Research Tracking System (Task Order #11)
Research Project Maintenance and Monitoring System (Task Order #16)

Final Report

Principal Investigator:
H. Joseph Wen
School of Management
New Jersey Institute of Technology
Newark, NJ 07102-1982, USA

Co-Principal Investigators:
Chi Tang
Institute of Transportation
New Jersey Institute of Technology
Newark, NJ 07102-1982, USA

Hindy Schachter
School of Management
New Jersey Institute of Technology
Newark, NJ 07102-1982, USA

Direct correspondence to: H. Joseph Wen
School of Management
New Jersey Institute of Technology
Newark, NJ 07102-1982, USA
Phone: (973)596-8569
Fax: (973)596-3074
E-Mail: wen@admin.njit.edu
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PROJECT NAME
   Research Tracking System (Task Order #11)
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PRINCIPAL INVESTIGATOR
   H. Joseph Wen, Ph.D.

INSTITUION
   New Jersey Institute of Technology

TELEPHONE
   (973) 596-8569

FAX
   (973) 596-3074

EMAIL
   Wen@admin.njit.edu

PROJECT ABSTRACT
The New Jersey Department of Transportation (NJDOT) has taken a leadership rule in
developing new approaches to managing their research projects and programs. Structural
reorganization of NJDOT has resulted in a focus on project management, with a shift to
the use of project managers as the new paradigm. Recognizing the need to provide this
new breed of project managers with the tools necessary to effectively manage their
projects, and concomitant with the structural changes, PC workstation applications have
been developed to build on and supplement the cost data available through the main
frame workhorse Financial Management Information System (FMIS). In this study, we
develop a project management and progress tracking system (ProMPTS) that integrates
schedule and progress information, financial and budget allocations, and cost data
downloaded from FMIS. The system permits response inquiries, descriptions, and
provides summary status information for current research projects and programs. It
reduces management costs, improve management controls and streamline processing
procedures.
PROJECT OBJECTIVE

This project is to assist the NJDOT in achieving their objectives of an efficient, effective, and user friendly project management system. The result will be a Project Management and Progress Tracking System (ProMPTS) which will:

- provide an MS Windows environment for data entry, analysis and reporting including the use of graphical displays where appropriate.
- address the needs of the users, at all levels of management.
- provide on-line monitoring of the current projects and the problem statement submissions.
- expand the basic financial control features available to include more flexibility in budget allocations, earned value computations and alternatives for estimating cost at completion and percent complete.
- be based on dollars or workhours or both.
- provide enhanced reporting flexibility.
- maintain and update the description and status of problem-statement submissions.

TASK DESCRIPTIONS

To achieve above objectives the project team will:

- analyze NJDOT’s ongoing maintenance and monitoring systems for the current research projects and the problem statement submissions.
- conduct interviews with research division personnel to learn about current work-flow procedures.
- develop a preliminary paper on organizational needs and get feedback on it from research division personnel.
- design computer-based maintenance and monitoring systems after determining where the systems should be different for the current research projects and problem statement submissions.
- present the prototype system to the research bureau at NJDOT and get additional feedback from bureau administrators.
- finalize the maintenance and monitoring systems.
- prepare a schedule for installation and implementation of the systems.
- train engineers and project managers in the use of the systems.
- prepare a final report and a user manual.

INITIATION DATE

Research Tracking System (Task Order #11): January 1, 1996
Research Project Maintenance and Monitoring System (Task Order #16): January 1, 1997
EXPECTED COMPLETION DATE
Research Tracking System (Task Order #11): December 31, 1996
Research Project Maintenance and Monitoring System (Task Order #16): June 30, 2000

BUDGET
Research Tracking System (Task Order #11): $39,831
Research Project Maintenance and Monitoring System (Task Order #16): $73,540

STUDENT INVOLVEMENT
One MIS student and two CIS students were hired

MILESTONES AND PRODUCTS
The project activities, milestones and completed products are listed as follows:

- In August 1996, a copy of Research Tracking System (RTS) written in MS Fox Pro was distributed to the research division staffs for Beta testing and feedback was received in September 1996.
- Due to the major change of NJDOT’s timesheet process in September 1996, RTS would receive input of project cost information via files downloaded on a regular basis from the FMIS mainframe system. RTS would need a major modification.
- In October 1996 meeting, the division staffs gave approval to develop a new version of the system in MS Access version 2 because they felt that an Access based program would be more compatible with the NJDOT network. The previous version was written in Visual FoxPro. The system was re-named as Project Maintenance and Monitoring System (PMMS).
- During November 1996, the new import screen was developed in MS Access and the timesheet data downloaded from mainframe was tested and was successfully imported to PMMS.
- The transfer of all screens, reports, monitoring and tracking functions to MS Access was finished in July 1997.
- The length of the PMMS contract was extending to allow for a six-month hands-on evaluation period by the Research staff. After PMMS was installed on the NJDOT network, research staff used the program for a trial period of six months. Programming changes suggested by the staff during this six months of hands-on experience were made as required through December 31, 1997.
- In February 1998, the original database structure was revised which necessitated additional programming. For completeness, 11 new data fields were added to the database.
To keep up with the change of the windows operating system at NJDOT, changes were made to the PMMS so that it run under the Windows NT operating system instead of the Windows 3.1 operating system.

In May 1998, PMMS was rewritten in Microsoft Access97 to take advantage of this new software’s improved performance. Previously, it was written in Microsoft Access 2.0.

More extensive revisions and new features to the PMMS were added by the request of users to improve its user friendliness and functionality.

In early 1999, changes in NJDOT’s internal processing of contract financial information required that a completely new method of tracking contract costs be developed. This new method provides a much more detailed level of consultant contract financial information and is more automated and accurate; however, FMIS data input to the PMMS more than doubled with the addition of three new downloaded files. Considerable additional programming was required to develop this new detailed presentation of contract budget and expenditure data, and to read these three large input data files. The new method automates the contract budget and expenditure process for research projects, since FMIS financial data downloads provide the cost information instead of the project managers.

Additional program features were requested by the NJDOT Project Manager to improve the user friendliness and functionality of the PMMS and to increase the amount of project information available. The system was renamed as Project Management and Progress Tracking System (ProMPTS) in June 1999.

YEAR 2000 fixes being programmed by OTIS significantly delayed the availability of the FMIS consultant contract download files. Final formats of these input files only became available on September 1, 1998. Also, the contract file downloads were not available until May 1999.

In March 2000, ProMPTS security program was completed. It provides security for the application and database so that they can only be modified by authorized personnel.

In May 2000, the installation program was completed and tested. The installation program will make the final version of ProMPTS operate in "runtime" mode at NJDOT.

In June 2000, the old user manual was revised and extended to reflect the changes of the system.

POTENTIAL BENEFITS OF PROJECT

It is clear that ProMPTS will result in the following substantial benefits:

- timely reporting and analysis of period information so that trends can be discerned and corrective action taken, if necessary.
- a simpler to use, more friendly system.
• greater flexibility in financial status reporting.
• a system which can be easily modified by NJDOT personnel to meet their needs as project management evolves within the Department.
• a basis for training new project managers in the effective use of project management tools.

In summary, ProMPTS permits response to inquiries regarding description and current status of problem-statement submissions and current research projects. The system will improve the productivity of project engineers and substantially help management control the program, by providing greater project accuracy. The system, therefore, should reduce overall costs, improve management controls, and streamline processing procedures.

**TRB KEY WORDS**

Project Management, Information Systems

**ATTACHMENTS**

• The final report
• The user manual
• ProMPTS program and installation CD