Oregon
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February 1, 2014

The Honorable Senator Richard Devlin
The Honorable Representative Peter Buckley
Joint Committee on Ways and Means
900 Court Street NE
H-178 State Capitol
Salem, OR 97301-4048

Dear Co-Chairpersons:

This letter provides the report to the Joint Committee on Ways and Means as required by a budget note adopted during the 2013 legislative session by the Joint Ways and Means Committee. The Department of Land Conservation and Development (DLCD) requests the Joint Committee on Ways and Means acknowledge receipt of this report.

Nature of the Request

In approving DLCD's 2013-15 budget, the Natural Resources subcommittee of the Joint Ways and Means committee reviewed and approved a transformation initiative called Information Management Modernization Initiative (IMMI). The committee recommended funding the second phase of this five-year initiative, and the legislature approved it with the following budget note:

> The Department of Land Conservation and Development (DLCD) is directed to work with the Department of Administrative Services (DAS) in the development of a plan for implementing business and technology improvements to its existing business processes, databases, tools, and applications as identified in the "scope of work" defined in DLCD's "Information Management Modernization Initiative (IMMI) Strategic Action Plan 2012-2017." DLCD and DAS are directed to provide the Legislative Fiscal Office (LFO) by February 1, 2014, with final copies of all foundational project management documentation; a project work plan and budget; and a current project status report showing progress against original goals and objectives. DLCD is further directed to provide a report to the Joint Committee on Ways and Means during the February 2014 legislative session on the status of IMMI.

The Strategic Action Plan referred to in the budget note is a complete plan that includes the required foundational project management documentation, except for alternatives analysis. Because the initiative includes more than 75 projects, alternatives analysis was not considered feasible or suitable. The remaining documentation is incorporated in the plans for each significant project. The initiative is designed for flexibility and adaptability throughout its five-year period. As discussed with the 2013 Joint Ways and Means Subcommittee on Natural Resources, the plan evolves according to project needs and available resources. This evolution includes combining projects, modifying solutions based on current

analyses, eliminating projects, leveraging DLCD staff as available, and adding new projects. The 2013 Legislature approved a funding package that was 50 percent less than the original agency request. As a result, the department has adjusted the timing and content of the original strategic plan. Current and future projects over the remaining 3.5 years of this initiative are described in the Foundation Highlights document (Attachment 1).

In addition to the information provided in this letter regarding IMMI, the department is prepared to answer any questions about the initiative, resources and impacts on local governments at the next meeting of the Joint Committee on Ways and Means.

STATUS REPORT

Agency Progress (July 2012 – January 2014)

DLCD's Information Management Modernization Initiative (IMMI) contains over 75 projects. Thus far, the department has completed 24 projects of different magnitudes and complexity with a mixture of internal and external resources. Overall, the department has modernized two critical databases (with two more in progress), established a governance structure to guide the initiative over its five-year life, engaged a cross-section of personnel to work together on project teams, and enhanced the skills and abilities of many employees. Accomplishments are summarized below, prefaced by a brief restatement of initial conditions, organized by architecture as in the IMMI plan but in order of significance. Refer to the Strategic Action Plan August 2012 for more detail.

1. Organization (overall) 

<u>Developing personnel; adding needed skills</u> 

Historically, the department has not been able to properly maintain or enhance information resources, nor has it been able to put those resources to best use. Some employees needed to update existing skills, some employees needed new skills, and others needed more advanced skills. The most cost-effective way to provide most of the missing capabilities is to build on the skills and interests of existing personnel. Using this strategy, only one position was requested for 2013-15.

STATUS: The department developed an agency-wide training plan (Attachment 2) to increase current skill sets needed to maintain and use the new resources and enterprise platform effectively. The training plan is funded through existing department resources. More than 20 employees have received one or more training courses on a variety of technologies and some have received project management training. In addition, the department leveraged prior communications training sessions provided to all staff by hosting a three hour facilitated course on improving communications. A part-time limited duration database administrator, approved by the 2013 Legislature, is currently in recruitment. The department anticipates it will request a permanent, full-time position and accompanying funding levels in support of the position for the 2015-17 biennium. The department has made significant progress in equipping personnel with the right skills at the right time. The training plan provides a path for future skills development.

<u>Initiative Management</u> 

IMMI governance structure is necessary to make decisions, sustain progress and build connections throughout the department. The department had no organized process for making investment

decisions. A portfolio approach to investment decisions and overall project management was identified to build cohesion and promote discipline.

STATUS: IMMI governance structure is approximately two-thirds in place. The IMMI charter has been recently updated and is attached to this report (Attachment 3). The Steering Committee meets every four to six weeks to consider a variety of IMMI-related topics and review project deliverables. Technical Advisory Committee members are preparing for their initial meeting. The initiative sponsor, Director Jim Rue, has formally invited proposed members to the Partner Advisory Committee.

The Steering Committee has recently completed a full cycle of portfolio management--from initiation through annual review, including project scope changes, priority changes, project additions and combinations, and examining lagging projects. Portfolio management is used for making cohesive information resource investments and for routine initiative tracking and management.

Draft performance measures await further consideration by the steering committee. These draft measures are described in the Foundation Highlights document attached to this report (Attachment 1).

Framework Stewardship

The department must take on the responsibility of maintaining and providing access to statewide GIS data sets on behalf of agencies and the public by formalizing its stewardship role. Stewardship is a vital component of a statewide program coordinated by DAS. DLCD is uniquely situated to steward several valuable statewide data sets but had been slow to assume and formalize the stewardship responsibility and accountability due to limited personnel with the requisite skills and time.

STATUS: DLCD has assumed the responsibility of providing stewardship services for the following five statewide GIS data sets: urban growth boundaries (UGBs), zoning, comprehensive plan designations, shoreline, and flood plain. Each is in different stages of development and maintenance. The most mature, UGBs, is steadily moving through the process of establishing formal stewardship. Three people in three different divisions are currently acting as stewards. Documentation is lagging somewhat behind stewardship activities.

Rules and Policies

The Strategic Action Plan identified that some existing rules and policies needed to be modified to facilitate the use of current and emerging methods of communication and operation. A new policy needed to be adopted/developed to promote the treatment of information as a strategic asset.

STATUS: Two Oregon Administrative Rules have been amended to permit submission of digital planning documents (Attachment 4). In addition, one new policy was established to maintain the integrity of modernized information assets (Attachment 5). The remaining changes contemplated at this time are to existing policies, such as an agency-wide prohibition on the use of social media. The rule and the policy are provided with this report.

Collaboration/Harmonizing

Sorting out overlapping and ambiguous responsibilities for hazards identification, risk assessment, mitigation and public awareness are essential to developing certain resources under this initiative. Various methods were needed to promote collaboration with state agency partners and local jurisdictions, leverage investments, and pursue joint projects. Internally, organizational divisions producing isolated resources need to diminish. IMMI requires cross-division teams and builds agency-wide resources to promote cohesion and gradually reduce standalone resources.

STATUS: Department of Geology and Mining Industries (DOGAMI) and DLCD have agreed upon an approach to hazards data and applications that avoids duplication and reduces competition for resources. Much work remains to bring the approach to reality. The Partner Advisory Committee, part of IMMI governance, is designed to incorporate partner and jurisdiction input. Internally, cross-divisional project teams have had a positive effect on agency cohesion. In a statewide context, the IMMI coordinator has convened a diverse workgroup that is developing an integrated zoning map and associated data standard. Many state agencies are eagerly awaiting this release of this data.

Document Management

DLCD is the custodian of vast paper collections of land use plans and related documents that are difficult to access. Online access, search and retrieval are needed for efficiently conducting routine business, responding to public records requests, reporting, and contextual access by agency personnel, partners and the public.

STATUS: A set-level inventory was completed over a year ago. The Measure 49 library has been digitized and is ready for the Oregon Records Management System (ORMS). A records management work plan for ORMS is embedded in the department's agreement with the Secretary of State. The first group of documents is in process again after being in a holding pattern while technical obstacles are resolved. In partnership with the University of Oregon Libraries, the department is updating and refining an existing collection of local government planning documents that are searchable and accessible to the public. Because our partner is developing the digital tools at no cost to us, progress is slower than originally planned but the tools will be ready within the next few weeks. A large portion of document conversion and management remains to be done.

2. Applications & Tools

The IMMI Strategic Action Plan identified the need for several new applications and tools to support the land use program. Equal emphasis was placed on internal and external users overall, but early focus has been on building a standard foundation so that customized tools and applications can be more easily developed and deployed for all users in the future.

STATUS: Progress has been made on land use program tracking applications and map viewers. Specifically, the department has accomplished the following:

- Planners' Portal Design and Brief (Attachment 6)
- Map viewers for sage grouse planning, urban growth boundaries through the decades, estuary plans with updated data, zoning data status Web application, solar and wind resources and, for greater transparency, distribution of grants from 2009-2011
- Web application in development for each of the above
- Web-based forms for Farm and Forest decisions (see data section, below), with search, query, edit, and reporting application
- SharePoint implementation plan (Attachment 7); home page launched in early January 2014
- Cloud-based spatial/location resources gallery

3. Data

The department's mission-critical databases needed a complete overhaul, and four database projects were loaded into phase 1 of the initiative, following the development of a Database Foundation Plan (Attachment 8). Essential data, such as zoning, was not available statewide or current. Organizing and providing access to data and data services are required for internal and external use.

STATUS: Two databases have been migrated and provided with new applications and Web-based interfaces. The Farm & Forest database, formerly stranded in an antiquated and unreliable desktop database, is now in an enterprise database management system. Time savings in data verification, manual paper searches, and pulling multiple sources together for reporting are expected to conserve an estimated 325 hours annually. That time will be used for more valuable work in quality assurance; analyzing and mapping the data; and helping counties with rural planning. The Measure 49 database was moved from an outsourced solution to the department's new database management system and provided with a more efficient user interface. Now the department has unfettered access for conducting data quality checks, making minor modifications, and providing routine data management by a program expert. Other benefits include data mining, improved mapping capability, and repurposing funds previously expended for third-party services (nearly $17,000 annually). Two additional databases are in the process of being redesigned, migrated, cleansed, and deployed in the same database management environment. The department will soon have all the components required to begin mapping data assets for agency and public uses.

A statewide map integrating local zoning data, in collaboration with the Geospatial Enterprise Office in DAS and others, is now approximately 50 percent complete. The latest zoning status map is included with this report (Attachment 9). In addition, the department has developed and now hosts several Web data and map services available to the public.

4. Security

Modest improvements in security tools and processes were proposed in the IMMI Plan. A security audit or review was suggested.

STATUS: Security measures and processes have been enhanced. A DMZ has been staged for future outward-facing Web applications. Permissions and roles are implemented for databases in the enterprise system environment. Additional permission structures for various applications and SharePoint are not yet fully implemented. The department will soon acquire the ability to authenticate external users so that they can submit forms and documents online. This ability will significantly reduce hours spent duplicating input from paper forms. Routine security checks and measures are performed by our two-person IT team.

5. Technology

The plan called for timely software upgrades, increased server capacity and performance, deploying completely new tools and applications, installing and configuring an enterprise platform and helping consultants troubleshoot issues arising from all the changes, new users and new uses. In addition, the plan cited some improvements to infrastructure and broadband connectivity for satellite locations.

STATUS: With only a two-person IT team, DLCD has increased its server capacity, improved its technical infrastructure, upgraded software licenses, and added software and components to support enterprise management of assets and information access regardless of location. The team made numerous contributions to the execution of several IMMI projects. The department made progress on broadband connectivity for some satellite locations. Life cycle replacement of hardware and routine reporting comprise the majority of what remains to be done.

