Washington State Transportation Framework

For GIS

Project Charter

Version 2.1

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INTRODUCTION *1*
VISION *1*
BACKGROUND *1*
APPROACH *2*
NEEDS ASSESSMENT *3*
OBJECTIVES *4*
SCOPE *4*
CRITICAL SUCCESS FACTORS *5*
KEY DELIVERABLES *10*
ASSUMPTIONS *15*
PROJECT ORGANIZATION *17*
ROLES AND RESPONSIBILITIES *18*
PROJECT RESOURCES *20*
FUNDING *21*
DECISION MAKING PROCESS *22*
PILOT PROJECTS *22*
PROJECT MANAGEMENT METHODOLOGY AND APPROACH *23*

Washington State Transportation Framework for GIS
Project Charter

INTRODUCTION

The purpose of this project charter is to describe the project to develop the GIS Transportation Framework for the State of Washington (WA-TRANS). The charter defines the understandings between the project partners under which the project is to be managed. It also defines project methodology and processes.

The WA-TRANS project is in a state of flux. For some time this project has been handled on a part-time basis by people who are unable to spend enough time on it to allow for predictable progress.

Recently a full time project manager has been assigned to the project. The perspective provided by a project manager includes the disciplines involved in project management such as risk assessment and management; business requirements elicitation, documentation and management; change management; work process schedule and budget management; communications management; and issue management. It is expected that a different perspective will be brought to the project regarding determination of scope, business needs and business requirements, deliverables, project methodology and approach and other project management rigors.

Because of the changes described above it would be of benefit to revisit the project charter and the plan for the Transportation Framework described in that charter. This charter will reflect those changes. The charter also includes some action items, which will focus effort on areas, which have not yet been completed in the original charter plan or to which more attention needs to be paid.

VISION

The Washington State Transportation Framework is a seamless set of data that are consistent, connected, and continuous between segments of the transportation framework and with other framework layers. The transportation framework represents the best data available and includes mechanisms to improve over time. Framework data is accessible to the general public at the least cost with the least restrictions.

BACKGROUND

The Washington Geographic Information Council (WAGIC) strategic plan calls for development of a geospatial framework to facilitate sharing of data and to enable cross-jurisdictional analysis. Identified data themes include cadastral (property ownership), hydrography (surface waters), transportation, ortho-imagery (corrected aerial photographs), and topography (elevation) data sets. Completing the development of the transportation data theme is the goal of this project.

The WA-TRANS project has been ongoing for some time. Considering the part-time, volunteer nature of the project previously, a fair amount of work has been completed. The original charter outlines work done prior to October 1999. Committees that have been in place have been retooled for the purposes of "supporting " this project as well as other GIS and framework related projects. These include the Inter-organizational Resource Information Coordinating Council (IRICC) Roads Committee, the Washington Transportation Framework Group, the Washington Framework Management Group (FMG), and the Washington Geographic Information Council (WAGIC).

A series of individual workshops were organized regarding different approaches and implementation strategies for the framework. More recent work includes the Oregon Department of Transportation County GIS Mapping Pilot Project conducted with Wasco County data and the ongoing effort with Portland State University's Kenneth Dueker, Ph.D. and Paul Bender, to develop the White Paper on Issues and Strategies for Building a State Transportation Framework. This white paper outlines some business drivers and requirements for a Washington Transportation Framework, design options, strategies and issues. It outlines some possible pilot studies to use for assisting decision making for the framework project. Finally, other states' efforts will also be reviewed and considered. All this work needs to be examined for lessons learned and used as a basis for strategies for the future.

One additional item of interest which should be documented in relationship to this project happened as a result of the events in New York, NY and Washington D.C. on September 11, 2001. President George W. Bush's Administration has announced that the geospatial initiative is a presidential priority. Key driving forces behind this announcement is recognition of the role of framework in Administration focus areas - Homeland Security and preparedness, and e-government. As a result, there is an increased emphasis on completion of the framework including very aggressive time lines in the federal government. As examples, federal core data standards are to be completed within the next few months and spatial data is to be collected for 120 cities. This provides greater impetus for developing a robust transportation framework. It also means that there may be some legal changes and funding opportunities that affect the project and the partners' participation.

APPROACH

The approach for this project is based upon project management processes and the unique issues of developing a framework project. The following is a high level view of this approach:

- The approach to the project includes gathering and/or verifying detailed business needs to use as the basis for all project decisions. These business needs provide the basis for business requirements that can be prioritized based on urgency, funding and technical issues, which impact the order work, can be done.

- Pilots will be identified to meet two needs. One type of pilot is to test a technical issue and the results of these types of pilots may be more prototypes or proof-of-concepts than actual useful framework deliverables. Another type of pilot will be set up to test with a small set of partners and data the overall concepts of how to build and maintain a framework including interagency relationships and agreements. These types of pilots provide mitigation of the risk involved with trying to build the whole framework and not knowing the best process for doing so. It is expected that the results of these pilots and the processes involved in them will be part of the final framework, if successful.
- Based upon the experience from pilot projects an approach and process will be defined for doing the full framework and the first release of the framework will be developed. This includes all deliverables needed to begin maintenance of this version of the framework.
- Additional versions of the framework with additional capabilities based upon business requirement prioritization will be developed.

This plan assumes that development of the transportation framework will be a phased iterative process that will result in change to this charter and to requirements as we learn. Each phase will have a mini-charter developed which will be specific to that phase with deliverables, roles and responsibilities and work plan and budget defined.

For more detail of the project approach and methodology please see the "Project Management Methodology and Approach" section later in this charter.

NEEDS ASSESSMENT

Needs assessment is the primary focus of Phase I as defined in the methodology. It is critical that business needs be defined as completely as possible so the framework is not unintentionally developed in an exclusionary format. Business needs have been defined previously and these need to be verified. Where there are gaps identified in the business needs (missing partners, missing needs, etc.) business needs will be gathered. Gathering and/or verifying business needs can also provide some less obvious benefits. Those include informing and sharing with non-GIS users the benefit of GIS and sharing data; establishing contact with managers and decision makers for organizations which could lead to funding and resource opportunities; and discovering new business needs which could provide opportunities to use GIS by new groups. A good needs assessment should guide all project decisions including scope, requirements priorities, strategies and data.

