

broken up into four modules: Scheduling, Budgeting / Cost Control / Earned Value, Contract Management, and Construction Cost Estimating. The requirements gathering process will involve three rounds of meetings:

- **Round One** - The first round of meetings is typically with a large group of users. SPMG is providing an overview of the Project Management System that WSDOT is implementing, discussing an initial set of configuration parameters and reports, and determining the appropriate individuals from each group to meet with in the next round of meetings.
- **Round Two** – The second round of meetings will be with individuals in smaller groups to discuss issues that will need to be addressed by the configuration and to collect a final set of detailed configuration and reporting requirements.
- **Round Three** – After completion of the detailed requirements gathering process, we will be moving into the analysis and design phase of the project. When consolidating the configuration and reporting requirements from all groups we will document the resolutions. The final consolidated requirements will be used to configure the system and design the reports to meet the requirements. The third round of meetings will take place after the design phase has started and allows us to demonstrate screenshots or working prototypes of how the system will work. SPMG will also present the results of the consolidation of configuration and reporting requirements and explain how conflicting issues were resolved. ♦

## Next Steps

SPMG has completed all of the Round One detailed requirements gathering meetings with Headquarters and the Regions. We have gathered the appropriate list of contacts for the Round Two meetings and began conducting them in late January 2007. SPMG is actively working to schedule the remaining Round Two meetings, focused on one-on-one and small groups to be completed by March 2007. Following completion of these tasks, the next step will be to develop a configuration plan, or system design, that will include screen and report mock-

ups and prototypes of the proposed tools. These examples will show the proposed configuration and how the tools will be used to meet WSDOT's needs, based upon the processes and requirements previously defined. The proposed design will be presented to the Regions during the Design phase of the project this summer. WSDOT staff will have the opportunity to provide feedback on the suggested configuration at that time.

## Significant Findings

As a result of the Product Selection, Detailed Requirements Gathering and Process Mapping tasks, a few items of significance have been identified that are refining the development of the PMRS. The WBS has been defined down to eight levels as shown below. A description of each of these levels as well as a white paper on the Control Account concept is available on the SPMG website at <http://wsdot.wa.gov/projects/SPMG>.

1. WSDOT Statewide
2. Mode
3. Region
4. Corridor (or group of projects)
5. Project
6. Phase
7. Contract
8. Control Account

The process for managing using Earned Value was defined and agreed to. It is planned that earned value, forecasted costs and schedules will be required for all Capital Projects. The level of detail to which this is required will vary depending upon the size and type of project. Additional information on the process and their associated maps are available on the SPMG website. ♦

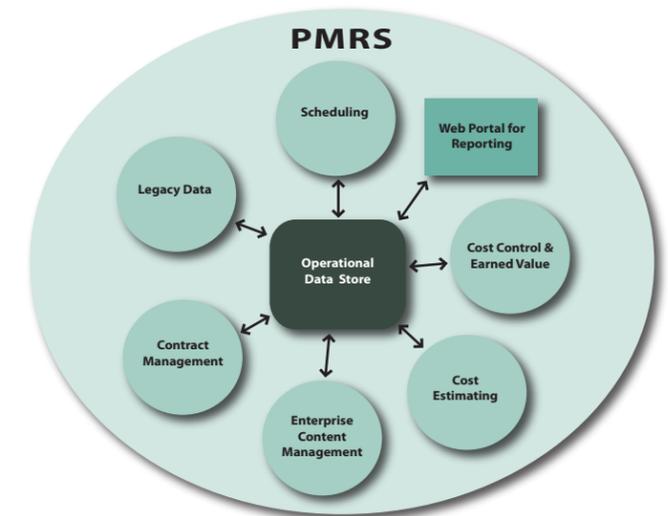
## Conclusion

The PMRS is in the final stages of the planning phase of the development project. Issues encountered during the planning phase are being addressed and the design will be adjusted accordingly. The implementation of PMRS will enable WSDOT to efficiently and cost-effectively manage the expanded capital construction program through application of best management practices using modern and proven project control and reporting processes and tools. ♦



## Project Summary

WSDOT's Project Management and Reporting (PMRS) is being developed to support the largest capital construction program increase in WSDOT's history. Its objectives are to provide WSDOT with the tools, business processes and training to deliver construction projects on-time, on-budget, within scope and to establish accountability. SPMG has assisted WSDOT in the preparation of a strategic plan for the WSDOT's \$16 billion Capital Construction Program. This plan outlines recommended Best Management Practices (BMP's), project management training and development of a system of integrated project management tools. These tools will leverage management information to provide informed decision making and efficient reporting. The tools as outlined to the right, comprise the Project Management and Reporting System. ♦



## Scheduling

The Scheduling tool utilizes the latest in construction scheduling software capabilities and methods to efficiently capture the planned, actual and forecasted activities needed to complete the project, from beginning to end. The tool will also be capable of capturing and forecasting resource usage and reporting the status of overall work completed. The schedule will be used by all parties related to project management, including each of the specialty WSDOT groups. Project members will be responsible for updating their portions of the schedule and project management will be responsible for validating the overall project schedule.