Current Projects

The department is implementing these projects during the 2013-15 biennium.

What it is	What it does	Architecture	Target Completion Date
Plan Amendments and Periodic Review data migration, program tracking and workflow management; online submission capability	• Mission-critical info placed in managed enterprise database system • Improve data access, security, reliability and quality • Permit basic and advanced data management, data mining and reporting • Improve efficiency by conserving staff time • Improve morale by reducing frustration and instability • Facilitate more effective execution of land use planning program • See Farm&Forest online submission below	Data Application	May 2014
Intranet home page in SharePoint	• Provide tailored communications, access to common resources, and collaboration capabilities internally • Support cross-divisional teamwork • Support basic document management • Improve efficiency	Application	First wave, Jan. 2014; successive waves every two months thereafter
Online submission of Farm and Forest decisions by local governments	• Increase convenience for local governments • Increase quality of data entry • Reduce paper handling and storage needs • Increase efficiency • Conserve staff time	Application	June 2014
Records Management System implementation (ORMS)	• Permit better and faster responses to public records requests • Provide improved access internally • Comply with State records standard • Able to apply record-level policy	Application Organization	Gradual implementa-tion through June 2017

What it is	What it does	Architecture	Target Completion Date
	• Leverage state purchase and increase agency collaboration • Significantly reduce cost & risk		
Online planning documents catalog, with online upload from DLCD to UO Libraries	• Provide access to collection of acknowledged planning documents to all • Continuous maintenance as acknowledgments occur • Effective search and retrieval of digital planning documents	Application Organization	June 2014
Web services: Data, maps and apps	• Establishes ready access to curated spatial resources internally • Provides ready access to DLCD spatial resources externally • Leverages statewide licensing for cloud-based GIS	Application Technology	December 2013 pilot; gradual deployment through 2014
Enterprise spatial deployment	• Location and mapping integrated with tabular data • Spatial analysis and data visualization • Empowers everyone to incorporate maps and spatial analysis in their work and decision-making	Technology Data	June 2014
UGB Stewardship Plan	• Makes DLCD explicitly responsible for maintaining assets for the benefit of all • Assures accountability • Documents how, when, by whom, how often and other parameters of stewardship • Contributes to navigatOR program at DAS/CIO/GEO	Organization Data	Dec. 2014

Action Requested

The department requests acknowledgment of the report and attachments.

Legislation Affected

It is not expected that legislation under consideration will be affected by this report. Funding for the initiative was provided by SB 5530 Section 1, 2013 Legislative Assembly.

Thank you for your consideration. If there are any additional questions concerning this initiative, we will be happy to respond.

Sincerely,

Jim Rue, Director

cc: Marilyn Worrix, Chair, Land Conservation and Development Commission

Attachments

1) Foundation Highlights with work plans and budget
2) Agency-wide Training Plan
3) IMMI Charter
4) Revised OAR 660-018-0020 and OAR 660-018-0040
5) Asset Integrity agency policy #OPS 370.06
6) Planners Portal Design and Brief
7) SharePoint Implementation Plan
8) Database Foundation Plan
9) Zoning Status Map

Department of Land Conservation and Development

State of Oregon

Information Management Modernization Initiative

Strategic Action Plan

Foundation Highlights

2012-2017

per Legislative Budget Note attached to SB 5530, Section 7

Prepared by
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Information Management Project Coordinator
and
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Table of Contents

Executive Summary

With access to better information and improved ways of using it, DLCD will be able to respond to critical questions quickly and reliably and provide the answers in easily understood form calibrated to the audience. That is the purpose of the Information Management Modernization Initiative.

The initiative includes over 75 different projects and activities that will modernize and enhance the department's information resources for internal and external users and business purposes. The strategies and solutions are organized into five architectures: organization, data, applications, security, and technology.

The major outcomes of this initiative are captured in the following table:

Tangible Improvements	Intangible Improvements
All program and related databases on enterprise database platform, and data with a location map enabled	An agency that can plan and execute projects and adequately support a robust information infrastructure
Land Use Planning Web portal and Hazards Planning Web portal on Oregon Explorer, with relevant data, tools, maps and apps	An agency that responds quickly and thoroughly to public record requests
Digital index to Planning Document Library (and potentially a complete digital library) replacing the Acknowledgment Room's paper collection	An agency that treats data as a strategic asset and integrates it into nearly all aspects of agency business
Document management system that conforms to the State's standard and agency policy for record retention	A vibrant collaborative of agencies and other partners that continue to work together for mutual benefit
Online submission of planning and other required documents	Realization of efficiencies equivalent to at least one FTE
Tools and techniques for assessing land use planning outcomes and for generating possible scenarios	Information resources fully aligned with agency business needs
Visualization of Oregon's land use planning history--to the extent data exists to support it	Ability to foster a well-informed citizenry and provide valuable resources for local governments and other stakeholders
Intranet supporting internal communication, collaboration and resource sharing	Unified agency through thriving internal collaboration and cross-divisional teams
Stewardship of at least three and up to five statewide GIS data sets	An agency with the experience and flexibility to adapt to constantly changing circumstances

In an era of scarcity, DLCD is beginning to derive greater value from its resources to meet its mission more effectively. The IMMI Strategic Action Plan describes and recommends a modern information infrastructure to meet the current challenges and be better prepared for future challenges. This document highlights the plan foundation and updates parts of the plan for the current and 2015-17 biennia. We are about 1.5 years into the five-year plan. The outcomes are beginning to make a tangible difference in carrying out the department's mission.

1.0 Program Management

1.1 Governance

The Steering Committee is made up of all department managers and executives, plus the IMMI coordinator. Final approval rests with the director. The Steering Committee establishes ad hoc workgroups and requests reports or other contributions from the Technical Advisory Committee (TAC). Among other things, the steering committee also reviews the IMMI portfolio, makes policy decisions, and monitors the progress of initiative activities. State agency and local government partners sitting on the Partner Advisory Committee make recommendations to the Steering Committee about potential joint projects, resource sharing, joint budget proposals, and ways to help local governments improve land use planning. The Technical Advisory Committee, comprised of DLCD subject matter experts as a core and ad hoc workgroups for short-term assignments, also makes recommendations to the Steering Committee, such as for enterprise licensing deployment and major infrastructure changes.

1.2 Initiative Coordinator

The IMMI coordinator serves as the project manager for most of the past and current IMMI projects, manages the IMMI portfolio of investments and projects, and is the point of contact. The coordinator also engages participants inside and outside the agency and leads the Framework Implementation Team workgroup tasked with creating the statewide zoning and comprehensive plan GIS maps. In addition, the coordinator maintains the documents for all initiative activities, organizes the meetings, assembles the agendas, and generally orchestrates the various activities so that components are ready for integration or assembly into broader resources.

1.3 Portfolio Management

A portfolio approach was established for managing over 75 IMMI projects and tracking the information resources improvements resulting from those projects. At regular meetings, the steering committee reviews new project ideas and requests for new software tools and applications before purchases are approved. The committee periodically reviews the status and priority of projects in the portfolio, reviews project deliverables, previews new resources, and considers changes to projects. They assure the availability of team members to effectively participate. Portfolio management practice permits the steering committee to make deliberate and informed decisions about investments that become more than the sum of their parts. It also permits the IMMI coordinator to maintain a complete and current picture of IMMI projects for daily management.

2.0 Project Schedule

Overall, the pace of the initiative has slowed somewhat due to lack of funding and reaching the limit on internal capacity in terms of available time and skills. The end of the five-year plan is June 30, 2017.

Phase 2 ends June 30, 2015 and comprises Priority 2 and 3 projects. Some reworking of Phase 2 necessary because of: 1) promoting all program database projects to Phase 1/Priority 1; and 2) only slightly more than half of the budget request was appropriated (Agency Request, $450,000; Legislatively Adopted Budget, $238,934). Projects were removed, deferred or are being done in-house despite inexperience and limited availability of personnel. Two projects are being accomplished through partnerships that have reduced or eliminated the anticipated cost. Phase 3, which includes the priority 4 and 5 activities adjusted from the Strategic Action Plan, spans next biennium (2015-17). The work plan for Phase 3 has been adjusted to include projects deferred due to funding shortfalls and evolving needs. (See section 5.0 for work plans.)

3.0 Project Team Examples

In addition to the governance bodies described above, IMMI teams are assembled for each project or activity based on expertise, position within agency, and interest. Cross-divisional participation is emphasized. Presented here are samples of current project teams.

Project team with external consultants – primary program database migrations and application
Project start: October 2013 Project end: May/June 2014

Name	Position	Division	Role
Gail Ewart	IMMI coordinator	Director's Office	Project manager
Jon Dunsmore	Network Administrator	Administrative Services	IT expert
Angela Houck	Administrative Support	Planning Services	Data entry expert
Larry French	Administrative Support	Community Services	Program expert
Rob Hallyburton	Division Manager	Community Services	Program expert
Sarah Marvin	M49 Land Specialist	Planning Services	Data expert
RDI team	Various	na	Consultants

Internal project team - Intranet home page design, populate, deploy in waves
Project start: October 2013 Project end: successive rollouts through June 2015

Name	Position	Division	Role
Teddy Leland	Division Manager	Administrative Services	Project manager
Jon Dunsmore	Network Administrator	Administrative Services	Site developer
Casaria Taylor	Administrative Assistant	Director's Office	Site designer/developer
Andy Lanier	Coastal GIS Analyst	Ocean & Coastal	Content expert
Angela Lazarean	Administrative Support	Community Services	Content expert
Bill Holmstrom	Transportation Lead	Planning Services	Content expert
Gail Ewart	IMMI Coordinator	Director's Office	Content expert
Lorinda DeHaan	Administrative Support	Ocean and Coastal Services	Content expert
Robert Mansolillo	Urban planner	Community Services	Content expert
Laura Lehman	Transportation Planner	Planning Services	Content expert

Planning Workgroup participants – Zoning & Comprehensive Plan Maps

This statewide collaborative group develops standards, defines specifications for cooperative agreements, builds consensus among diverse participants, and provides input to the stewardship plans. Activities are part of the navigatOR program coordinated by DAS and under the auspices of the Oregon Geographic Information Council. The workgroup does not conduct data development; data development has been accomplished by the department and Oregon Department of Transportation.

Name	Profession	Organization
Gail Ewart, Lead	Geographer/Info Mgmt	DLCD
Alex Bettinardi	Transportation modeler	ODOT
Robert Mansolillo	Urban Planner/GIS	DLCD
Dennis Yee	Economist	Metro
Zac Christianson	GIS Manager	Metro
Rob Denner	GIS Analyst	City of Philomath
Bill Clingman	GIS Analyst	Lane COG
Joanne Manson	GIS Analyst	OMD
Katherine Daniels	FarmForest Planner	DLCD
Al Burns	Urban Planner	City of Portland
Brian Hanes	Planner	Washington County
Steve Lucker	Hazards GIS Analyst	DLCD
John Boyd	Planner	Douglas County (formerly)
Dawn Smith	Planner	Wallowa County
Heidi Suna	Planner	City of Beaverton
Chad Crockett, Chair Admin Boundaries FIT	GIS Analyst	ODOT
Doug Terra	GIS Analyst	City of Eugene
Brady Smith	GIS Planner	Confederated Tribes of Siletz Indians
Cy Smith	Geospatial Information Officer	DAS/CIO/GEO
Bob DenOuden	Framework Coordinator	DAS/CIO/GEO

4.0 Scope

The IMMI Plan bolsters five architectures described in the Strategic Action Plan (data, applications, technology, security and organization) through more than 75 projects. Each of these projects is scoped and managed individually. Partnerships, collaborative activities, and internal resources are leveraged whenever possible.

