Topics

1. Introduction and overview
   - Key dimensions of project management
   - Project life cycle
   - Software Capability Maturity Model
2. Project Organization
   - Project environment
   - Project manager and the team
   - Project team structures
3. Project planning
   - Scheduling
   - Cost estimating methods and budgeting
   - Risk assessment
4. Project control
   - Cost and schedule control
   - Performance and quality control
   - Change control
5. Project management software

6. Project leadership
   - Communications
   - Team building and development
7. Critical success factors in IS project management
8. Topics and reference material for a typical IS project management course

References

Abdel-Hamid, T. and Madnick, S.E., *Software Project Dynamics: An Integrated Approach*, Prentice-Hall, Englewood Cliffs, NJ, 1991.

Field, T., When Bad Things Happen to Good Projects, *CIO*, October 15, 1997, pp. 55-62.