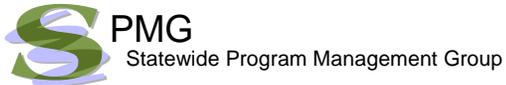


WSDOT Statewide Program Management Strategic Plan Project Control and Reporting Systems Options

Review

May 15, 2006

Prepared by:



Parsons Brinckerhoff Quade & Douglas, Inc.

In Association with:

HBMG Inc.

Integrated Business Solutions, Inc.

Systems Development and Implementation Plan

Systems Memo review –

- Purpose
- Objective
- Vision –
- Options
 - COTS
 - Hybrid w/Integration
 - Hybrid w/Integration and Web Interface
 - Custom Built
- Solutions
 - Software/Hardware
 - Implementation
 - Risk
 - Schedule

Systems Development and Implementation Plan

- **Purpose**

The SPMG report reviews the key elements of the WSDOT PC&R business environment, data structure, and high level functional requirements and makes strategic recommendations for systems solutions and configurations.

- **Objective**

This project lays out the framework to select, install, configure and integrate industry leading project control and reporting applications to support enhanced WSDOT practices, processes and reporting needs.

- Enterprise Wide
- Easy Access
- Consistency

Systems Development and Implementation Plan

• Vision

PC&R systems should provide for portfolio management of projects and programs from a single set of base data which is transparent, rolls up effectively from task level to work package to project to program, can be sliced and diced by geographic and organizational areas and tracked and reported by functional responsibility.

- Eliminate conflicting data;
- Consistency of process and results;
- Efficient in inputs and out-puts;
- Integrity of data;
- Real-time cost accuracy;
- Simplifies processes and preparation of reports;
- Provides analytical methods based on best PM practices to
 - assess risk,
 - forecast cost,
 - forecast time of completion
- Are easy to access and intuitive in use;
- Can be implemented in a relatively short time frame so as to benefit the startup of the major capital construction spending.

} Reliably

*Fundamental change . . .
Running WSDOT like a
business. Providing
those business tools to
manage the projects
efficiently.*

*Near real-time objective
reporting, generated by
the systems used to
manage the work.*

Systems Development and Implementation Plan

Systems Memo review –

Options

Option 1 – Unaltered COTS

This option utilizes COTS applications deployed as purchased, without software integration or extensions.

Option 2A – Hybrid COTS with Data Integration

This option utilizes COTS products that are integrated and extended using Application Programming Interfaces (APIs) and database access tools.

Option 2B – Hybrid COTS with Data Integration and Web Portal

This option utilizes COTS products that are integrated and extended using APIs and database access. The option also provides a solution for reporting project information from multiple systems through a single web-based portal.

Option 3 – Custom Built

Complete custom and fully integrated implementation with consolidated and accessible data.

Comparison of PC&R System Enhancement Options				
Factors	Option 1 COTS	Option 2a Hybrid COTS (Data Integration)	Option 2b Hybrid COTS (Data Integration + Dashboards)	Option 3 Custom Built System
Support Enterprise Architecture	Poor	Very Good	Excellent	Excellent
Prevalence in Market	Excellent	Excellent	Excellent	Poor
Meet Functionality Needs	Poor	Moderate	Excellent	Excellent
System Adaptability - Future Needs	Very Good	Excellent	Excellent	Poor
System Adaptability - Advancements in Market	Excellent	Excellent	Excellent	Poor
Data Integration for Reporting	Poor	Very Good	Excellent	Very Good
Systems Supporting Optimum Processes	Poor	Moderate	Excellent	Moderate
Time to Implement	Excellent	Very Good	Very Good	Poor
Maintenance Costs	Very Good	Very Good	Very Good	Poor
Implementation Cost	Excellent	Very Good	Very Good	Poor
Technical Risk	Low	Moderate	Moderate	High
			Recommended	