5.0 Work Plans

The current Phase 2 and estimated Phase 3 work plans are presented below.

Phase 2 ending June 30, 2015
Legislatively Approved IMMI Budget: $238,934

Project	Est. Cost	Type	Notes
e-Acknowledgment Room, Ph 1	$0	In-house & Partnership	Collaborate w/UO Libraries for online maintenance of acknowledged planning documents; UO Libraries providing student work force
FarmForest & M49 application and Web UI	$26,201	Contract	Complete data migration and application development project
PAPA/Periodic Review modernization, with online submission	$100,000	Contract	Data migration, application development, Web UI, with online submission by jurisdictions (formerly separate project w/budget of $30,000; split in half with next)
Intranet Development	$0	In-house	Design, develop, deploy DLCD Inside
Database Administrator	$92,894	Personnel	Hire one ISS 6 database administrator
Software, tools, etc.	$19,823	S&S	Software, tools and related expense supporting the execution of DBA duties
Records Management System	$0	In-house & Partnership	With Secretary of State providing consulting services for no charge, continue ORMS implementation; subscription costs paid with IT budget.
Stewardship Plans for statewide GIS data sets	$0	In-house & Partnership	Develop stewardship plans with stewards for Zoning, Comp Plan Designations and Flood Plains

As a result of decreases during the development of the 2013-15 biennial budget, DLCD does not have resources to complete other planned IMMI projects. These projects include: the Planners Portal, the toolkit collaboration with Metro, and assisting all the cities and counties that need help to develop digital zoning and comprehensive plan maps. We are advancing some efforts without the benefit of outside expertise, such as developing our Intranet site in SharePoint. The risks of this approach are higher than they would be with consulting expertise, but these are somewhat mitigated by solid implementation plans prepared by consultants in earlier phases as is the case with SharePoint.

Phase 3 ending June 30, 2017
Anticipated Budget Request = $513,400

Project	Est. Cost	Type	Notes
Planning Document Collection Accessibility	$25,000	Contract	Partial document conversion and accessibility enhancement
Land Use Indicators Study	$10,000	Contract	Concept evolving
Land use Indicators Implementation	$15,000	Contract	Implement as much of the results of the study as budget allows
Planners Portal, Ph 2	$53,400	Contract	Implement Planners Portal on Oregon Explorer; INR as contractor
M49 Spatial	$0	In-house	Research and correct location data in Measure 49 database as time permits

Intranet Dashboard	$30,000	Contract	Implement dashboard in SharePoint to track progress on 19 goals and projects from rulemaking to databases
Planners Toolkit	$50,000	Contract	Data and planning support tools (adapt existing or purchase)
Intranet Workflow Management	$10,000 $10,000	Contract S&S	Workflow management component implemented in SharePoint (software only); configuration and training estimated
Oregon Records Management System	$15,000	Contract S&S	Annual subscription and customization
Intranet Document Management	$30,000	Contract	Configure and ingest document collection for integration with SharePoint capabilities
Extranet/Internet Development	$15,000	Contract	Augment Web resources supporting LCDC and jurisdictions
Land Use Policy Database	$20,000	Contract	Requirements gathering, design and pilot
M37 Tables	$10,000	Contract In-house	Parsing and batch scripting DBA and M49 Specialist
Database Administrator	$220,000	Personnel	Years 4 and 5, full time, permanent

6.0 Quality Assurance

Quality assurance and quality control occur on two fronts. Quality assurance is performed for each project. Contractors, if used, provide internal quality checks and periodically review quality issues and results with the project team. Common expressions are data migration reports and testing, best practices checklists, change requests, and status tracking throughout the life of the project. Quality assurance status and improvements reports and presentations summarizing the overall project status, performance, risks and recommendations for process improvement to are provided to department project managers, the IMMI Steering Committee and other relevant governance bodies.

The second aspect of quality assurance is the stewardship of statewide GIS and department program data. For statewide GIS data, the department provides stewardship services for the benefit of everyone. The stewardship charters and plans, along with any standard operating procedures, evidence the roles and responsibilities for all parties involved and outline how and when the data will be updated and distributed. Standard metadata is required. The charters and plans are reviewed by various governance bodies and are approved by the Oregon Geographic Information Council. For department databases, separate projects evidence the process of examining data that could not be migrated in batch mode and, if practicable, it is cleansed and inserted into the database. The new database administrator will conduct data quality and integrity checks and review new records. Input forms, stored procedures, and permissions all contribute to getting the right information from the start, preventing processing errors, and permitting only knowledgeable personnel to make changes. In addition, all changes are tracked in log files, and backups insure that no more than one day's work is ever lost.

7.0 Risk and Mitigation

In the execution of mandates, goals and objectives, departments can no longer afford to operate separately when it comes to developing and supporting the core business activities. This statewide strategy has at its core a new approach in information resource management. With change comes added risk. New solutions also come with risk. It is not prudent or cost effective to manage to a risk-free environment. State government must be prepared to accept the potential of risk to achieve cost

reductions or improved outcomes. Departments must work together to help design and deploy common, cost-effective solutions that achieve agencies' common business needs. This is a core principle of DLCD's transformation. DLCD strives to leverage mutual business needs and resources while accepting some risk.

Within the department's role of completing quality management, quality assurance and quality control on the projects within the initiative, the project leader and project teams identify risks and provide recommendations for risk avoidance and mitigation strategies for each project. Mechanisms for notification of risks and avoidance of risk are identified with project management plans for each project.

At a summary level, the anticipated risks for the entire initiative, along with an assessment (estimate of likelihood over level of impact), and mitigation strategies are set forth in table below. Risks currently manifesting due to funding issues are highlighted in grey. Mitigation measures have been taken, and the overall pace of implementation has slowed somewhat. We have shifted emphasis to projects and activities the department can do with internal resources or with minimal outside help.

Risk Assessment	Risk Description	Mitigation Strategies
Low-Medium/ High	No action or too little action, too late	The biggest risk here is that so little is accomplished that technology innovations render most of our plan irrelevant. Purchase focus (i.e., outsource) whenever monetary resources permit.
Low/ Medium	Executive commitment wanes or is inconsistent	Mitigation at this level primarily rests on early notification of changes in direction or priorities so that an orderly winding down or transition can be accomplished.
High/ High	Insufficient or poorly timed resources, monetary and human	Early notice; flexible planning; adjusted expectations
High/ Medium	Projects initiated before business plan in place	This risk naturally diminishes as this Plan approaches adoption, so mitigation is adoption without undue delay.
High/ Low-Medium	Talent to task mismatch or match not possible	In the course of five years, this is likely to occur and probably more than once. The best mitigation is making early adjustments in assignments to better match existing talents and acquire talents by contract. If acquisition is not an option, seek volunteer contributions. If all reasonable options fail, consider changing project requirements or do with less satisfying outcome.
Medium/ High	Key decisions and investments are not made or not made in a timely manner	Communicate the impacts to decision makers early and often. Focus on efforts that can continue if delays on certain projects are unavoidable. Facilitate decisive decision making as much as possible. Regroup and potentially revise plan and schedule.
Medium/ High	Resistance to change or other human factor overtakes positive contributions and cooperative intentions	DLCD Director and IMMI Steering Committee must be willing to lead through typical resistance to change. The adoption curve predicts a range of adoption timing and can be managed, but key contributors must be early adopters. Persistent resistance must have consequences, and those consequences must be clear and well communicated from the start.
Low/ High	Important information relevant to IMMI and this plan are not discovered in a timely fashion.	A certain level of communication failures and knowledge gaps can be absorbed without significant adverse impact. Beyond that level requires the active engagement of the IMMI Steering Committee to bring salient information forward so that appropriate adjustments can be made.
High/ Medium	Completed IMMI projects reveal unanticipated opportunities and lead to adjustments in priorities and projects.	It is anticipated that exposure to data and information previously inaccessible to most potential users will stimulate many new project ideas, shift priorities and perhaps obviate the need for some planned projects. Review and revise portfolio as indicated.
High/ High	Available budget is insufficient to carry out needed and desired projects	Re-scope to funding constraints and recalibrate time line; accept and communicate that DLCD will not be able to implement everything envisioned in the original five-year plan.

8.0 Communications and Outreach

The most essential ingredient for any initiative is effective, consistent communications in all directions. Given the amount of change that implementation of this initiative will bring, it is critical to organize and use multiple channels of communication on a regular basis and increase the frequency of communications during peak periods of change.

One new communication channel will be our Intranet, DLCD Inside. Announcements and accomplishments will be posted on the home page. The calendar will let people know when meetings are set. The Director can use the area set aside for thoughts to include items about IMMI. Space will be devoted to refresh people's minds on available tools and resources and ongoing projects. The project teams will use the Projects Web pages to share documents, ideas, issues, and progress. A page devoted to IMMI overall will feature status reports to IMMI Steering Committee, meeting agendas and notes, the project portfolio and other relevant materials. On the flipside, people can use the Intranet to post project ideas, share new efforts that relate or could be connected better, provide suggestions, pose questions, or alert us about upcoming opportunities. It can also be used to inform us about what's not working very well.

We will continue to employ our public Internet site to provide information about our activities, announce improvements and new services, post answers to frequently asked questions, and perhaps create a visualization of IMMI progress.

Demonstrations and models, requirements gathering, beta testing, and new ideas are conducted using a variety of methods throughout the five years of plan implementation. In addition, we will incorporate new media approaches into our communications strategy when DLCD policies are adjusted, along with convenient feedback mechanisms, in conformance with state standards and policies.

Communications is a major component of effective change management, and effective change management can make or break this initiative. Change management is addressed in an informal manner currently, and the department continues to evaluate a more structured approach as the initiative progresses.

A change advisory board was envisioned but that level of formality may not be necessary if existing communications channels are fully engaged and incremental changes unfold gradually. Nevertheless, essential aspects of the practice are incorporated within IMMI governance.

General communications and solicitation of feedback occur via email, during project meetings, and at stakeholder input meetings. All-staff meetings and our Intranet will be increasingly relied on for feedback and new ideas.

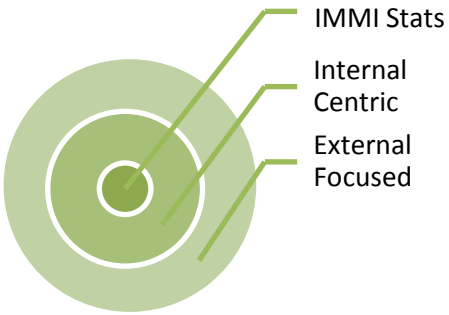
Well-timed expressions of support and encouragement from the executive sponsor and Steering Committee members are critical to sustaining momentum and refreshing minds about common

priorities and the value of working together. Another extremely important communication involves calibrating expectations to match what can realistically be accomplished.

To round out the communications strategies, milestone celebrations, periodic updates between milestones at all-staff meetings, demonstrations, brown bag education, and presentations to the Land Conservation and Development Commission are all envisioned. The first milestone celebration was held in December 2013.

9.0 Measuring Progress

Some basic measures for gauging IMMI progress are under consideration by the Steering Committee. A fresh proposal is on the agenda for January 2014. The measures are grouped into three spheres (see diagram). Selection will largely depend on whether there is a method of measurement and a way to quantify historic information. Eventually, all measures can be displayed on a dashboard in SharePoint.