The process for gathering or verifying business needs will begin with WSDOT in order to be prepared for the legislative budgeting process for the '03 – '05 biennium. Justifying the use of a WSDOT FTE and set the stage to get more funding and resources from WSDOT requires definition of benefit to the organization and establishing a high level cost benefit.

Additionally the Washington Transportation Framework Group (WTFG) will be leveraged to gather business needs. Where possible the members of that group can document or verify business needs. Additionally they can provide information to the project about potential contacts. As much as possible, a sampling of counties and communities from both east and west will be interviewed. A survey may be used to identify high level needs and opportunities that merit further investigation. This survey would be distributed partly by the WTFG.

OBJECTIVES

The project objectives identify the major things that need to be accomplished to implement the transportation framework. It is anticipated that these objectives will be refined as the project progresses and more is learned about business needs, the capabilities of existing technology, and the condition of existing data. These are summary objectives:

1. *Identify and recruit partners to develop, maintain, and distribute the transportation framework and framework data that meets a set of business and analytical needs defined by the partners and users.*
2. *Develop a transportation framework data model and standards based on business and analytical needs for the data, technology available to implement the model, and the ability to provide and maintain the data over time.*
3. *Define and implement institutional arrangements to facilitate data collection and maintenance partnerships, and to make the data accessible at the least cost with the least restrictions on use.*
4. *Implement interactive platform independent software, database, and processes to support integration of data received from data providers, maintenance of data by data stewards, and data accessibility by partners and the general public.*

SCOPE

Discussion

The scope of the WA-TRANS is not yet well defined. The previous project charter does not completely define a scope which is related to a business perspective because the scope defined in that charter is not linked to any clearly documented business needs or requirements but to data. The business needs are the driver behind a project and should frame the scope. Lacking such documentation the scope in the charter appears to be a technical determination of what can be accomplished. While this is necessary, it should be done after business requirements are completed and mapped back to those requirements.

A high-level project scope can be defined based upon what is thought to be the overriding business need. Once business needs and business requirements are documented, approved, and prioritized by partners then a detailed scope based upon those requirements can be developed. This is very useful in a phased approach because discrete sub-projects can be developed for each phase and/or release based upon which business requirements make up the scope. There is a document to go back to for determining what is in scope and out of scope for change control. There is also the business case to use for justifying funding at each phase or release. Once business requirements have been completed and the scope determined then functional requirements are developed from the scope and system requirements specification are developed. These then become the technical blueprint. This is where questions regarding which algorithms and technical capabilities need to be available to meet the defined business need.

The following is a high-level scope for the project prior to business requirements definition:

Cooperatively develop a statewide transportation framework for GIS including:

- ✓ *Business requirements which align with business needs documented from as many stakeholders as can be engaged during the process,*
- ✓ *Process for developing the framework,*
- ✓ *Data structures for developing and maintaining the framework aligned to business requirements,*
- ✓ *Security, access and translation tools which facilitate access, use and maintenance of the framework based upon functional requirements identified,*
- ✓ *Memorandums of Agreement regarding use of resources and funding for the framework,*
- ✓ *Memorandums of Understanding and data sharing agreements to facilitate data sharing.*

Action Item ® Articulate a high level project scope and then refine based upon business requirements and priorities.

CRITICAL SUCCESS FACTORS

In support of project objectives specific critical success factors were defined. These critical success factors are listed below with notes on the progress so far in establishing them. Bolded italicized elements of a critical success factor are new items that were not in the previous charter. Generalized action items are listed with each critical success factor:

1. *Establish broad participation.*

Identify and recruit partners who . . .

- Can identify a business case for investing in the transportation framework,
- Represent a range of uses of the database,
- Are needed to create full data coverage.

Current Status and Discussion

Partnerships have been developed and work has begun on the WA-TRANS. There are two primary groups identified which have provided input and some level of consensus decision making for the project. Those groups are the IRICC Roads Committee, and the Washington Transportation Framework Group. The Washington Transportation Framework Group has fairly broad-based participation. Participation in these groups has dwindled over time. However a role for the IRICC in the project has been defined in the roles and responsibilities section of this document. Some effort needs to be put into making sure there is adequate representation from cities and others who may be stakeholders. A list of as many potential partners as possible should be developed.

Another potential area of participation is across state and country boundaries. We need to consider Oregon, Idaho and Canada (British Columbia). As stated previously Oregon is already participating in the IRICC Roads Committee. Contact was established with Idaho at a recent Regional Framework Meeting between Washington, Oregon and Idaho Framework participants.

Action Item ® Develop and maintain a list of all potential partners. Try to establish or re-establish contact with them.

Getting enough participation needs to be balanced with making sure there are few enough participants with decision making authority involved so that decisions can be reached expediently. Clear roles and responsibilities need to be evaluated and maybe further defined for this. There can be ways to participate in terms of requirements gathering and verification that does not necessarily include decision-making for the project. Those who make decisions for the project will need to devote more time and effort than those who don't. This may involve using the groups already in place or it may involve defining some other participation structure. See the section titled "Decision Making Process" for a proposed strategy on decision-making.

Action Item ® **Determine** the optimal structure for partner participation and decision making in the project.

A key element to gathering funding is identifying the business case. The reality is there may be many business cases, which can be used to justify funding. At this point in time there are several different business needs identified, but no real "cost benefit analysis" to turn those needs into business cases. Additionally there has been no linking of business need to business processes supported. This also must be done to justify funding and participation. This is a critical need to be handled early on in the project timeline. The complexities may reside in prioritizing conflicting or competing business needs in terms

of resources and time for completing implementation so business results can be gained. The business case may very well influence the scope. The source of funding may also influence the scope, particularly which deliverables and functionality or data are available at a particular product release. Group cost/benefit efforts may be used to determine priorities among business cases and to prepare for funding to be available at the right time.

Action Item ® **Document** the business needs and cost benefit justifications for participation in and funding of the Washington Transportation Framework by partner section or function.

2. Establish standards, which enhance the will and ability of partners to collect and maintain the data.

- Match the standard to the ability of the partners to collect and maintain the data.
- Identify a standard which allows data quality to improve over time.
- Identify funding incentives for partners to participate.