## Cost Control & Earned Value

The Cost Control/Earned Value tool will report the budget and budget changes, actual expenditures and commitments and capture the forecasted cost to complete. This information will be used in conjunction with the scheduling information and physical percent complete to generate the earned value. Earned value is a method for management to use to forecast the cost and schedule outcomes of a project, and thereby make adjustments earlier than would otherwise be possible.

## Contract Management

The Contract Management tool will capture the project management commitments or agreements made with consultants

and contractors, as well as with internal groups to provide services. Agreements with specialty groups, such as Environmental and Bridge Design will be tracked along with formal contracts with General Engineer Consultants and construction contracts with general contractors. This tool will also track changes to agreements or contracts. It will integrate with the Enterprise Content Management tool which is described on the next page.

## Cost Estimating

The Cost Estimating tool will be used to generate project construction estimates. It keeps track of each cost estimate throughout the life of the project including the bid value and the final construction cost. It offers the ability to develop estimates at any stage of design, including the parametric estimates typically associated with preliminary design. In addition, it will offer the ability to analyze any bid item across all projects or a given set of projects to develop cost trends for estimating purposes. It will also be able to develop estimates based on resources, materials and production rates the way a contractor typically prepares a bid.

## Operational Data Store (ODS)

At the heart of the PMRS lies the Operational Data Store (ODS). This is the central database that is used to house and transfer all of the project management related data to each of the PMRS tools. It will be configured as a "Hub and Spoke" system so that there is only one tie to each of the tools, allow-

ing for easy upgrade and replacement of any of the tools. Since all of the PM data will be flowing through the ODS, it is the logical place from which to pull consolidated reporting. A web portal will be used to provide configurable views into the PM data. This will also provide an ad-hoc reporting tool. The ODS results from the Critical Applications Assessment's determination that the primary Legacy systems need to be replaced and integrated. WSDOT is developing an enterprise-wide architecture to address this need and the PMRS is the first step in the process of implementing that architecture.

### Enterprise Content Management (ECM)

Enterprise Content Management (ECM) tools contain the technologies used to capture, manage, store, preserve, and deliver content and documents related to organizational processes. ECM tools and processes provide for the management of an organization's unstructured information, wherever that information exists. The heart of the ECM system consists of the content management module that organizes data and allows for easy retrieval. Records management is used to automatically manage the removal and destruction of records once their retention data has expired. Business Process Management, or Workflow, is used to route documents efficiently through their lifecycle and makes sure critical processes are completed effectively. Electronic Forms are used to automate the capture of data and reduce redundant data entry both in the field and the office. All of these processes and tools are to be integrated into user friendly systems for managing project information.

### Why ECM?

It's not enough to "manage" content. Of course, the ability to access the correct version of a document or record is important, but WSDOT must manage content so that it is used to achieve business goals. Central to this strategy are the tools and technologies of ECM, which manage the complete lifecycle of content, birth to death. ECM offers the ability to use project documentation more efficiently. An example of how ECM can benefit WSDOT would be that of a document from a consultant that needed to be reviewed by multiple people. Without an ECM, it would be received as a hard copy, copied and distributed to the reviewers. They would make their comments manually and return them to the manager. The manager would then manually compile the comments, make a copy to keep for the record, file that in a file cabinet and return the final document to the consultant.

With an ECM, the document is scanned and added to the

ECM. The manager then sends a link of the document to the reviewers, cutting down on network traffic. The reviewers electronically markup the document and return versions to the manager, who is then able to automatically compile it and send it back to the consultant with fewer steps involved. This scenario keeps track of each reviewer's comments separately, unlike the original. It also eliminates the manual consolidation of comments, resulting in only one copy (the original scan) being made instead of multiple copies on two occasions. It tracks the return to the consultant eliminating the need to place it in a file and allowing for easy retrieval by anyone in the organization with the rights to do so. ♦

### PMRS Status

The development of the PMRS is underway as shown in the schedule on the opposite page. The first major task is the procurement of the Commercial Off-The-Shelf (COTS) software packages. These are being acquired as part of the Product Selection RFP's described below. In addition to selecting the tools that will be used as part of the system, the processes that dictate how they will be used are also being developed. There is also an ongoing effort to define the detailed requirements of the system which identify specifics about what the system needs to accomplish. These two efforts are described on the following page.