IMMI Statistics

These measures are easy to identify, compile, and report. The project statistics are routinely provided on the steering committee meeting agendas.

1. Projects by priority by stages of completion
2. Initiative progress bar, overall and for each architecture

DLCD Centric

These measures are more difficult to quantify but are highly indicative of benefits realized.

3. Number of person hours converted to productive pursuits
4. Number of trainings experienced and skills enhanced, with specific reference to gaps filled
5. Number and percent of total statewide GIS data sets stewarded for Oregon
6. Number of new or improved enterprise resources in routine use

External Focused

These measures gauge the positive impact on our partners and local governments. The first two can be counted and the latter collected by anecdote with as much quantification as possible.

7. Number of data, tools and other resources made available
8. Policy/rulemaking/study groups supported with IMMI resources
9. Efficiencies gained using IMMI resources—that is, instances where improved resources conserved time and/or money of local governments or other partners.

Attachment 2
Agency-wide Training Plan

	SQL Server		ESRI Enterprise			
	MSSQL *Vouchers from New Horizons*	**Key Training Course**	**ArcServer - Key Training** *Discounted Arc training Credits from DAS via ELA#2*		**ArcDesktop - Key Training**	
Installation	**Immediate: Jon** **Future: Aaron or DB Adm** (Immediate = 2)	10775 Administering Microsoft SQL Server 2012 Databases (5 days @$2,475) *6/3 in Beaverton	**Immediate: Jon** **Future: Aaron or ?** (Immediate = 2)	ArcGIS for Server: Site Configuration and Administration (3 days, $1515) *Online May 13, June 5, etc.	**Future:** Jon, Aaron	N/A
Construction	**Immediate: Sarah, Tanya, Robert, Randy** **Future:** DB Adm, Contractors (Immediate = 4)	10776 Developing Microsoft SQL Server 2012 Databases (5 days @$2,475) *6/3 in Beaverton	**Immediate: Randy, Robert** **Future:** Sarah (Immediate = 2)	Configuring and Managing the Multiuser Geodatabase (3 days, $1515) *Online 5/7, 5/20, 6/4, etc	**Immediate: Robert** **Future:** Randy, Andy, Steve, Christine, Laura, etc. (Immediate = 1)	Building Geodatabases (3 days, $1515) *Online 4/15, 5/28, 6/4 etc
Application Development	**Immediate: DB Adm** **Future:** Contractors (Immediate = 1)	N/A	**Immediate: Tanya** **Future:** Contractors (Immediate = 1)	Building Web Applications Using the ArcGIS API for JavaScript (2 days, $1010) *Online 6/24	**Future:** Randy, others? Contractors	N/A
Power Use	**Immediate: Angela H, Larry** **Future:** Diana, Juna, Doug, Randy, Casaria, (Immediate = 2)	Custom Onsite OR Querying Microsoft SQL Server 2012 (Course 10774 is a 5-day course at $2,475) *5/13, and 6/24 in Beaverton	**Immediate: Andy, Steve, Sarah, Robert** **Future:** Randy, Christine, Sarah, Ed, Tanya and many others (Immediate = 4)	ArcGIS for Server: Sharing GIS Content on the Web (2 days, $1010) *Online May 21, June 4, June 18, etc.	**Future:** Matt S. Bill, Josh, Laren, Patrick, Dave, others	Editing Data with ArcGIS for Desktop (2 days, $1010)
New Use/ Low Use	**Immediate: Rob, Heather, Matt, Julie, Katherine, Tom, Gordon, Jon J., Casaria, Diana, Juna, Doug, Lorrinda, Mara, Linda** **Future:** Teddy, Carrie, Jim, Patty, and others interested in directly using databases (Immediate = 15)	Custom Onsite - Introduction to Microsoft SQL Server 2012 *Teddy organizing training (likely to occur no earlier than July)	N/A	N/A	Future discussion	Getting Started with GIS for ArcGIS 10.1 (4 hours, FREE)

State of Oregon Department of Land Conservation and Development

GIS Staff Development Plan

Overview

This Geographic Information System (GIS) Staff Development Plan is intended to be a tool the State of Oregon Department of Land Conservation and Development (DLCD) can use to leverage the GIS team's potential - identifying and planning specific training to support DLCD's investment in enterprise GIS technology.

The document reflects the points outlined in discussions between Esri and DLCD. Upon completion of DLCD's review of this document, Esri and DLCD will reengage to further refine the learning needs to be included in this staff development plan.

Business Strategy of Staff Development

Integration of any technology requires an engaged audience for effective and efficient implementation. GIS Staff Development success is measured in effectively utilizing the human element of the GIS to exploit the technology capabilities. Ultimately, this leads to a greater return on investment of capital and time; some of examples of this include:

- Productivity and efficiencies in GIS operations increase, allowing more accomplishments with fewer resources
- Up-to-date skills aid in the prevention of costly mistakes in new GIS implementations and system updates
- Staff is better equipped to recognize opportunities for using GIS throughout the organization

The Esri GIS Staff Development Process

The Staff Development Plan process consists of these steps:

- Identify organization goals and objectives
- Identify GIS goals that support the organization objectives, including newly defined GIS goals to be addressed in this plan
- Identify the applications of GIS and workflows needed to achieve the goals; typical applications of GIS are defined by Esri
- Attach GIS functions to the workflows
- Recommend Esri training resources to the GIS functions
- Schedule training
- Review Plan annually

The resulting Staff Development Plan is a dynamic document that will be maintained to meet the GIS goals and needs of DLCD. Esri is a partner in meeting regularly to evaluate and update this Plan.

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DLCD Business Goals and Objectives

- As a regulatory agency, DLCD is responsible for ensuring that local agencies are aware of, understand, and adhere to land use planning statutes and regulations.
- Ocean and Coastal Services Division works with multiple agencies on ocean and coastal management through the Oregon Coastal Management Program

GIS Support of DLCD Goals and Objectives

Initially, DLCD is embarking on a total overhaul of information resources and the new foundation will support robust location intelligence in all aspects of program delivery:

- Provide managing stewardship services for key Framework elements and make them available in multiple ways, with emphasis on Web services
- Share a "living story" of planning across the state: what's happened since inception; what was planned versus what actually happened; where are we now
- Provide the full array of Web services using Esri technologies calibrated to the need
- Gather spatial information of plan amendments and related documents at the time of online submission
- Spatially enable tabular databases
- Build analytical scenario-spinning tools
- Enable assessment of the land use program (statewide outcomes of the program) and as an agency (execution of the program)
- Capitalize on opportunities to infuse location awareness as we convert from paper collections to digital document management

Esri Common Applications of GIS

By providing the geographic advantage, an enterprise GIS offers benefits of sound decision making, efficient utilization of resources, and effective communication. Typically, organizations apply GIS in five ways: data management, planning and analysis, field mobility, operational awareness, and citizen engagement. In addition, system management of the GIS is represented in a separate pattern, GIS Infrastructure. Each of the application areas relies on specific sets of workflows, which are listed below.

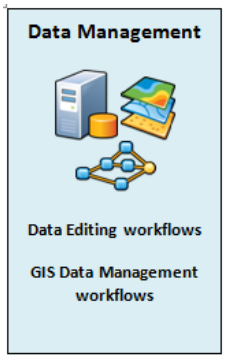
Data Management	Planning & Analysis	Field Mobility	Operational Awareness	Citizen Engagement
				
GIS Data Management workflows Managing Data Quality Feature Editing for Desktop Automating Editing Tasks Feature Editing for Server/Mobile **Data Editing workflows** Managing Feature Data Managing Raster Data Designing/Managing Geodatabases Managing Multiuser Geodatabase Environment Data Documentation	**Data Analysis workflows** Analyzing Feature Data Analyzing Raster Data 3D Data Analysis Network Analysis Geoprocessing/Automation **Map Publication workflows** Designing Web Maps Designing Maps for Print	**Data Visualization workflows** Browser Client iOS Client GPS Client **Data Editing workflows** Feature Editing for Server/Mobile Automating Editing Tasks	**Data Visualization workflows** Browser Client GPS Client iOS Client **Map Publication workflows** Designing Web Maps Designing Maps for Print	**Data Sharing workflows** Designing Web Maps Publishing Services Sharing Resources **Data Visualization workflows** Browser client Mobile client

GIS Infrastructure

Application Development workflows
Desktop Customization
Web Development
Mobile Development

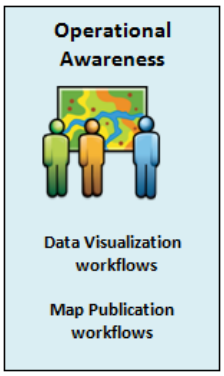
Enterprise GIS Management workflows
ArcGIS Server Administration
System Administration
Enterprise Database Administration
Promotion of Overall GIS Vision

ArcGIS Server 10.1 Training Recommendations – includes SDE data management, web services development, and ArcGIS Server administration



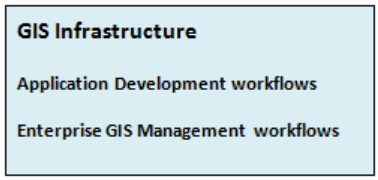
GIS Function: ArcGIS Server SDE data administration – responsible for designing and managing the multiuser (SDE) geodatabase(s)
GIS Role: Enterprise GIS Data Manager
Recommended Training

- Configuring and Managing the Multiuser Geodatabase (3 Days) Learn about the multiuser geodatabase architecture and installation options and how to configure the geodatabase for efficient data storage and delivery of data access and editing capabilities to many users. Intended audience: Spatial database administrators and GIS data managers who need to create, configure, and manage a multiuser ArcSDE geodatabase.



GIS Function: creating content/services/applications using ArcGIS Server
GIS Role: Web Developer
Recommended Training

- ArcGIS for Server: Sharing GIS Content on the Web (2 Days) Learn how to share your professional maps, data, and workflows by creating and publishing high-performing GIS services that can be accessed from desktop computers, web browsers, and mobile devices. Intended audience is GIS analysts, specialists, and other experienced ArcGIS users who want to share GIS resources in web maps and web mapping applications; developers who want to incorporate GIS services and web maps into custom applications.
- .Building Web Applications Using the ArcGIS API for Flex or JavaScript or Silverlight (2 Days) Learn how to use the ArcGIS API for Flex (or JavaScript, or Silverlight) to efficiently develop high-performing, engaging web applications that meet the needs of their users. Intended course audience: Web developers who want to create Flex-based applications that include ArcGIS services and functionality and GIS professionals who want to create Flex-based web mapping applications.