Current Status and Discussion

Although the WA-TRANS project helped to develop the IRICC Core Standards, it was later determined that this approach did not provide standard segmenting methods for centerlines. There was a great deal of disagreement about segments and segment identifiers. It was also focused on a limited business need and was viewed as not broadly based enough to justify the needed participation. The National Spatial Data Infrastructure (NSDI) Transportation Identification Standard was also examined. Because the NSDI requires a schema of link identifications, this would be very difficult to impose on the players. Some have already set up identifiers and it would be difficult to force then into a new ones.

However the biggest concern about standards at this time is that the business requirements are not defined from the original business process point and business needs to help determine which standards make the most sense and which will facilitate meeting those business needs. It is not yet time to decide on standards.

Action Item ® Develop a robust set of business requirements with broad-based user participation.

3. Provide the data needed to meet business and analytical needs.

Data must be . . .

- Accurate.
- Complete.
- Not too complicated to use.

- Described and documented.
- Up-to-date.
- Relevant to business and analytical needs.
- Digital.
- Formatted in open standard, relational structure.
- Able to be imported into commercial digital mapping systems.

Current Status and Discussion

One of the big concerns with the previous work on the WA-TRANS is that defining the data for the framework seems to be where all the effort has been focused. The data identified can't necessarily be linked back to business needs. The documentation demonstrating such a link does not exist. It isn't based on problems, which may be solved by a transportation framework, but on some group's idea of what may be needed. Additionally the group had a very difficult time defining and agreeing to what constituted data for the framework. In the absence of clearly documented business needs and business requirements it is unclear which data is mandatory to meet those needs. There is also no mechanism for determining what to implement first. The data design on content must be based upon business requirements.

Action Item ® Define what constitutes WA-TRANS data and identify data requirements as part of the business requirements.

4. Define a data model that partners agree meets their needs.

- Identify business needs and functional requirements, and define the data needed to support them.
- Examine existing data models.
- Seek consensus agreement on the data model. Partners commit to achieving consensus.
- Provide frequent and on-going communication of progress and decisions to partner organizations.

Current Status and Discussion

Previously the project examined NCHRP 20-27 (in Report 460), the Enterprise Data Model (Dueker, Butler) and the UNETRANS model by ESRI. The NSDI was also reviewed. The knowledge gained in these examinations need to be considered in any data model decisions.

It would be good to design the logical data model as a whole at one time early in the design process and only implement the pieces of the physical model in phases as needed to simplify the process.

Action Item ® Develop a preliminary logical data model for WA-TRANS that supports all business and functional requirements identified regardless of which phase the requirements will be implemented in. (See critical success factor # 7 below.)

5. Identify the right standards and processes.

- Identify standards and processes needed to meet business needs.
- Examine existing standards and processes.
- Identify standards and processes needed to facilitate integration of data from multiple sources.
- ***Identify standards and processes, which facilitate maintaining the data long term.***

Current Status and Discussion
See critical success factor #2 above.

6. Identify standards and processes that recognize the capabilities of existing technology to support the standards and processes.

- Identify standards and processes that recognize the capabilities of existing technology to support the standards.
- Provide tools for data integration, data access, and metadata.

Current Status and Discussion
See critical success factor #2 above.

7. Phased Development

- Set the scope of phases to allow delivery of tangible products within a set time frame.
- ***Use phases as a method of showing an effort and plan to meet all business needs while focusing on the ones, which can most realistically be met at the current time.***

Current Status and Discussion
It would be of benefit to use a phased process by which the WA-TRANS can begin again while utilizing what has already been done. The goal of a phased iterative approach is to break the project down into manageable chunks, with clearly defined objectives, scope, requirements, cost, risk and timeline so it can be handled as a single effort and with a defined budget.

It will use the work already done, particularly in evaluation of standards and research on the approach or data structure. It will also use the business needs already identified. There will be a comprehensive business requirements document. There will be a formal cost benefit done. Both will assist with getting partners involved and justifying funding. Both will also provide a basis for decisions on the scope of each phase and pilot implemented. Both will also provide a basis for determining what data or tools were available with different releases and resolving issues regarding data ownership and data stewardship. So there is an initial phase proposed to be dedicated to these items. For

more detail on defined phases and scopes please see the Project Management Methodology and Approach section of this document.

Action Item ® Evaluate existing development strategy and redesign as needed.

KEY DELIVERABLES

Deliverables are divided into two categories. These are Project Deliverables and Project Management Deliverables. The project deliverables are the actual items for the project, which must be completed to deliver the project. These items become major components of the final deliverable. By contrast the project management deliverables are the items that are tools used to manage the project. They provide the documentation and methods for making sure the project scope, schedule, budget and risk are adequately tracked and managed. They are based upon the Project Management Body of Knowledge (PMBOK) produced by the Project Management Institute (PMI). PMI is accepted as an authority on project management practices and procedures for projects in all disciplines.

Project Deliverables

Four additional deliverables have been added to the original charters deliverable list. They should be done first and are listed first. Following those are the project deliverables defined in the January 2000 Charter followed by some strategies and ideas for implementing them:

1. Business Needs:
   Business needs gathering involves identifying the business processes that could be improved by the WA-TRANS. These needs include much more than what the framework will actually do. However, without the framework meeting these needs are impossible or much more expensive. These needs make the basis for justifying the funding and resources for the framework. Business needs describe WHY the transportation framework is developed and WHY it must meet particular business requirements. The previous transportation framework effort did document some business needs at a high level. These need to be verified and possibly enhanced with more detail. A gap analysis needs to be done between what has been identified and what still needs to be identified. If there are any previously unidentified partner business types or business needs must be gathered for those.

2. Business Requirements:
   Business requirements are formally defined business expectations of the system, stated as imperatives. They are derived from the identified business needs. Business requirements define WHAT the transportation framework must do. These requirements will be formally inspected and accepted by the participants as true and complete at the time of inspection. A change control process is used to change requirements once they have been accepted. The requirements should be prioritized

by the partners and then decisions will be made about them regarding what requirements will be in what releases of the product. Costs estimates and schedule estimates can be done of each requirement. Additionally, these requirements can be used to prioritize and further define pilot projects. Because of the large potential project partner community and the variety of business requirements to be captured gathering these requirements could take several months or longer.

3. Cost Benefit Analysis:
   To justify funding and participation it would be helpful if each partner on the business requirements that are agreed upon did a cost benefit analysis, particularly for the requirements they bring to the table. This would also help in the prioritization process.