Systems Development and Implementation Plan

Options – Additional Considerations

Option 1 –

Unaltered COTS

Option 2A –

Hybrid COTS with Data Integration

Option 2B –

Hybrid COTS with Data Integration and Web Portal

Option 3 –

Custom Built

Factors	Option 1 COTS	Option 2a Hybrid COTS (Data Integration)	Option 2b Hybrid COTS (Data Integration + Dashboards)	Option 3 Custom Built System
Eliminates Conflicting Data Sources	No	Possible with Data Warehouse	Possible with Data Warehouse	Yes
Consistency of Process and Results	Yes	Yes	Yes	Yes
Efficient in Inputs and Outputs	Moderate	Better	Better	Best
Integration of Data	No	Yes	Yes	Yes
Real-Time Cost Accuracy	Fragmented	Able to provide	Able to provide	Yes
Simplifies Workflow and Preparation of Reports	Somewhat	Better	Better	Best
Provides Analytical Methods Based on Best PM Practices to Assess Risk and Forecast Cost and Time of Completion Reliably	Yes	Yes	Yes	Yes
Are easy to access and intuitive in use	No	Somewhat	Somewhat	Best
Can Be implemented in a relatively short time frame so as to benefit the startup of the major capital construction spending	Yes	Yes	Yes	No (Fatal Flaw)
Recommendation	Drop	Second Choice	Select	Drop

Systems Development and Implementation Plan

Platform and Hardware Architecture Under Consideration

Major Solution Elements

Project Management Elements

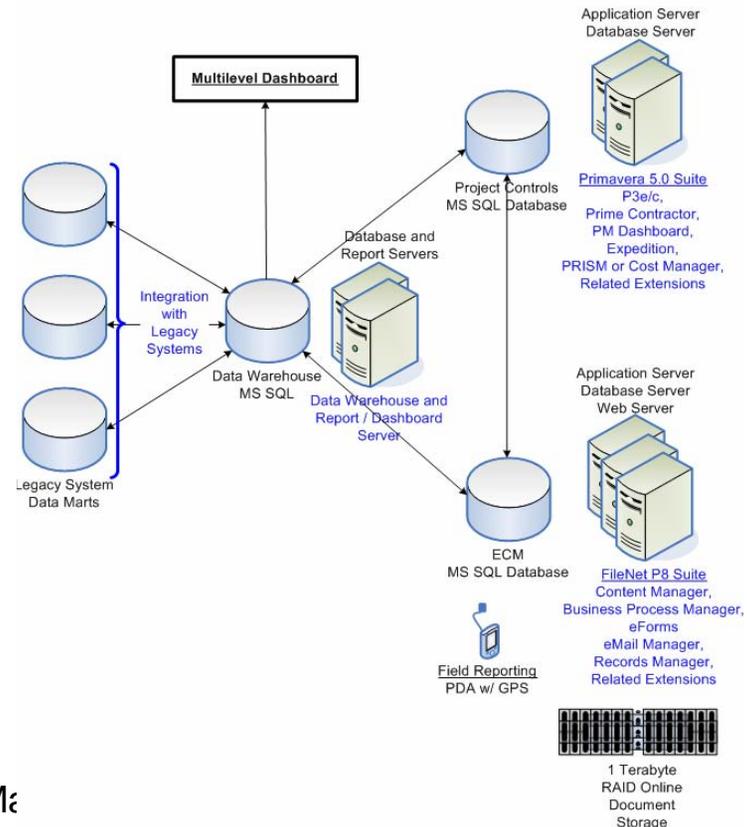
- Scheduler
- Cost To Date Measurement
- Contract Management
- Cost Management
- Cost Control and Earned-Value Analysis
- Construction Cost Estimating

Document Control

- Document (Content) Management
- Business Process Management (Workflow)
- Microsoft Office Integration
- Records Management