GIS Function: ArcGIS Server Administration - responsible for ensuring top performance of ArcGIS Server
GIS Role: Web Administrator
Recommended Training

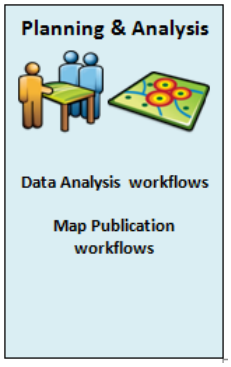
- ArcGIS for Server: Sharing GIS Content on the Web (2 Days) Learn how to share your professional maps, data, and workflows by creating and publishing high-performing GIS services that can be accessed from desktop computers, web browsers, and mobile devices. Intended audience is GIS analysts, specialists, and other experienced ArcGIS users who want to share GIS resources in web maps and web mapping applications; developers who want to incorporate GIS services and web maps into custom applications.
- *ArcGIS for Server: Site Configuration and Administration* (course description not yet on Esri website) (3 Days) Learn the ArcGIS for Server architecture and recommended workflows for configuring ArcGIS server sites and managing GIS services, applications, data, users, and servers. Techniques and best practices to ensure system performance, security, and reliability are emphasized. Intended course audience: ArcGIS Server administrators

Other Applicable Training

- Embedding ArcGIS into SharePoint (60 minutes)

- Esri Maps for Microsoft Office, SharePoint, and IBM Cognos (60 minutes)

ArcGIS Analysis Training Recommendations (not all courses are applicable to all staff members)



GIS Function: Performing Desktop analysis using both vector and raster data
GIS Role: GIS Analyst

Recommended Training

- Getting Started with GIS (for ArcGIS 10.1) (4 hours)
- ArcGIS II: Essential Workflows (3 Days)
- ArcGIS III: Performing Analysis (2 Days)
- Building Models for GIS Analysis using ArcGIS 10, (3 hours)
- Basics of Python (for ArcGIS 10)(3 hours)
- Using Python in ArcGIS Desktop 10(3 hours)
- Python Scripting for Geoprocessing Workflows (for ArcGIS 10)(3 hours)
- Introduction to Geoprocessing Scripts Using Python (3 Days) instructor-led alternative to the previous three Virtual Campus courses

Specific to analysis of raster data:

- Basics of Raster Data (for ArcGIS 10) (3 hours)

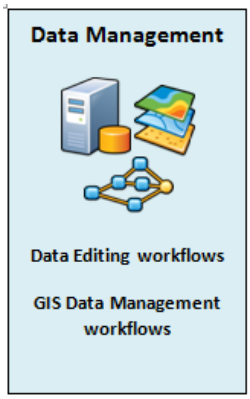
Other Applicable Training

- Geocoding in ArcGIS Desktop 10 (60 minutes)
- Working with CAD Data in ArcGIS Desktop (10.0) (1 Days)

Specific to analysis of raster data:

- Introduction to Spatial Pattern Analysis, (60 minutes)
- Deriving Rasters for Terrain Analysis Using ArcGIS 10 (3 hours)
- Processing Raster Data Using ArcGIS 10 (3 hours)
- Visualizing and Analyzing Imagery with ArcGIS 10 (60 minutes)
- Using Lidar Data in ArcGIS 10 (3 hours)
- Distance Analysis Using ArcGIS 10 (3 hours)
- Using Raster Data for Site Selection (for ArcGIS 10) (3 hours)
- Introduction to Surface Modeling Using ArcGIS 10 (3 hours)
- Performing Spatial Interpolation Using ArcGIS 10 (3 hours)

ArcGIS Data Management Training Recommendations (not all courses are applicable to all staff members)



GIS Function: Management of GIS data, including both vector and raster data
GIS Role: User-level GIS Data Manager
GIS Role: GIS Data Manager
Recommended Training

- Getting Started with GIS (for ArcGIS 10.1) (4 hours)
- ArcGIS II: Essential Workflows (3 Days)
- Building Geodatabases (3 Days) Gain thorough understanding of geodatabase functionality
- Managing Imagery Using ArcGIS (10.0) (2 Days)

If using SDE geodatabases

- Configuring and Managing the Multiuser Geodatabase (10.1) (3 Days) Learn about the multiuser geodatabase architecture and installation options and how to configure the geodatabase for efficient data storage and delivery of data access and editing capabilities to many users. Intended audience: Spatial database administrators and GIS data managers who need to create, configure, and manage a multiuser ArcSDE geodatabase.

Other Applicable Training

- Getting Started with the Geodatabase (for ArcGIS 10) (3 hours)
- Working with Geodatabase Domains and Subtypes (for ArcGIS 10) (3 hours)
- Getting Started with Geodatabase Topology (for ArcGIS 10) (3 hours) These three Virtual Campus courses can be an alternative to the instructor-led Building Geodatabases course listed above in Recommended Training.
- Organizing Raster Data Using ArcGIS 10 (3 hours)
- Managing Imagery with ArcGIS 10 (60 minutes)
- Managing Lidar Data in ArcGIS 10 (3 hours)

DLCD Training Matrix

	Role	Function	People	Courses
	Enterprise GIS Data Manager	• ArcGIS Server SDE data administration – responsible for designing and managing the multiuser (SDE) geodatabase(s) • Data Editing Workflows • GIS data management workflows	Randy Steve Jon	• Configuring/Managing the Multiuser Geodatabase • Introduction to ArcGIS for Server

	Web Geo Developers	• Creating content, services, and applications using ArcGIS Server • Data visualization workflows • Map Production Workflows	Steve Randy Andy Angela Tanya Sarah	• ArcGIS for Server: Sharing Content on the Web • Building Web Apps Using APIs Flex, Silverlight, JavaScript
	Web Administrator	• Responsible for optimizing performance of ArcGIS for Server • Enterprise GIS Management workflows • Application Development Workflows	Randy Tanya Jon	• ArcGIS for Server: Site Configuration & Administration • Authoring and Serving ArcGIS Mobile Projects • ArcGIS for Server: Web Administration Using the Microsoft .NET Framework • Authoring & Serving ArcGIS Mobile Projects

	GIS Analyst	• Performing Desktop analysis using both vector and raster data. • Map Publication Workflows	Angela Ed Laura M Sarah Steve	• ArcGIS Desktop II: Tools and Functionality • ArcGIS Desktop III: GIS Workflows & Analysis • Performing Analysis with ArcGIS Desktop • Building Models for GIS Analysis using ArcGIS 10 • Getting Started with Geodatabase for ArcGIS • Building Geodatabases • Data Management in the Multiuser Geodatabase • Creating & Editing Geodatabase Toplogy with ArcGIS Desktop • Creating, Editing and Management Geodatabases for ArcGIS Desktop • Working with Geodatabase Domains and Subtypes • Creating & Editing Geodatabase Features with ArcGIS Desktop • Managing LiDAR Data in ArcGIS • Advanced Techniques for Cartographic Representations • Creating & Integrating Data for Natural Resource Applications
	Web Content creators	• Sharepoint editors posting content to Agency intranet (& website?)	Jon Randy Andy Casaria Aaron	• Embedding ArcGIS into SharePoint • ESRI Maps for MS Office and SharePoint • Web Editing with ArcGIS Server • Mobile GIS: Creating Web Maps for Lightweight Mobile Apps

	GIS User - Moderate	• Previous experienced consumer of GIS products	Laren Patrick Matt Bill	• Getting Started with ArcGIS 10.1 • ArcGIS Online Subscriptions: Mapping and GIS for Organizations • Intro to ESRI Community Analyst • Using ArcGIS Data Reviewer to Assess Data Quality • Quality Control Using ArcGIS Data Reviewer for Desktop • Getting Started with Cartographic Representations • Working with Map Topology in ArcGIS • Working with Coordinate Systems in ArcGIS
	GIS User – Casual & Field	• Occasional consumer of GIS products	Josh Jeff Cinamon Chris	ArcExplorer ArcGIS Online (for Organizations) Intro to ESRI Mobile GIS Solutions Maximizing GPS Accuracy in GIS Data Collection, 1hr Webinar Sharing GIS Content Using an ArcGIS Online Subscriptions
	GIS User - Newbie	• New consumer of GIS products	Grant Jon Karen Dave Amanda Jennifer Larry Aaron	ArcExplorer ArcGIS Online (for Organizations) Sharing GIS Content Using an ArcGIS Online Subscriptions Getting the Most Out of ArcGIS Explorer Online

Esri Training DELIVERY models

Instructor-Led Training

Focusing on engagement and interaction, instructors lead group exercises, guide discussions that facilitate peer-to-peer learning, and introduce scenarios in which students interactively explore ways to solve tangible workplace problems. Students apply new concepts and skills in hands-on exercises using Esri software.

Instructor-led training may be taken in a traditional classroom environment at an Esri office or on-site at a customer's office. Instructor-led classes are also offered online in a virtual classroom, which eliminates the need for students to travel.

Organizations that sign up for a private class may supplement that class with one or more days of client coaching. Coaching provides the opportunity to work with an instructor in an informal setting to revisit the concepts learned in the class and apply them within the organization's unique work environment. This can include demos with local datasets and other customer-driven applications.

Self-Paced e-Learning

Presentations, demonstrations, and hands-on software exercises are available on demand in Esri's rich e-Learning environment. Self-paced e-Learning is delivered as courses, live seminars, and recorded seminars. An Internet connection is required.

Esri Press

Award-winning self-study workbooks published by Esri Press teach GIS concepts and how to apply them using Esri software. Case-study books discuss GIS best practices and industry-focused solutions. For more information, visit **www.esri.com/esripress**.

Customized Training

Esri instructor-led training can be delivered in a private Online model, or in customized webinars. Customized delivery of standard course content is available and should be discussed with your Esri Training Specialist.

Esri Training Purchase Options

Purchase by Seat

Open-enrollment classes are regularly scheduled by Esri. Instructor-led classes are delivered over the Web in a virtual classroom environment as well as at Esri learning centers throughout the United States. Visit **www.esri.com/schedule** to search for class dates and locations.

Purchase by Class

Arranging a private instructor-led class at an Esri learning center or hosting such a class at your own facility may be the most convenient and cost-effective solution. If necessary, Esri will provide preconfigured hardware or access to virtual machines over the Web to enable students to complete the hands-on exercises.

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Information Management Modernization Initiative (IMMI) Charter

Version 1.2

December 2013

Revision History

Version 1.0 approved by IMMI Steering Committee on April 15, 2013
Version 1.1 refines PAC member roster
Version 1.2 clarifies charter amendment provision

Introduction
This Charter supports the vision and goals and the projects and activities required to modernize the information resources of the Department of Land Conservation and Development (DLCD), an executive agency of the State of Oregon, and its partners, jurisdictions, stakeholders, and the public.

Context
While many of the projects and activities will be directed toward bolstering DLCD's internal capabilities, the plan also includes projects and resources developed with and for external partners and groups.

Purpose
The purpose of this Charter is to formalize a governance structure for the effective execution of the Information Management Modernization Initiative.

Objective
The larger objective is to modernize DLCD's information resources to measurably enhance land use program outcomes, from routine tasks through policy decisions. Chartering this governance system to guide, track, evaluate, and sustain IMMI is a key component of ensuring the larger objective is accomplished.

Name
The name of this initiative is the Information Management Modernization Initiative (IMMI).

Scope
This Charter covers the IMMI governance groups and all of the projects and activities carried out under the IMMI Strategic Action Plan and the investment portfolio flowing from it, as revised from time to time, for five years.

Executive Sponsor
The director of the department is the initiative's Executive Sponsor and will serve on the Steering Committee at his option. The Executive Sponsor shall have the final say on any matter relating to IMMI.

Steering Committee
The Steering Committee makes policy decisions relating to IMMI and works jointly with the policy and management committees when a policy involves both IMMI and the land use program. The Steering Committee will resolve conflicting priorities and volunteer personnel to serve on project teams and provide user experience or subject matter expertise. In general, they will do everything necessary to keep IMMI on track.

Each member of the IMMI Steering Committee agrees to:

- Participate in committee meetings on a regular basis
- Represent and communicate with division employees

- Champion IMMI at all levels
- Bring new project proposals to the Steering Committee for consideration prior to commitment
- Manage the investment portfolio
- Maintain an agency-wide perspective

Membership and Roles

Position	Div/Sec	Agency	Role
Director	Director's Office	DLCD	Sponsor/ Decision Maker
Deputy Director	Director's Office	DLCD	Decision Maker
Division Manager	CSD	DLCD	Decision Maker
Division Manager	PSD	DLCD	Decision Maker
Division Manager	OCSD	DLCD	Decision Maker
Division Manager	ASD	DLCD	Decision Maker
Info Management Project Coordinator	Director's Office	DLCD	Decision Maker/ Advisor

A list of the names and contact information of the people currently holding these positions are attached as Appendix A.