4. Functional Requirements:
   Functional requirements should be developed from the business requirements and should map back directly to an individual business requirement (although they may meet more than one). Functional requirements are used to describe the actual functionality the transportation framework must have to meet the business requirements. If the business requirements describe WHAT the WA-TRANS must do the functional requirements describe HOW the WA-TRANS must do it.

5. Data Model
   This process includes developing a high level conceptual model (logical data model). This model may be developed based upon existing accepted models such as those previously examined by the project. It would be good to develop a model which included as many business needs as possible and then only implement those portions needed for each phase as appropriate. The design may or may not be based upon a distributed model.

6. Database
   Implement only the portion needed for each phase or release or pilot.

7. Data access and distribution software and process
   This could be a clearing-house or web application or some other method to be determined based upon business requirements and technical limitation and capabilities. Other framework theme implementation in the state and other state solutions should be examined.

8. Data integration standards, processes and tools
   These are based upon the approach and standards both developed externally and selected for use and those developed by the project. Tools developed are based upon business requirements by phase or release.

9. Partnership agreements
   Partnerships are based upon who is participating at what point in time. These will be an ongoing effort and should be included in maintenance plans. Developing a

template agreement might be of value down the road for facilitating this process under a maintenance situation. A process for updating and maintaining partnership agreements should also be developed.

10. Definition of roles
    There will be a variety of different roles including data provider/owner/stewards, data maintainer, tool maintainer, etc. The Dueker and Bender document does a good job of outlining some of these potential roles. These need to be defined for each product developed in each mini-charter and as a part of partnership agreements and maintenance plans.

11. Pilot projects to populate the database – limited geographic area and limited data content
    It needs to be recognized that there will be more than one pilot and so a list of potential pilots must be made and priorities assigned to that list. The goals of those pilots may not be to populate the database The Dueker and Bender white paper identified some pilots to consider.

12. Plan for maintaining the transportation framework
    This is a critical factor and must be developed and updated in phases based upon each release. Anything developed that is to be used for production should be covered under maintenance. This needs to include funding plans and maintenance of partnerships.

13. Project reports.
    These reports should include lessons learned and recommendations for future direction and follow-on phases. Each phase should have a report.

None of these deliverables have been completed at the time this document has been written. One thing that might help flesh out what these deliverables could be is looking at lessons learned from other framework projects, both in Washington and other states.

Items 6 through 13 could be repeated iteratively for many phases as needed. These deliverables are actually incorporated in with the project management deliverables in a recommended high level project plan in the section titled "Project Management Methodology and Approach" that follows.

Project Management Deliverables

The January 2000 Charter did not identify project management deliverables. These deliverables are added to adhere to a formalized project management approach. Project management deliverables are as described below:

- Develop Decision Package and Formal Funding
  Initially this will require focusing on the WSDOT business case for the Transportation Framework. It will require those needs be documented and a cost-benefit analysis be performed. Later funding may be gathered from other sources based upon business cases for other organizational participation and agreements with those organizations.

- Establish Formal Project Reporting and Decision Making Structure
  The WA-TRANS project has the potential of having a great many potential decision-makers that can make reaching decisions very difficult. One way of dealing with this is identifying a formal decision making team with the authority to act for the larger group of partners. The decision makers (called the Steering Committee) approve project scope and charter and decide priorities of business requirements and assist with change control decisions and issue escalation and resolution. This group also decides the approach to the project and the framework. The rest of the partners participate providing business requirements, final acceptance of business requirements that originate or strongly affect them, testing the various components of the framework and providing resources for pilots or other situations. They are kept informed of decisions and deliverables made by the Steering Committee. It may be that for various phases the membership of the Steering Committee could change as needed when a particular group is funding something specific or has a very high priority need which is being implemented. To facilitate decisions there must be a smaller structure that has the authority to make decisions expediently so the project progresses. The steering committee will be formed to serve this function.

- Project Charter
  This document is the Project Charter. It will eventually have the deliverables defined below as appendices.

- Risk Assessment and Management Plan
  Because of the size and number of organizations potentially impacted, and project complexity the Washington Transportation Framework project could be considered high risk. A formal risk assessment needs to be developed for the project. It needs to be updated as business requirements are formally developed and then it should be updated for each pilot and each phase. It will include risk mitigation strategies and triggers to facilitate recognition of the development of a risk situation and provide strategies for handling the situation.

- Communication Plan
  Communication is a critical factor in any project and because of the different business needs, political environments and governing bodies of the partners in this project it is more critical than ever. A well thought out communication plan would be of great benefit to the project along with strategies for "selling" the idea of the framework to partners whose data may be needed. This plan needs to include status reporting mechanisms and outreach methods. The plan will define how the Steering Committee is kept involved and how the other partners are kept informed of their activities.

- Change Control Plan
  Change control is the process of keeping the project in scope based upon accepted business requirements. It is also the process for changing the scope when the project decision makers deem it appropriate. It facilitates a formal and documented process to manage the scope of a project. Each phase will have its own scope, budget and resources and this is the level at which change management is the most critical

- Issue Management and Dispute Resolution Plan
  Issues should be documented as well as the resolution so there is a record when the problem arises again. It is also useful for the lessons learned process. Issues require a formal escalation procedure for resolution. This is especially true when a business issue arises. Business issues usually must be resolved at a management level, which may not be directly involved in the project on a day-to-day basis. Disputes are a form of issues. The plans for issue management and escalation need to be formally defined. See the section titled "Decision Making Process" for some plans regarding issue escalation.

- Project Plans
  High-level project plans should be defined in the charter. Detailed plans should be done in a scheduling tool. These plans needs to be detailed enough that "what-if" scenarios can be developed with them. They also need to be developed at a high level for what is known and then the detail added as enough scope or business requirements are provided that they can be expanded in detail. They also need to show the required resources and project budget and should be kept up to date on a regular basis.