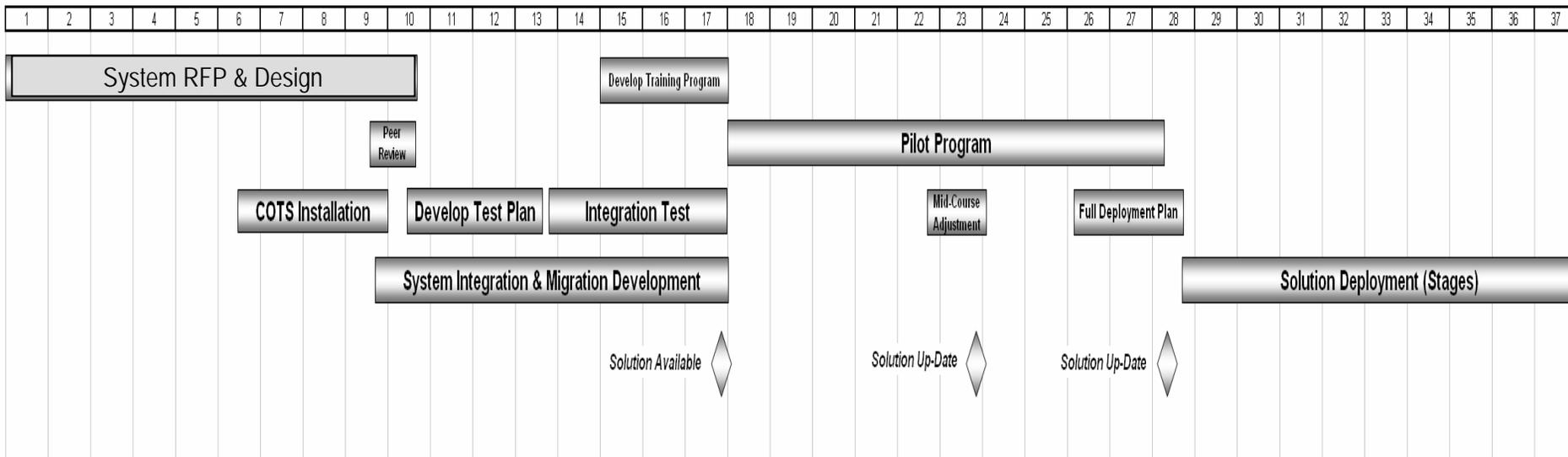
Reporting

- Data Warehouse (Centralized Data Integration)
- Standardized Reports
- Ad Hoc Reporting



Systems Development and Implementation Plan

Project Management, Control & Reporting Systems Development and Deployment



Systems Development and Implementation Plan

Design –

- Detail Systems Requirements
 - COTS Selection & Integration
 - Legacy Systems
 - PDIS
 - CCIS
 - EBASE
 - WOA
 - CPMS
 - New Business Process
 - Migration Plan

Test –

- Integration
- Migration

Train –

- Trainers
- OIT
- Project / Area / Region Users
- HQ Users

Deploy –

- Latest Release
- Pilot Projects
 - Sample of Project Sizes
 - Sample of Project Types
 - All Regions

Adjust –

- Mid-Course (Pilot)
- Final Deployment

Full Deployment –

The Team

Project Control & Reporting

SPMG

- Requirements
- Analysis
- Design
- Implementation
- Integration
- Migration
- Test
- User Training
- Pilot Project
- User Support
- Feedback
- Adjustment
- Deployment

OIT

- Infrastructure
- Capacity Planning
- Procurement
- Systems Support
- Network Support
- Database Support
- Legacy Expertise
- Integration Support
- Deployment Support