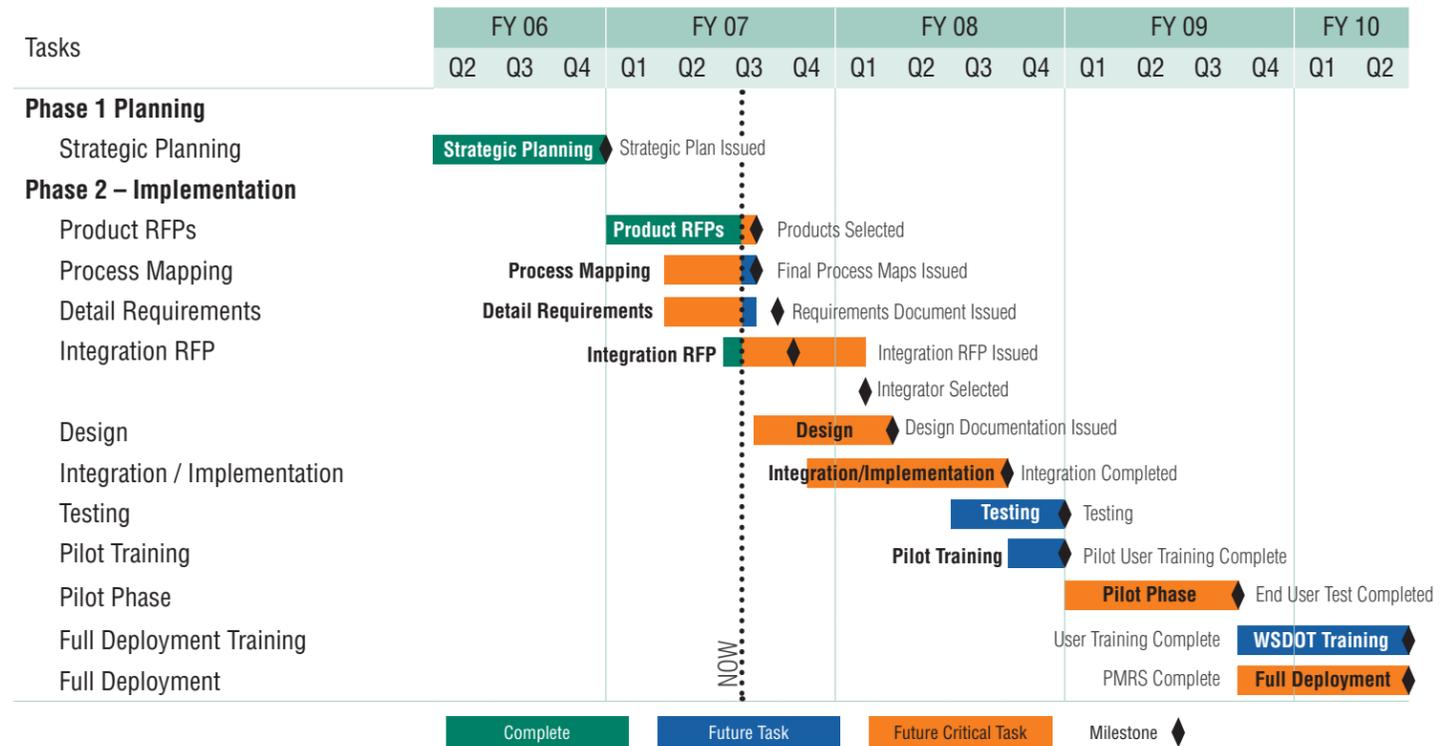
The project is making progress and is scheduled to be ready for pilot in the 2<sup>nd</sup> quarter of 2008 and to complete full deployment by the end of 2009.

### Product Selection Requests for Proposal (RFP's)

Two RFP's have been developed and issued based on the initial product selection requirements gathering conducted in July and August of 2006. The RFP's were developed with the assistance of WSDOT's Information Technology contracting unit using the input from each of the Regions.

The first RFP is for the selection of the Project Management tools of scheduling, cost control/earned value, contract management and cost estimating. This RFP was issued in October 2006 and was well received by the industry, resulting in proposals from many vendors. Those vendors that met the initial WSDOT requirements were invited to provide on-site product demonstrations. The Project Management Tools demonstrations have just been completed. The winning vendor will be announced once the contract is executed, which is expected to be in March, 2007.

### PMRS Development Schedule



The second RFP is for an Enterprise Content Management suite of tools, which consists of content management, records management, business process management (work-flow) and electronic forms. This RFP was also issued in October and well received. The vendor demonstrations have been held and a product selected. Again, the winning vendor will be announced once the contract is executed, which is expected to be in March, 2007.

### Process Mapping

WSDOT is building a set of standardized project management processes from which the PMRS will be configured. The use of consistent and documented processes is essential to the design of the PMRS. The processes include Schedule Development and Maintenance, Cost Control/Earned Value, Contract Development, Change Management, and others. SPMG has refined the agency's approach to the use of the Work Breakdown Structure (WBS) and introduced the concept of Control Accounts for use in the PMRS.

These process maps were developed in October 2006 during a two-day retreat that was held with select members of the project management community from all areas

within WSDOT to develop the flowcharts that outline these processes. The resulting processes have been approved and endorsed by the executives.

Since then, SPMG has conducted a series of meetings with Headquarters and the Regions to present the processes for review and to verify that no fatal flaws exist. These meetings were completed by the end of February 2007. SPMG continues to refine the Master Deliverables List to contain strictly deliverables, establish standard control accounts across modes and regions, and is planning changes to existing work op codes so that they will better map to the control accounts. This will result in the ability to track time by control account and perform earned value calculations.

### Detailed Requirements Gathering

In preparation for designing the integrated Project Management and Reporting System, SPMG is conducting a series of detailed requirements gathering meetings with Headquarters and each of the Regions within WSDOT. The meetings are split up into the two major functional areas of the PMRS: the Project Management system for configuration and reporting, and ECM. Furthermore, the Project Management system is