- Project Mini-charters
  There may be some fear that too much time will be spent developing charters. But these little charters don't need to be longer than a couple of pages depending on the size of the effort. Each of the pilots should have a mini-charter and they should be developed for each phase. Each should include: purpose or objective of phase or activity, scope, how this portion of the project fits into the whole, deliverables, roles and responsibilities, time-line (project plan), budget, and assumptions. They can "inherit" the change management, issue management,

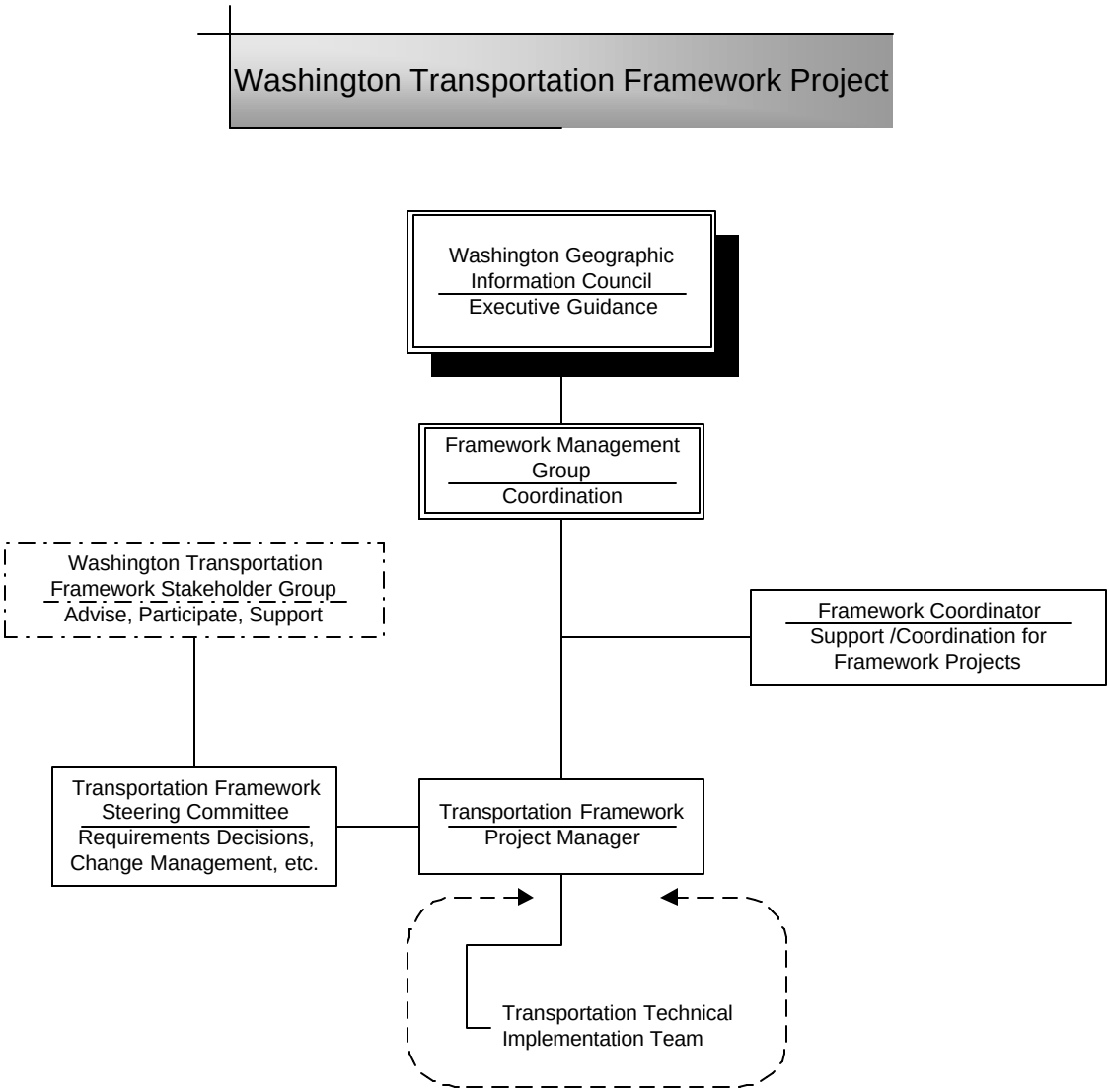
and communication plan for the overall project. The risk assessment should be updated based upon each project phase or effort.

ASSUMPTIONS

1. Sufficient partners representing data providers and data users participate in the project. The exact number is uncertain, but there should be a representative participation from the various groups who will be primary data providers and/or primary business users of the product.
2. Funding and resources are available from partner organizations for a project manager, data modeling, software development and maintenance.
3. Key staff resources with the necessary technical ability are available and can be scheduled to complete project tasks. While it is not yet possible to completely define the technical ability required it is assumed that when this is defined the ability will exist to provide or acquire these resources.
4. Agreement can be reached on a common data model.
5. Agreement can be reached on a common linear referencing system if one is needed.
6. Technical capabilities of the software, hardware, and resources are available to support business needs.
7. A phased approach will be utilized to develop the framework incrementally.
8. Existing infrastructure will be used to make transportation framework data accessible.
9. The transportation framework project and other framework projects will be coordinated.
10. The first implementation of the framework will be simple and a plan will exist for increasing complexity and functionality over time.
11. Sufficient business value will be discovered and documented to compel participation in building, using and maintaining the WA-TRANS.
12. Pilot test results will represent the statewide situation enough to use these results to determine approaches.
13. When pilots are successful the results will become part of the framework implementation.
14. Negotiation, compromise and facilitation will be utilized to arrive at implementation priorities. Funding source may be considered a key issue in deciding such priorities.
15. A steering committee will be organized for the project that will have the authority in their individual organizations to access resources and possibly funds to assist with the various phases of the project. The size of this steering committee will be dependant upon what is required to get adequate representation for different business areas. However at this time it is hoped that steering committee will be limited to 13 members including the project manager.
16. Membership of the steering committee may change as phase deliverables change.

17. The steering committee will be able to participate to the level of providing detailed analysis and decision-making about business requirements, functional requirements and prioritization of requirements. The steering committee will also be available at least once a month for meetings in order to facilitate change management and issue management.
18. The steering committee will be representative of the Washington Transportation Framework Stakeholder Group.
19. The steering committee will be small enough to facilitate effective decision-making.
20. Any project plans for implementation will include plans and funding sources for maintenance of what is implemented.
21. WAGIC and FMG will assist with pursuing funding.

PROJECT ORGANIZATION



ROLES AND RESPONSIBILITIES

Washington State Geographic Information Council (WAGIC)

The WAGIC is recognized as the statewide body responsible for coordinating and facilitating the use and development of Washington State's geospatial information. WAGIC is an advisory body to the Framework Management Group (FMG) and supports the vision of the Washington Geospatial Data Framework. WAGIC serves as a resource for dispute resolution and/or deadlock decision making to the FMG.