Meetings are conducted monthly. The inaugural meeting was held on April 13, 2012. Meeting frequency may be revised by agreement and documented by an addendum to this Charter. Special meetings will be scheduled as needed. E-mail and other digital communication methods may be employed to conduct Steering Committee business. A simple majority is required to make a decision, subject to approval by Sponsor. Four members constitute a quorum.

Partner Advisory Committee

The primary purposes of the Partner Advisory Committee (PAC) are to bring outside perspective to the IMMI, identify multi-agency collaborative opportunities early on, coordinate local investments to the extent practicable, and to remain connected with and informed about IMMI status, challenges, and outcomes. The PAC's input is relayed to the Steering Committee for consideration via the IMMI Coordinator.

Each member of the Partner Advisory Committee agrees to:

- Participate in meetings on a regular basis
- Be open to collaborative projects and help shape them for maximum utility
- Be willing to support IMMI through the budgeting process
- Contribute the expertise of your agency from time to time
- Report on tangible and intangible benefits arising from better information resources
- Provide recommendations and suggestions to the Steering Committee

Proposed Membership and Roles

Position	Div/Sec	Agency	Role
Director	n/a	Institute for Natural Resources	Advisor
State GIO	CIO/GEO	DAS	Advisor
State Geologist/ Director	n/a	DOGAMI	Advisor and NR Affinity Group
Executive Director	n/a	Columbia River Gorge Commission	Advisor
City Planning Director (large)		rotating	Advisor
City Planning Director (small)		rotating	Advisor
County Planning Director		rotating	Advisor
Deputy Director	Director's Office	ODFW	Advisor and NR Affinity Group
IMMI Coordinator	Director's Office	DLCD	Liaison and Domain Expert

A list of the names and contact information of the people currently holding these positions are attached as Appendix A.

Initially, meetings will be conducted at least annually, with the inaugural meeting to be held in 2014. E-mail and other digital communication methods may be employed to conduct Partner Advisory Committee business. Alternates may be designated to represent the member at meetings when necessary.

Technical Workgroups

From time to time, the Steering Committee or PAC will request research and recommendations related to technical aspects of IMMI implementation. The Steering Committee will form standing and *ad hoc* technical workgroups to address a specific project topic or issue and provide advice. Each workgroup will be staffed with the best expertise available relevant to the topic, and *ad hoc* workgroups will be disbanded when the assignment is completed. The purpose of the *ad hoc* approach is to spread the opportunity and responsibility among technical experts. One standing workgroup will be the GIS technical advisory group within DLCD.

Each member of a technical workgroup agrees to:

- Participate in workgroup meetings and carry out action items as assigned
- Apply their best technical expertise to the topic at hand
- Complete workgroup commissions in a timely manner

The technical workgroups are anticipated to be from 3-5 people in order to minimize the impact on daily work and reduce turnaround times. The IMMI Coordinator will coordinate reporting results to the Steering Committee and/or PAC.

IMMI Coordinator

The Information Management Project Coordinator for DLCD is the IMMI Coordinator and agrees to:

- Maintain a current list of all committee members, their organizations, and contact information
- Act as a liaison from the PAC and the ad hoc technical workgroups to the Steering Committee
- Organize and otherwise support the meetings of the Steering Committee and the PAC
- Maintain the IMMI Plan, the investment portfolio, and project documentation
- Provide other services as appropriate.

Succession

Continuity is vital for meeting our goals. Notwithstanding, it may become necessary for an agency or person to step away from responsibilities related to IMMI. Any partner agency may terminate its committee membership upon thirty (30) days' written notice to DLCD's IMMI Coordinator, with a courtesy notice to the Director.

Individuals or their alternates representing partners, programs, or areas of expertise may change from time to time. In that event, the withdrawing party will do their best to identify an appropriate replacement and provide their name and contact information to DLCD's IMPC.

Amendment

This Charter may be amended by a two-thirds majority of the Steering Committee members which must include the Director. Changes sought by members of the Partner Advisory Committee will be forwarded to the Steering Committee for consideration and decision. Changes to names and contact information (Appendix A) may be made by the IMPC without a vote in accordance with Succession, above.

Sunset

This Charter will expire at the end of the five years covered by the IMMI Plan unless it is reaffirmed prior to June 30, 2017. If DLCD discontinues the initiative prior to June 30, 2017, the Director, or their designee, will notify all affected partners and employees within thirty (30) days of the decision.

DEPARTMENT OF LAND CONSERVATION
AND DEVELOPMENT

By_____ Date 12.17.13

Jim Rue, Director

Appendix A
Names and Contact Information of Committee Members

Steering Committee

Name	Position	Telephone	Email
Jim Rue	Director	503-934-0002	jim.rue@state.or.us
Carrie MacLaren	Deputy Director	503-934-0051	carrie.maclaren@state.or.us
Matt Crall	PSD Manager	503-934-0046	matt.crall@state.or.us
Rob Hallyburton	CSD Manager	503-934-0018	rob.hallyburton@state.or.us
Teddy Leland	ASD Manager	503-934-0016	teddy.leland@state.or.us
Patty Snow	OCSD Manager	503-934-0052	patty.snow@state.or.us
Gail Ewart	IMMI Coordinator	503-934-0295	gail.ewart@state.or.us

Partner Advisory Committee

Name	Position	Telephone	Email
Darren Nichols	Executive Director	509-493-3323	darren.nichols@gorgecomission.org
Lisa Gaines	INR Director	541-737-1976	lisa.gaines@oregonstate.edu
Vicki McConnell	DOGAMI Director	971-673-1697	vicki.mcconnell@state.or.us
Cy Smith	DAS/CIO GIO	503-378-6066	cy.smith@state.or.us
Curt Melcher	ODFW Deputy Director	971-673-6030	curt.melcher@state.or.us
Large city tbd			
Small city tbd			
County tbd			
Gail Ewart	IMMI Coordinator	503-934-0295	gail.ewart@state.or.us

DIVISION 18

POST-ACKNOWLEDGEMENT AMENDMENTS

660-018-0020
Notice of a Proposed Change to a Comprehensive Plan or Land Use Regulation

(1) Before a local government adopts a change to an acknowledged comprehensive plan or a land use regulation, unless circumstances described in OAR 660-018-0022 apply, the local government shall submit the proposed change to the department, including the information described in section (2) of this rule. The local government must submit the proposed change to the director at the department's Salem office at least 35 days before holding the first evidentiary hearing on adoption of the proposed change.

(2) The submittal must include applicable forms provided by the department, be in a format acceptable to the department, and include all of the following materials:

(a) The text of the proposed change to the comprehensive plan or land use regulation implementing the plan, as provided in section (3) of this rule;

(b) If a comprehensive plan map or zoning map is created or altered by the proposed change, a copy of the relevant portion of the map that is created or altered;

(c) A brief narrative summary of the proposed change and any supplemental information that the local government believes may be useful to inform the director and members of the public of the effect of the proposed change;

(d) The date set for the first evidentiary hearing;

(e) The notice or a draft of the notice required under ORS 197.763 regarding a quasi-judicial land use hearing, if applicable; and

(f) Any staff report on the proposed change or information that describes when the staff report will be available and how a copy may be obtained.

(3) The proposed text submitted to comply with subsection (2)(a) of this rule must include all of the proposed wording to be added to or deleted from the acknowledged plan or land use regulations. A general description of the proposal or its purpose, by itself, is not sufficient. For map changes, the material submitted to comply with Subsection (2)(b) must include a graphic depiction of the change; a legal description, tax account number, address or similar general description, by itself, is not sufficient. If a goal exception is proposed, the submittal must include the proposed wording of the exception.

(4) If a local government proposes a change to an acknowledged comprehensive plan or a land use regulation solely for the purpose of conforming the plan and regulations to new requirements in a land use statute, statewide land use planning goal, or a rule implementing the statutes or goals, the local government may adopt such a change without holding a public hearing, notwithstanding contrary provisions of state and local law, provided:

(a) The local government provides notice to the department of the proposed change identifying it as a change described under this section, and includes the materials described in section (2) of this rule, 35 days before the proposed change is adopted by the local government, and

(b) The department confirms in writing prior to the adoption of the change that the only effect of the proposed change is to conform the comprehensive plan or the land use regulations to the new requirements.

(5) For purposes of computation of time for the 35-day notice under this rule and OAR 660-018-0035(1)(c), the proposed change is considered to have been "submitted" on the day that paper copies or an electronic file of the applicable notice forms and other documents required by section (2) this rule are received or, if mailed, on the date of mailing. The materials must be mailed to or received by the department at its Salem office.

Stat. Auth.: ORS 197.040
Stats. Implemented: ORS 197.610 - 197.625
Hist.:

660-018-0040 Submittal of Adopted Change

(1) When a local government adopts a proposed change to an acknowledged comprehensive plan or a land use regulation it shall submit the decision to the department, with the appropriate notice forms provided by the department, within 20 days.

(2) For purposes of the 20-day requirement under section (1) of this rule, the proposed change is considered submitted to the department:

(a) On the day the applicable notice forms and other required documents are received by the department in its Salem office, if hand-delivered or submitted by electronic mail or similar electronic method, or

(b) On the date of mailing if the local government mails the forms and documents.

(3) The submission to the department must in a format acceptable to the department and include all of the following materials:

(a) A copy of final decision;

(b) The findings and the text of the change to the comprehensive plan or land use regulation;

(c) If a comprehensive plan map or zoning map is created or altered by the proposed change:

(A) A map showing the area changed and applicable designations; and

(B) Electronic files containing geospatial data showing the area changed, as specified in section (5) of this rule, if applicable.

(d) A brief narrative summary of the decision, including a summary of substantive differences from the proposed change submitted under OAR 660-018-0020 and any supplemental information that the local government believes may be useful to inform the director or members of the public of the effect of the actual change; and

(e) A statement by the individual transmitting the decision identifying the date of the decision and the date the submission was mailed to the department.

(4) Where amendments or new land use regulations, including supplementary materials, exceed 100 pages, a summary of the amendment briefly describing its purpose and requirements shall be included with the submittal to the director.

(5) For local governments that produce geospatial data describing an urban growth boundary (UGB) or urban or rural reserve that is created or altered as part of an adopted change to a comprehensive plan or land use regulation, the submission must include electronic geospatial data depicting the boundary change. Local governments that create or alter other zoning or comprehensive plan maps as geospatial data are encouraged but not required to share this data with the department. Geospatial data submitted to the department must comply with the following standards endorsed by the Oregon Geographic Information Council:

(a) Be in an electronic format compatible with the State's Geographic Information System software standard described in OAR 125-600-7550; and

(b) Be accompanied by metadata that meets at least the minimum requirements of the federal Content Standard for Digital Geospatial Metadata.

(6) Local government must notify the department of withdrawals or denials of proposals previously sent to the department under requirements of OAR 660-018-0020.

(7) If a local government did not submit a notice of a proposed change to a comprehensive plan or land use regulation to the department as required by OAR 660-018-0020, the transmittal must clearly indicate which provisions of OAR 660-018-022 are applicable.

NOTE: ORS 197.610 clearly requires all adopted plan and land use regulation amendments and new land use regulations to be submitted to the director even if they were not required to be submitted for review prior to adoption.