-Quality Assurance / Control

Systems Development and Implementation Plan

Risk Assessment

No.	Risk/Threat
1.	Funding from WSDOT not in accordance with development: Funding for the project could be denied based on Budget estimates 1a) Totally unfunded 1b) Reduced funding
2.	Funding from WSDOT not in accordance with development Funding may not be available for FY07
3.	Funding from WSDOT not in accordance with development: Remaining funding, post FY07, may not be available. 3a) Totally unfunded 3b) Reduced funding
4.	Budget from WSDOT not in accordance with development: Funding may not match budget estimates and normal work duties
5.	Hardware procurement problems / timeliness
6.	Software procurement problems / timeliness
7.	Partial or total rejection of recommended best practices: Best Practices may be "cherry-picked" or partially-accepted without regard to functionality and effectiveness.
8.	Resource availability for development in timeframe indicated
9.	Completion within the timeframe identified
10.	Integration with legacy system data 10a) Data needed for some reporting purposes may not currently be automatically populated in existing data marts. 10b) Pushing data to legacy system native data stores may be required for existing processes and/or reports
11.	Selection of representative Pilot Projects
12.	Lack of participation by stakeholders due to "not invented here" syndrome
13.	Resistance by line managers due to "it ain't broke"; Staff reluctance to do things a new way; Belief that projects don't fit into the template(s)
14.	Staff not receiving the same deliverable from the new system as old.
15.	Staff not wanting to be held accountable; Staff increased workload perception
16.	Lack of consistent definitions for processes
17.	Lack of a consistent definition for a project; Lack of consistent terminology
18.	Changing vision of what is needed from DOT
19.	Over reliance on technology to solve non-technical issues
20.	Lack of adherence to protocol or process
	COORDINATION ISSUES
21.	Acceptance by IT groups of "outsider consultant"
22.	Security issues unknown to integration team
23.	Interface issues unknown to integration team

Draft - May 15, 2006

Systems Development and Implementation Plan

Risk Assessment

No.	Risk/Threat	Business Priority				Risk Management Strategy				Status
		Risk Category	Impact	Occurrence Probability	Exposure (Rank)	Mitigation Activities	Contingency			
							Trigger		Activities	
							Condition	Date		
6.	Software procurement problems / timeliness	S	1	1	1	Work with IT Systems manager to obtain a replacement	Software Unavailable	10/06		
7.	Partial or total rejection of recommended best practices: Best Practices may be "cherry-picked" or partially-accepted without regard to functionality and effectiveness.	R/S	2	2	4	Communicate desirability of integrated application functionality	Outside agency dictating Systems definition	07/06		
8.	Resource availability for development in timeframe indicated	R/S	2	1	2	Recognition / awareness of project schedule, and requirements	Falling behind schedule	ongoing		
9.	Completion within the timeframe identified	S	2	2	4	Adequate Funding	Falling behind schedule	ongoing		
10.	Integration with legacy system data 10a) Data needed for some reporting purposes may not currently be automatically populated in existing data marts. 10b) Pushing data to legacy system native data stores may be required for existing processes and/or reports	S	1	3	3	Request assistance from OIT to add the automatic population of the additional data to the existing data mart	Incomplete reporting information available for PC&R integrated solution reports	12./06		Design PC&R integrated solution reports
			2	2	4	Require the continuation of parallel manual entry of required data in legacy system	Incomplete legacy system data for users and reports	10/07		Review legacy system screens and reports to determine that pilot system projects are properly represented.

Systems Development and Implementation Plan

Rationale for Selection:

- Meets Business Needs
- Enterprise Applications
- Proven Product
 - Integration
 - Deployment
 - Core PE Needs (COTS)
 - Other business applications
 - For DOTs
 - Performance
 - Confidence
 - Not Based on Advertising
- Speed of Deployment
- Scalability
- Cost Effective

Vendor/Application Evaluation

Within these criteria several functional requirements have been developed for scoring the different applications or COTS against what is proposed as best practices and the environment that will foster a successful deployment of an integrated system. The following list of items will be used as a guide to determine which COTS ultimately meet the expectation of WSDOT in the new systems:

Global Criteria

- Web-enabled interface
- Microsoft SQL Server database
- Built-in reporting capabilities
- User-friendly
- Role-based functionality
- Cost
 - Initial Cost (license fee)
 - Implementation Cost (Installation / configuration labor costs)
 - Maintenance Cost (maintenance agreement)
 - Highest value of return with minimized cost for integration
- Integrates well with other systems
 - Microsoft Office Integration (Word, Excel, Outlook)
 - Custom modules
 - API / SDK
 - ODBC compliant
 - XML Support
- Output formats
 - PDF
 - Excel
 - HTML
 - Microsoft Word
- Report Interface Capabilities
 - Native Product Reporting Capabilities
 - Microsoft SQL Server Reporting Services
 - Crystal Reports
- Security
 - Security authentication account synchronization
 - Group-level user security / permissions
 - Electronic signatures / document security
- Strong product support
 - Documentation
 - Customer Support Quality
 - Product maturity
 - Frequency / Currency of Release
 - Transaction Logging
- Market credentials
 - ISO 9000
 - Industry acceptance / familiarity
 - Endorsements