Framework Management Group (FMG)

The FMG is a consensus building body that provides overall direction to individual framework projects. The FMG determines framework priorities, identifies and facilitates resolution of common framework issues, and ensures coordination among the projects. Overall framework decisions and decisions that are out of individual project scope are made by the FMG. Widespread participation is solicited and encouraged from federal, state, local, private, tribal, and professional organizations.

Framework Coordinator

The Framework Coordinator provides coordination between framework projects and support of individual projects.

Washington Transportation Framework Stakeholders

The Transportation Framework Project Team is made up of representatives from the partner organizations. The project team is responsible for the approval of the project charter, high-level project approach, final project business and functional requirements, and high-level project deliverables. Decisions will be discussed at quarterly meetings and then voted on regarding the ability of the partner to live with the decision or not. Dissenting votes will be discussed and then another vote taken. The second vote counts.

Transportation Framework Project Steering Committee

This committee is made up of representative from the project partners group. These representatives are willing to commit more time to the project and may have the ability to assist with providing resources or funding to the project. They may have a particular expertise regarding a priority business need, which is to be implemented for a particular phase. This group assists with development and evaluation of the business requirements and prioritizes them, develops functional requirements for a particular set of deliverables, determines the scope of individual phases of the project, supports that scope with change management, and provides issue resolution support. They will meet at least once a month for the duration of the project and the membership may change as needed. They may be called on for more time to make major decisions particularly during the business requirements and functional requirements development and evaluation phase.

IRICC Roads Committee

The Interorganizational Resource Information Coordinating Council (IRICC) has expressed a commitment to participate in this project through the Roads Committee. The IRICC represents the needs of some Federal organizations including US Forest Service, The Bureau of Land Management, and Fish, Wildlife and Parks. All groups have some concern and business needs associated with the transportation framework. Additionally the Roads Committee includes representatives from the State of Oregon who are working on a transportation framework for their state. We will need to discuss how those frameworks can "connect". The USGS also participates in the IRICC. The IRICC Roads Committee has come up with a standard for transportation data that represents those needs. This standard needs to be examined carefully by the transportation framework project and seriously considered for inclusion in the standard selected in order to facilitate inclusion of these organizations in the Washington Transportation Framework. Their business needs are similar to other environmental organizations involved in the project.

Thus the IRICC provides an opportunity to bring these players to the table and to perform some specific pilots, which may provide useful input to the project. Additionally the role of IRICC will be to provide coordination between Washington and Oregon transportation framework projects. The IRICC has also been a key player in the Washington Hydrography Framework. Thus they can assist with making sure the two frameworks "align".

Transportation Framework Project Manager

The Transportation Framework Project Manager is responsible to lead development of the transportation framework. This includes leadership of the project team, reporting of progress and milestones to the Framework Management Group, cross-project coordination with other framework projects, successfully recruiting project partners, arranging resources for the project, project planning and schedule tracking, and project budget and expenditure tracking. This person provides project management expertise to the project and develops and maintains the project management deliverables defined in this document.

Transportation Framework Strike Teams

The framework strike teams will be formed with the goal of being a timely focused structure to more deeply research, test, and resolve issues to allow better decisions to be made. The team would be chartered for an appropriate duration for the task. The resources for this could be provided by a variety of sources including the Transportation Framework Technical Team or technical experts that reside within partner organizations.

Transportation Framework Technical Team

The technical team functions as the working group for the project. The technical team consists of experts in data production, data use, data access methods, etc. The technical team provides decision options and recommendations to the project team. Final decisions are made by the project manager for day-to-day process or the project steering team for change control and other major issues. The project manager may appoint a technical

team leader for that group who will have some day-to-day leadership responsibilities as well.

Administrative Support

The Administrative Support person is responsible for: scheduling of project meetings; booking, setting up and taking down meeting rooms; communication with participants; preparing and distributing project documentation; taking and distributing meeting notes; maintaining contact lists; and, working closely with the Project Manager to support the success of the project.

PROJECT RESOURCES

The project manager is a Washington Department of Transportation Employee. To the degree that project resources are available and can be justified by the business needs that the transportation framework is providing the Agency other WSDOT resources may also participate.

It is the project manager's responsibility to determine resource needs and skill levels required for each phase of the project as part of the project plan. These needs are provided to the project steering committee and if needed to the project partner group. An effort will be made to gather resources from them. If needed funding will be used to purchase contract resources to fill gaps.

Resources will report to the project manager or a project technical lead if one is available. All deliverables will be based upon a project schedule which will be provided to project resources and their management. The managers will commit the resource based upon that schedule. When schedule changes occur which affect the amount of time or scheduling of resource participation the project manager must report that as soon as possible to both the project resources and their manager. Adjustments must be negotiated as needed with formal agreement made for significant changes. The resources and their managers must provide the project manager with advance notice when a resource will be unable to provide the level of participation promised for a project. Again these changes will be negotiated with impact to the project schedule and budget determined prior to negotiation. All resources provided for the project will be documented and agreements made formally to facilitate mutual expectations and support project progress regarding those resources.

The project manager is responsible to provide status reports to the project steering committee at monthly meeting and the project partners at quarterly meetings regarding the use of project resources and the schedule of deliverables dependant upon those resources.

It must be made clear that without resources the project cannot succeed. At the end of the State Biennium (June 2003) an evaluation must be done regarding the level of resource

commitments made and adhered to for the WA-TRANS project. At that time if there has been a continuous significant lack of resources provided to make reasonable progress against work plans a decision may be entertained to redirect the resources that WSDOT is providing the project.

FUNDING

Funding will likely be provided by a variety of sources. Funding may affect decisions of project requirement priorities. The membership of the project steering team should include representation from any sources of funding for the project. Agreements regarding the use of funding for project deliverables and resources will be formally documented with the funding organization, the project manager and the project steering committee to facilitate mutual expectations and support project progress regarding that funding.

The project manager is responsible for the budget and will provide budget status reports at each steering committee meeting as well as quarterly partner meetings.