(8) ORS 197.620 provides that a local government may cure the untimely submission of materials by either postponing the date for the final evidentiary hearing by the greater of 10 days or the number of days by which the submission was late; or by holding the evidentiary record open for an additional period of time equal to 10 days or the number of days by which the submission was late, whichever is greater. The local government shall provide notice of such postponement or record extension to the department.

Stat. Auth.: ORS 197.040
Stats. Implemented: ORS 197.610 - 197.625
Hist.:

Oregon Department of Land Conservation and Development Policy

Title: **Information Asset Integrity** Number: **OPS 370.06**
Supersedes:
Applicability: **All DLCD Staff, Volunteers, Others**
Reference:

- ORS Chapters 192 and 357
- OAR Division 166
- 2005 Oregon Laws Chapter 739
- OAR 125-800-005, 125-800-0010, and 125-800-0020

Approved: Effective Date:

I. Purpose

To preserve and enhance our investment in the department's information assets and ensure their reliability and integrity for all.

II. Definitions

Department	Department of Land Conservation and Development
Information Asset	Any data collected, managed, or curated by the department regardless of form (i.e., includes both written and digital forms).
Enterprise	Affects entire department or its mission and goals

III. Background and Need

This policy arises from practices common at the department prior to the Information Management Modernization Initiative implementation. Due to inadequate information assets, employees often satisfied data needs by developing and maintaining individual information assets that were not integrated with department information assets. As new, well-maintained information assets become available, data can and should be accessed and used via the department's database applications and tools.

IV. Policy

Employees shall refrain from creating, maintaining, or otherwise engendering copies, extracts, or other holdings of enterprise information assets separate from department's enterprise information assets. Examples of former common practices include:

- Spreadsheet tracking jurisdictions in Periodic Review
- Export of database data into a spreadsheet used to generate a report graph but thereafter is updated instead of the database and substitutes for source
- Spreadsheet that tracks data for KPM reporting

The information assets applicable to this policy are identified in a list attached to this policy. The list will be updated as new information assets become available.

If an employee does not find information assets that meet needs, the employee shall contact their manager and the Information Management Modernization Coordinator to initiate addressing the need.

Note: This policy does not apply to projects, software, hardware, or tools that may be proposed to address new information asset needs. These are addressed by the portfolio management process.

List of Information Assets Asset Integrity Policy applies to:

As of November 2013:

Farm Decisions database, application and interface
Forest Decisions database, application and interface
Measure 49 database, application and interface

Institute for Natural Resources
Oregon State University
210 Strand Agricultural Hall · Corvallis, Oregon 97331-2208
T 541.737.9918 · F 541.737.1887 · http://inr.oregonstate.edu

LAND USE EXPLORER DESIGN DOCUMENTS

SCOPING AND DESIGN BRIEF

BACKGROUND/OVERVIEW

The Department of Land Conservation and Development (DLCD) developed a five year plan to modernize information resources (the Information Management Modernization Initiative Strategic Action Plan). Part of this plan calls for the development of a planners' portal which will provide centralized access to resources that facilitate land use and hazards planning at the state and local levels. Oregon Explorer's Land Use Explorer Portal will be updated with integrated tools and resources to support land use planning. DLCD will have the ability to curate portal content in the "Planners Resources" and "Places" section of the site, facilitating a quick response to changes in land use law, rules, or guidance.

- PHASE 1: Phase 1 will include providing place-based access to documents in the U of O Scholars Bank Document Collection and simple web maps displaying information divided by theme (rural, urban, zoning, hazards, and comprehensive plan maps). Additionally, the portal will provide streamlined access to existing resources on the DLCD website which are of use to local jurisdictions, including the 19 Goals and how to implement them, guidance documents, model development code, and information on document submission for local jurisdictions. A map viewer will bring together existing data and provide access by township and range, tax lot, or address. Mapping tools will ingest web mapping services to reduce dependency on INR for updating. Other mapping tools will include a transparency map application and a map of land use approvals. A "DLCD News" box will provide a place to highlight recently posted items, news, or surveys and other forms of communication.

- PHASE 2: Possible phase 2 objectives could include a mapping tool displaying historic UGB datasets with a time-slider function and a crowd-sourced resource, similar to the NOAA Natural Hazards Image Database, which uses photographs to capture the history of an event. Phase 2 could

also include centralized access to DLCD live feeds as they come online (ArcGIS online, Twitter etc.)

PROJECT OBJECTIVES

Providing centralized access to information resources guiding compliance with land use and hazards planning programs.

PROJECT PARTNERS

Department of Land Conservation and Development

TAGLINE

Land Use Planning Digital Library

TARGET AUDIENCE

- Land use planners at all levels
- Affected state agencies
- Land managers and land owners
- Interested citizens
- Consultants
- Legislators

THE MARKET AND COMPETITION

Currently, resources to support land use planning are scattered and can be hard to locate. This portal does not seek to duplicate existing efforts, and will instead provide clear access to existing resources from a single point and will compile other information not readily available.

KEY MESSAGES: WITH THE UPDATED LAND USE EXPLORER…

- You can learn about Oregon's land use planning program and the 19 statewide planning goals.
- You can find guidance and sample documents to jumpstart your land use planning.
- You can explore local and regional planning documents through a place-based interface

- We can support land use planning through access to spatial data and summary tools.

USER GROUPS (TESTING AND OUTREACH)

- Local land use planners
- Consultants
- DLCD regional representatives

PHASE 1 PROJECT OBJECTIVES

- Provide place-based access to U of O Scholar's Bank Local and Regional Documents Archive
- Facilitate theme-based access to resources already on the DLCD website including: Guidance and assistance documents, model development code, and land use regulations
- Provide access to training materials at http://www.oregonlandusetraining.info/
- Create planning-specific map viewer including several custom themes tuned to particular planning applications
- Transparency mapping application displaying grant projects and related DLCD investments (service by DLCD)
- Mapping application displaying either plan amendments or farm and forest land use permits (service by DLCD)
- Simple map themes paired with place-based document access will provide easy access to maps and information in 2-4 themes containing 1-4 layers each, including updated Rural Lands Database soils classification (data from ODA, service from DLCD), as available
- Guide planners and local jurisdictions to document submission section of DLCD FTP site. Point to or include instructions for FTP use written by DLCD IT personnel.
- Provide access to the State Hazard Mitigation Plan
- Compile and display links to external OCMP resources
- Strive to design all portal products in the "Planner's Resources" section to be updated and curated by DLCD staff. Portal products that rely on external resources for contributions may be incorporated depending on the

requirements. Those products would need to be specifically agreed to by DLCD prior to development/inclusion.

TASKS FOR FUTURE DEVELOPMENT PHASES (PHASE 2 AND BEYOND)

- Feasibility assessment of a crowd-sourced hazards database of photos, videos, and information
- Centralized access to DLCD live feeds as they come online (ArcGIS online, twitter, etc.)

TONE AND PERCEPTION

- Address the target informatively and neutrally (without bias)
- Support informed decision-making

CREATIVE CONSIDERATIONS

- Consistency with "Oregon Explorer" design and functionality (www.oregonexplorer.info)
- Incorporate open-source Oregon Explorer system architecture (Drupal)
- Prominent incorporation of DLCD logo and name and clear delineation of DLCD-sourced resources

DELIVERABLES (PLANNING PHASE)

1. Portal Design and Scoping Brief
2. A completed portal design consisting of the portal design and scoping brief, wireframe, and visual design
3. A land use planners portal plan

DELIVERABLES (IMPLEMENTATION PHASE 1)

1. An updated Land Use Explorer providing centralized access to documents and resources to guide land use planning in the state of Oregon
2. Planner's Map Viewer with custom themes
3. Transparency map
4. Map of plan amendment locations (or map of farm and forest permits), depending on service availability

5. Simple place-based map interface (2-4 categories with 1-4 layers each), including updated Rural Lands Database soils classification (data from ODA, service from DLCD), as available
6. Two custom reporting tools
7. Access to the State Hazard Mitigation Plan
8. Links to external OCMP resources

MEETINGS

Planning Phase

- Portal kick-off meeting: November 16, 2012
- Planning Meeting: December 21, 2012
- Review Meeting: February 20, 2013
- Completed Design and Scoping Document, Wireframe, Tool functional requirements, and Portal Workplan: February 28, 2013

Implementation Phase 1

- Content Meeting
- Tool Development Meeting
- Review Meeting

APPENDIX 1: BUDGET AND RESOURCES NEEDED

SALARIES	FTE %	Project Months	Total Cost
Myrica McCune, PM	1.00	2.20	$ 13,125
Marc Rempel, Tech	0.8	4.4	$ 19,797
OSUL Web Manager	1.00	0.15	$ 949
OUSL Unix Administrator	1.00	0.05	$ 242
OE Intern	per hr.	0.34	$ 764
Total Salaries			**$ 34,877**
SUBCONTRACTS			Cost
Subcontractor			$ 7,500
Total Subcontracts			**$ 7,500**
TOTAL DIRECT COSTS			**$ 42,377**
INDIRECT			
	0.26		$ 11,018.14
TOTAL INDIRECT COSTS			**$ 11,018**
TOTAL COST			**$ 53,396**

APPENDIX 2: ROLES AND RESPONSIBILITIES (IMPLEMENTATION PHASE 1)

- Rob Hallyburton, DLCD Community Services Division Manager
- Matt Crall, DLCD Planning Services Division Manager
- Patty Snow, DLCD Ocean and Coastal Services Division Manager
- Gail Ewart, DLCD Project Manager
- Julie Hall: DLCD Contract Administration
- Myrica McCune: OE Project Manager
- Marc Rempel: OE Programmer
- Janine Salwasser: OE Program Manager

APPENDIX 3: CONTENT OUTLINE

1. Document Collections (place-based access)

   a. Scholars Bank collection of acknowledged planning documents

2. Secondary access point for selected items on DLCD website (including lead-ins using pictures and words to help users find what they are looking for).

   a. Guidance documents

   b. Sample plans

c. Model development code

d. White papers

e. Grant information

3. Training materials at www.oregonlandusetraining.info

4. Materials developed by DLCD on information submission by local jurisdictions, including link to relevant FTP site directory

5. Access to State Hazard Mitigation Plan

6. Links to external OCMP resources

7. Mapping tools

1. Planning Map Viewer

a. Phase 1 Data

- Framework datasets from DAS-GEO (administrative boundaries (including UGBs, city limits, counties), wetlands, PLSS, hazards, hydrography, preparedness, transportation, utilities)
- Tax lots with scrubbed attributes (Currently on ArcGIS online. NOTE: *cannot be used in any publicly accessible map viewers*)
- Hydric soils (already an OE map service)
- Fire Protection Districts (already an OE map service)
- Watershed Council Boundaries (already an OE map service)
- Oregon Plan Basins (already an OE map service)
- Oregon Land use and Land Cover 2008 (already an OE map service)
- PADUS (Protected Areas Database of the United States) (available as a service)
- GAP Land Ownership (available as a service)
- NCED (National Conservation Easement Database) (already an OE map service, but is static and requires manual updating)
- USFWS Critical Habitat for Threatened and Endangered Species (available from ODFW as service)
- Wetlands (already an OE map service)
- Hazards (DOGAMI services, already linked to OE Map Viewer)
- Rural Lands Database Soil Classification (ODA provides updated data, DLCD provides service and/or viewer)
- DLCD grant spending and related investments (DLCD provides service)

- Plan amendment locations or farm and forest permit locations (DLCD provides service)

b. Phase 2 Data

- Statewide zoning and comprehensive plans (when compiled)
- Other services providing access to data listed in Appendix 5