Project Management Elements

- Scheduling
 - Link with Cost Management/EV System
 - Link with Pay Item system
 - Multi "Baseline" comparisons
 - Lock historical information
 - Capable of Template Projects
 - Resource Management Capable
- Project Time/Cost Reporting
 - Log Historical Information
 - Period Security
 - Correction Adjustments
 - Security Levels
 - Multi-Location Discrimination
- Contract Scope Management
 - Variance Reporting
 - Funding Source
 - Funding Budgets for Overall Enterprise Accounts
 - Multi Funding Compilation for Each "Project"
 - Change Management
 - Work Flow
 - Work Order Authorizations Separate from Contracts
 - Task Order Management
- Cost Control Management
 - Multi-Funding Source
 - Time Phased Distribution
 - Project Based
 - Program Based (Funding Source -)
 - Work Flow
- Earned Value Analysis
 - Modeling - Forecasting
 - Real-time calculation and distributions in Time Phasing
 - Standard Curves + some customized curves
 - Graphics Based
 - Single Screen Comparison (budget, actual, forecasting, etc.)
 - Multiple Elements (i.e., hours, dollars, etc.)
- Construction Cost Estimating
 - Variable Escalations (By Trade, Year, etc.)
 - Drill-Down Capabilities
 - Multi-Level of Detail
- Field Reporting
 - Link w/ Payment Records
 - Link w/ Schedule Record
 - Standardized Menu Driven
- Risk Management
 - Link w/Schedule
 - Link w/Cost Elements/Control Accounts

Project Life Cycle Tracking

Detail Information Available in Systems Memorandum Appendix

Document Control

- Business Process Management (Workflow)
- Records Retention Management
 - Management of records stored within ECM library
 - Management of physical records not stored electronically
 - Management of records stored in network folders
- Open Records Management
- Document (content) Management Capabilities
 - scanned images
 - common files (i.e. Word, PDF, emails, TIFF, JPEG, etc)
 - compound documents (i.e. drawings, Excel, etc)
 - multiple views of library structure
 - user configurable rapid document access functions
 - user defined saved searches
 - document open with browser based viewers
 - document open with native application
 - intelligent electronic forms
 - collaboration support
 - versioning
 - major versions (regular, normal, access)
 - minor versions (restricted, DRAFT, access)

Workflow Capabilities

- Manual workflow initiation
 - user overt selection and start
- Automatic workflow initiation
 - Event based workflow initiation
 - calendared initiation (timer / date based event)
 - form completion
 - document receipt / filing
- Intelligent electronic form support
 - scripts in cells
 - Data externalization (for integration)
- Document attachment / reference support
- Unlimited concurrent workflows
- Online progress reporting / tracking
- Supports multiple alarm notifications (time and events)
 - Tickers / Dunning Notices / Alarms
 - Escalations to another user
 - Transfer responsibility to another user
- Workflow logic capabilities
 - Complex decision logic support
 - Time dependent action support
 - Data externalization (for integration)
 - Supports parallel paths (splits and joins)
 - Supports internal loops and Boolean logic
 - Script execution steps
 - Voting support

Systems Development and Implementation Plan

Candidates:

- Suites of Products
 - Primavera
 - Meridian
 - Stellant
 - FileNet
 - Hummingbird
- Specialty Applications
 - WinEstimator
 - Timberline
 - PRISM
 - Xybernaut – Planisware
 - Reporting Services
 - Crystal

Systems Development and Implementation Plan

Vendor Selection Process

- Identify Major Technical Requirements - Complete
- Evaluate Industry Leaders - Complete
- RFP Released - by June 30th
- Vendor Submittals/Interview/Selection - Mid-August