It must be understood that without funding the project cannot succeed. All reasonable effort will be made by the project team, WAGIC and FMG to pursue funding opportunities. However, if at the end of the State Biennium (June 2003) there has been a continuous significant lack of available funding, thus leading to minimal completion of project deliverables against work plans a decision may be entertained to redirect the resources the WSDOT is providing the project.

DECISION MAKING PROCESS

Project decisions will be made at the lowest possible level and at the earliest possible time. For day-to-day activities the project manager will make project decisions or the technical team lead. Decisions which impact the deliverable functionality, project scope, or significant budget, resource or schedule change the decision will be escalated to the project steering committee. When possible the decision will be made at monthly steering committee meetings. When time does not allow for waiting for the committee to meet e-mail, phone calls, and conference calls will be used to facilitate making a timely decision. The transportation framework partners will approve major project deliverables.

When the decision involves coordinating with another framework effort or standards that impact other framework efforts the issue will be escalated to the Framework Management Group. When the decision involves GIS policy or executive level support it will be escalated to the Washington State Geographic Information Council.

PILOT PROJECTS

There are two types of pilots that could be used to support decision making for the transportation framework project. Each is discussed in the following:

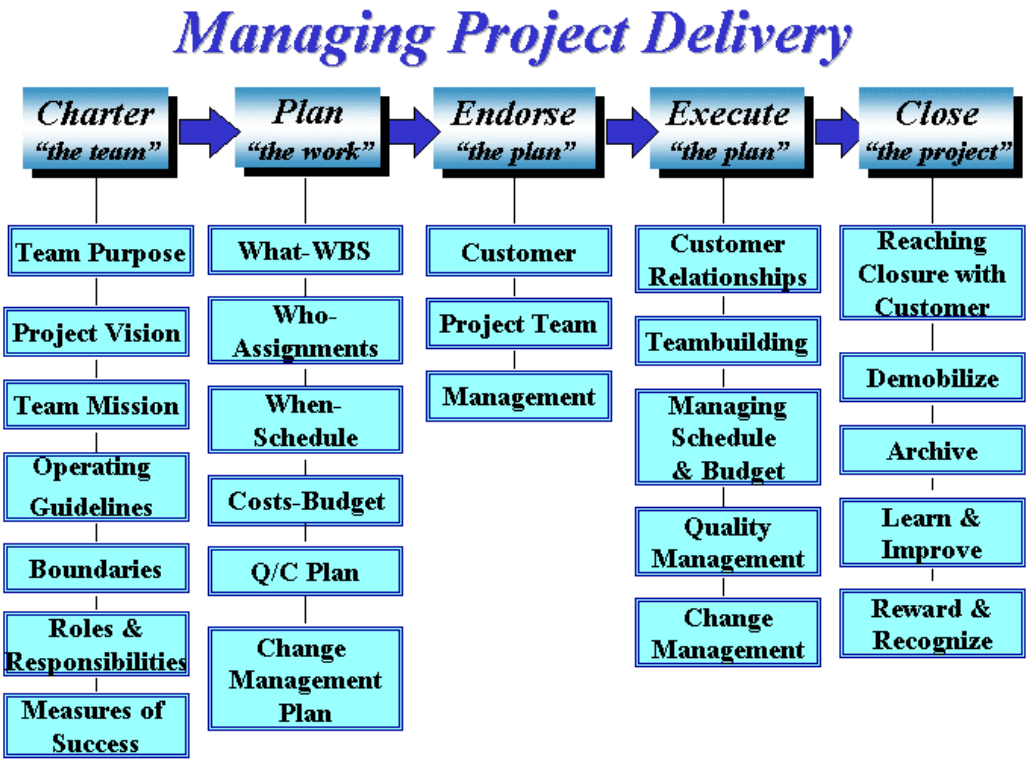
Proof of Concept: The proof of concept is an effort that will help decide technical concerns regarding the project. This kind of pilot is likely to be thrown away and is on a small enough scale that it does not need to be set up as a mini project. It is a risk management technique that will be utilized whenever there is inadequate information or experience on a particular type of technical solution.

Pilot Mini-Project: The pilot mini-project will be set up with a mini-charter, which defines roles and responsibilities, deliverables, schedule, budget and resources. This technique will be used to determine the approach for the project to follow regarding completion of various deliverables. These pilot mini-projects will be conducted on a small scale to reduce project risk. The results of a pilot mini-project that produce a deliverable of the quality needed for the particular implementation of the transportation framework will be integrated into that implementation

PROJECT MANAGEMENT METHODOLOGY AND APPROACH

Project Methodology

The WA-TRANS project will use the Managing Project Delivery (MPD) methodology integrated in with a system development lifecycle (SDLC) process. The MDP methodology is the WSDOT method for managing projects Agency-wide. This method has been selected for a variety of reasons. The first is that in effort to garner funding from the Washington State Legislature the project becomes a candidate for Department of Information Services (DIS) oversight. These projects must be managed with a formalized project management methodology. WSDOT put a great deal of effort into developing the MPD process. It is based upon the PMBOK and it is Agency policy that all capitol projects will be managed using this methodology. The WSDOT customers whose business needs will form the basis for justifying the funding will understand the method. The MPD method is outlined in the following graphic:



Project Approach

IT systems development (including GIS) should follow a standard system development lifecycle to control risk and produce a high quality product. A generic system development lifecycle process includes the following steps:

- Assessment
  During this process a broad scope is defined and the requirements are gathered/verified and the scope is refined with the outcome that it is okay to proceed (or not). Test cases are developed based on business requirements as well as measures of success. Project manager deliverables are at a high level here.
- Feasibility
  During feasibility the scope is refined to be specific and the project team will be established based on that scope. The technical requirements specifications are done here. The outcome is a determination that it is okay to build. The project team is set up and project management deliverables are established and implemented in this process.
- Build
  During this process the design work is done on the product, any purchasing that needs to be done is completed and the product is constructed. The product is tested and any training that needs to take place is completed.
- Implement
  During this phase the system is implemented into production, maintenance begins and lessons learned can be completed.
- Follow up
  Long-term follow up allows determination if the measures of success are being met and provides a feedback loop for future work. This is particularly important in an iterative process.

The following is a breakdown of the WA-TRANS project into the MPD method using the SDLC process outlined iteratively with a phased approach.

Phase I (Project Assessment and Feasibility)

*Charter*ing the team includes:

- ✓ Reassembling participants and determining which group will be decision makers.
- ✓ Revisiting the project scope and redefining it in business terms without regard to data.
- ✓ Updating the project charter to contain all items under the charter process plus an outline of the project methodology. This is a high level charter that arches over the whole project.

*Plan*ning the work includes:

- ✓ Developing a mini charter for Phase I that is more specific regarding the Phase I scope and deliverables.
- ✓ Developing a detailed work plan and schedule for Phase I.
- ✓ Evaluation Phase I resource needs and determine availability.
- ✓ Developing the project change control plan.
- ✓ Developing the project communication plan.
- ✓ Developing the project issue management and dispute resolution plan.

- ✓ Develop the detailed Phase I budget.
- ✓ Develop the project risk assessment and management plan.

Endorsing the plan includes:

- ✓ Formal approval of the charter with decision-making team.
- ✓ Review of charter with all partners.
- ✓ Review of all project management deliverable with all partners.
- ✓ Formal approval to provide resources as defined in the work plan by affected partners.

Executing the plan includes:

- ✓ Examination of previous work and other framework experience.
- ✓ Verifying previously documented business needs.
- ✓ Performing gap analysis on business needs verified.
- ✓ Gather business needs where a gap in documentation is identified.
- ✓ Extracting and documenting business requirements.
- ✓ Resolve previous work and business requirements with requirements elicited in Phase I.
- ✓ Develop high-level cost-benefit on individual requirements.
- ✓ Develop test cases and measures of success on individual business requirements.
- ✓ Get approval of business requirements.
- ✓ Prioritize business requirements.
- ✓ Develop functional requirements mapping to business requirements.
- ✓ Resolve previous work and functional requirements.
- ✓ Develop a list of pilots.
- ✓ Prioritize pilots based on business requirements.
- ✓ Begin gathering and documenting information about available data.
- ✓ Manage issues and risk through out.

Close Phase I:

- ✓ Develop phase I lessons learned.
- ✓ Get formal approval of Phase I deliverables (which weren't previously approved.)

Phase II (Pilot Build, Implement and Follow-up)

*Charter*ing the team includes:

- ✓ Select Phase II pilot(s).
- ✓ Determine if pilot is a proof of concept.
- ✓ Evaluate membership in decision-makers team for appropriateness regarding pilot selection.
- ✓ Determine scope of pilot(s) and define in business terms.
- ✓ Updating the overall project charter as needed.
- ✓ Develop a mini-charter for Phase II.

*Plan*ning the work includes:

- ✓ Developing a detailed work plan and schedule for Phase II.
- ✓ Evaluation Phase II resource needs and determine availability.
- ✓ Update the project communication plan.
- ✓ Develop the detailed Phase II budget.
- ✓ Update the project risk assessment and management plan.

Endorsing the plan includes:

- ✓ Formal approval of the mini-charter with decision-making team.
- ✓ Review of mini charter with all partners.
- ✓ Review of all work plan, schedule, budget, and resource needs and risk plan with all partners.
- ✓ Formal approval to provide resources as defined in the work plan by affected partners.
- ✓ Establish team for pilot(s) development and implementation.

Executing the plan includes:

- ✓ Document planned approach to pilot(s).
- ✓ Perform required analysis and design for pilot(s).
- ✓ Implement physical test data structure needed for pilot(s).
- ✓ Build utilities needed for pilot(s).
- ✓ Develop any required partner agreements.
- ✓ Develop test plans for the pilot(s).
- ✓ Get appropriate partner approval of test plans.
- ✓ Test pilot(s) based on test plans with appropriate partners.
- ✓ Modify pilot(s) as needed.
- ✓ Implement pilot(s).
- ✓ Evaluate pilot findings.
- ✓ Develop report of pilot findings and recommendations.
- ✓ Continue to identify and document available data.
- ✓ Manage change, issues and risk through out.

Close Phase II:

- ✓ Develop phase II lessons learned.
- ✓ Get formal approval of Phase II deliverables.

Phase III (Project Release 1.0 Build, Implement and Follow-up)

*Charter*ing the team includes:

- ✓ Determine which business requirements will be met by release 1.0.
- ✓ Evaluate functional dependencies to determine which additional functionality should be included in release 1.0.
- ✓ Evaluate membership in decision-makers team for appropriateness regarding release 1.0.
- ✓ Updating the overall project charter as needed.
- ✓ Develop a mini-charter for Phase III.

*Plan*ning the work includes:

- ✓ Developing a detailed work plan and schedule for Phase III.
- ✓ Evaluation resource needs and determine availability.
- ✓ Update the project communication plan.
- ✓ Develop the detailed Phase III budget.
- ✓ Update the project risk assessment and management plan.

Endorsing the plan includes:

- ✓ Formal approval of the mini-charter with decision-making team.
- ✓ Review of mini-charter with all partners.
- ✓ Review of all work plan, schedule, budget, and resources needed and risk plan with all partners.
- ✓ Formal approval to provide resources as defined in the work plan by affected partners.
- ✓ Establish team for development and implementation of release 1.0

Executing the plan includes:

- ✓ Document planned approach to release 1.0.
- ✓ Perform required analysis and design for release 1.0.
- ✓ Design logical data model for WA-TRANS.
- ✓ Implement physical test data structure needed for release 1.0.
- ✓ Build utilities needed for release 1.0.
- ✓ Develop any required partner agreements.
- ✓ Develop test plans for the release 1.0.
- ✓ Get appropriate partner approval of test plans.
- ✓ Test release 1.0 based on test plans with appropriate partners.
- ✓ Modify release 1.0 as needed.
- ✓ Implement release 1.0 and database into production.
- ✓ Establish system maintenance.
- ✓ Manage change, issues and risk through out.

Close Phase III:

- ✓ Develop phase IIII lessons learned.

Phase IV and Beyond

The phases could continue and be revamped as needed based upon priorities, funding and amount of the scope completed. They could have more functionality and data in release 2.0, etc. This iterative approach reduces risk and brings a working product into the partners' hand in a much shorter time frame than trying to accomplish all the deliverables in a single release. Of course, these deliverables would be subject to change based upon business requirements, funding and pilot results. The goal of such an approach though, is to break the project down into manageable chunks, with clearly defined objectives, scope,

requirements, cost, risk and timeline so it can be handled as a single effort and can be more manageable.