8. Map of Grant Projects and Other DLCD investments

9. Map of plan amendments OR map of farm and forest permits

APPENDIX 4: SPATIAL DATA FOR POSSIBLE FUTURE INCLUSION AS SERVICES BECOME AVAILABLE:

1. Identifying buildable lands
    a. Topography
    b. Slope
    c. Regulatory exclusion areas

2. Used in UGB planning process (for UGB expansion)

    a. Soil types by parcel
    b. Expense of extending services (where services would cross a street, river, railroad)
    c. Transportation services/access
    d. Gravity sewer

3. Used for planning within UGB

    a. Zoning
    b. Vacant land
    c. Value
    d. Improvement value to land value
    e. Proximity to types of uses (schools etc.)
    f. Regulatory impediments (wetlands)
    g. Hydric soils
    h. Information from DEQ databases

4. Used for rural planning

    a. Use value assessment
    b. Existing land use
    c. Land tracts (across lots, by owner)
    d. ODF fire hazard

e. ODFW wildlife habitat

5. Other

a. Climate change scenario maps (DLCD)
b. Updated estuarine data (DLCD)
c. WGA Western Renewable Energy Zones
d. FEMA DFIRM (Digital Flood Insurance Rate Map)
e. DOGAMI Tsunami Inundation Maps
f. DOGAMI Cascadia Earthquake Expected Shaking
g. Wave Energy Zones

APPENDIX 5: TOOL FUNCTIONAL REQUIREMENTS (PLANNING MAP VIEWER)

1. Standard Oregon Explorer Map Viewer Functionality

- Identify (by point, freehand, line, polygon, rectangle, or user-defined buffer)
- Simple attribute queries
- Re-order layers
- Extract data
- Add data (external services, shapefile, CSV)
- Share maps (Print map, export a map image, share map via-URL)
- Markup map with point, line, freehand, text, polygon, rectangle, circle, ellipse, arrow (ability to save markup to shapefile)
- Measure distance/area
- Create elevation profile
- Map coordinates, click to find coordinates

2. Customized reporting/searching

- Reporting by custom geography, tax lot (with stripped attributes), county, watershed, or other administrative boundaries
- Buffered reporting or other reporting tool TBD
- Search for location by address, township/range

APPENDIX 6: VISUAL DESIGN AND ARCHITECTURE

HOMEPAGE


OSU Libraries
Oregon EXPLORER
Institute for Natural Resources
Search this site
Natural Resources Digital Library
Information to help local citizens, policymakers, and community groups learn about Oregon's past, current, and future land use and enable more informed land use decisions.
Oregon Department of Land Conservation and Development
Land Use
EXPLORER
Explore
Planning history, 19 Goals.
Places
City, county, and regional information.
Tools
Maps, Charts & Reports
Data
Documents, spatial data, sites ...
Planner's Resources
Guidance documents, sample plans...
DLCD News
State of Oregon Natural Hazards Mitigation Plan
State Hazard Mitigation Plan
Territorial Sea Plan
COUNTIES
CLATSOP
COLUMBIA
WASHINGTON
MULTNOMAH
HOOD RIVER
SHERMAN
TILLAMOOK
UMATILLA
WALLOWA
MORROW
UNION
YAMHILL
CLACKAMAS
GILLIAM
WASCO
POLK
MARION
WHEELER
BAKER
LINCOLN
JEFFERSON
BENTON
LINN
GRANT
CROOK
LANE
DESCHUTES
COOS
DOUGLAS
LAKE
MALHEUR
HARNEY
CURRY
JACKSON
KLAMATH
JOSEPHINE
SELECT
Tools
Planning Map Viewer
Plan Amendment Locations
Transparency Map
Rural Lands Database: Soil Classification
Data & Documents
Place-Based Access to Documents, Data, and Maps
Search
Search LibraryFind and the Oregon Spatial Data Library for resources:
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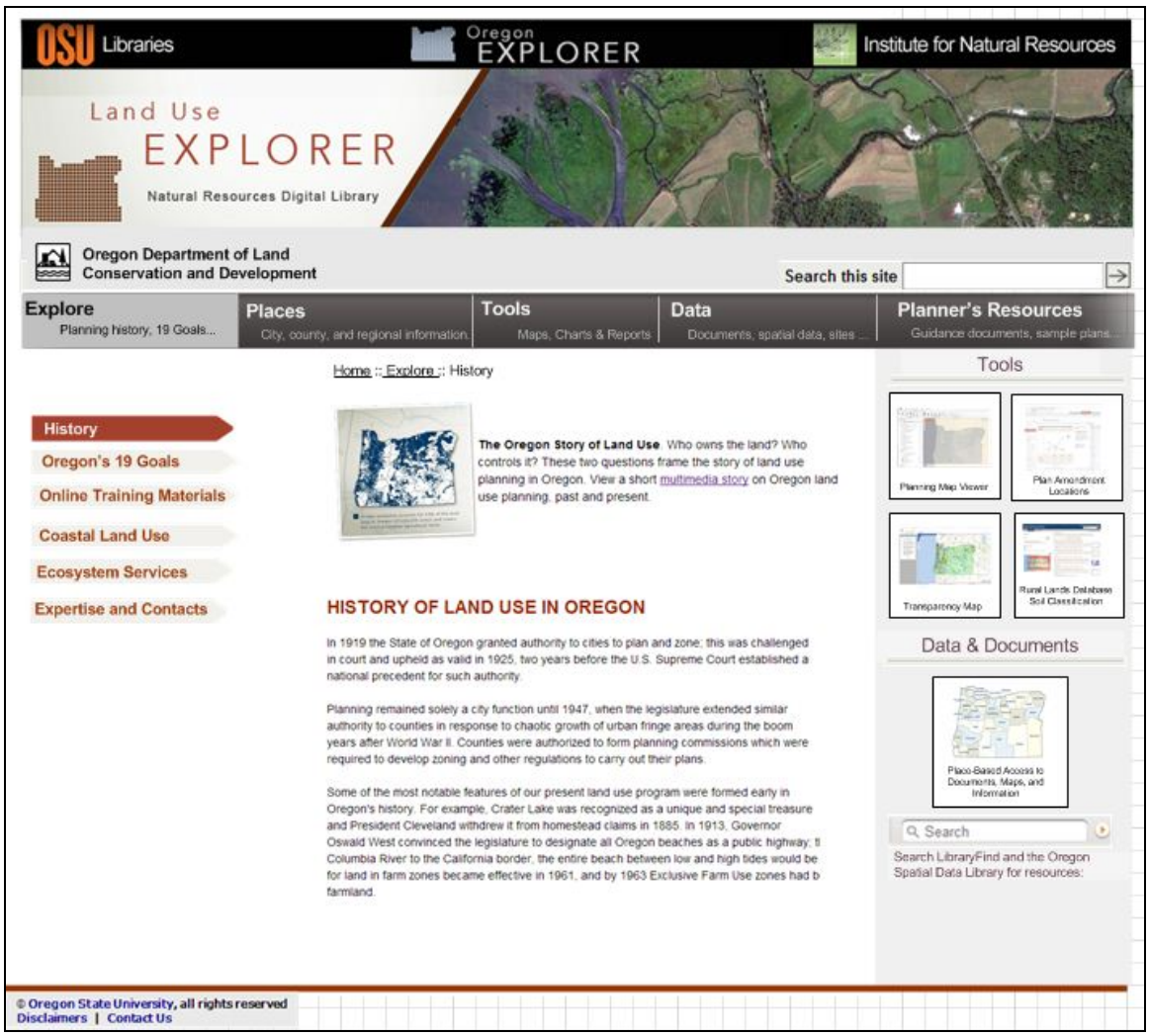
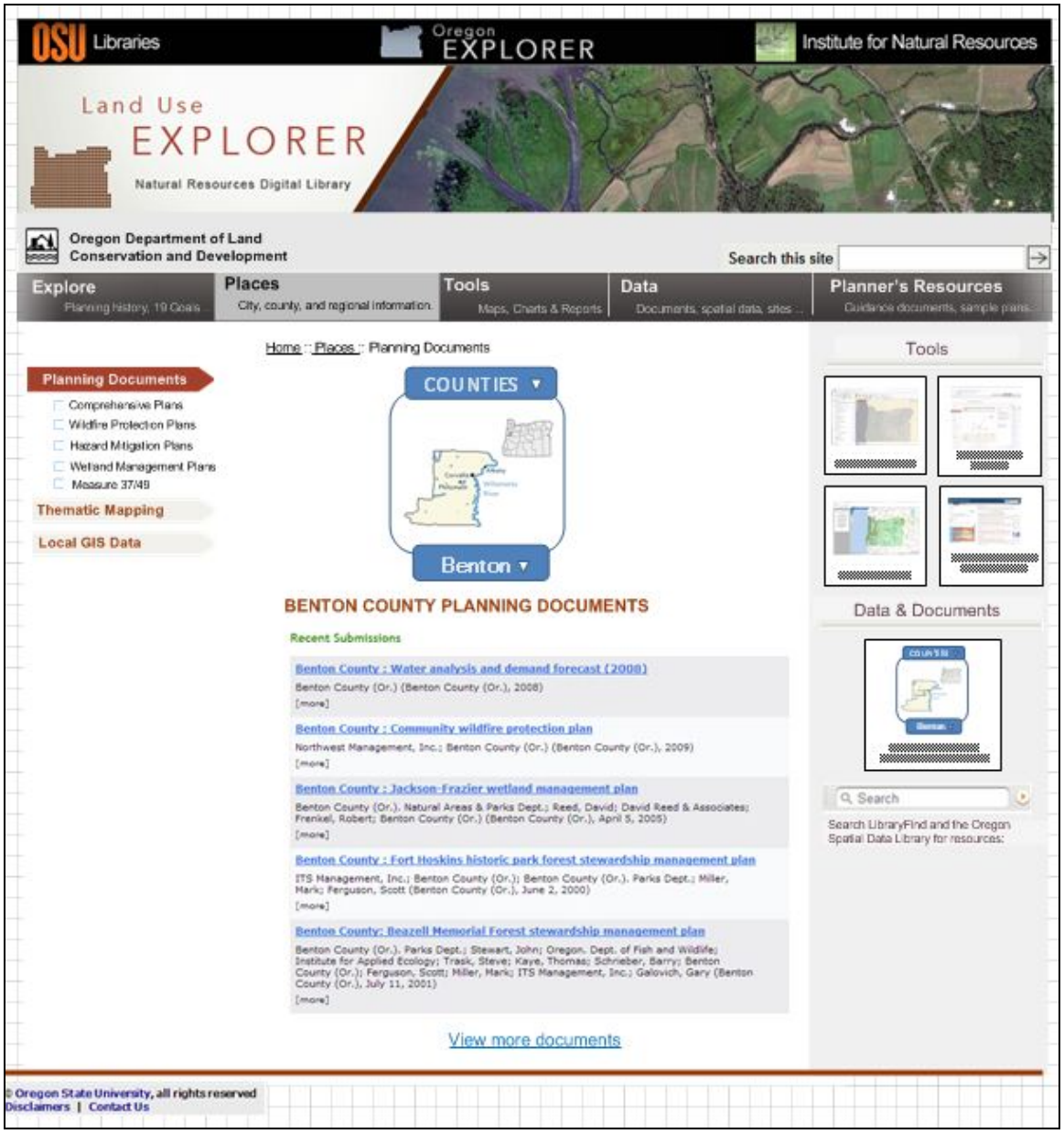
Disclaimers | Contact Us

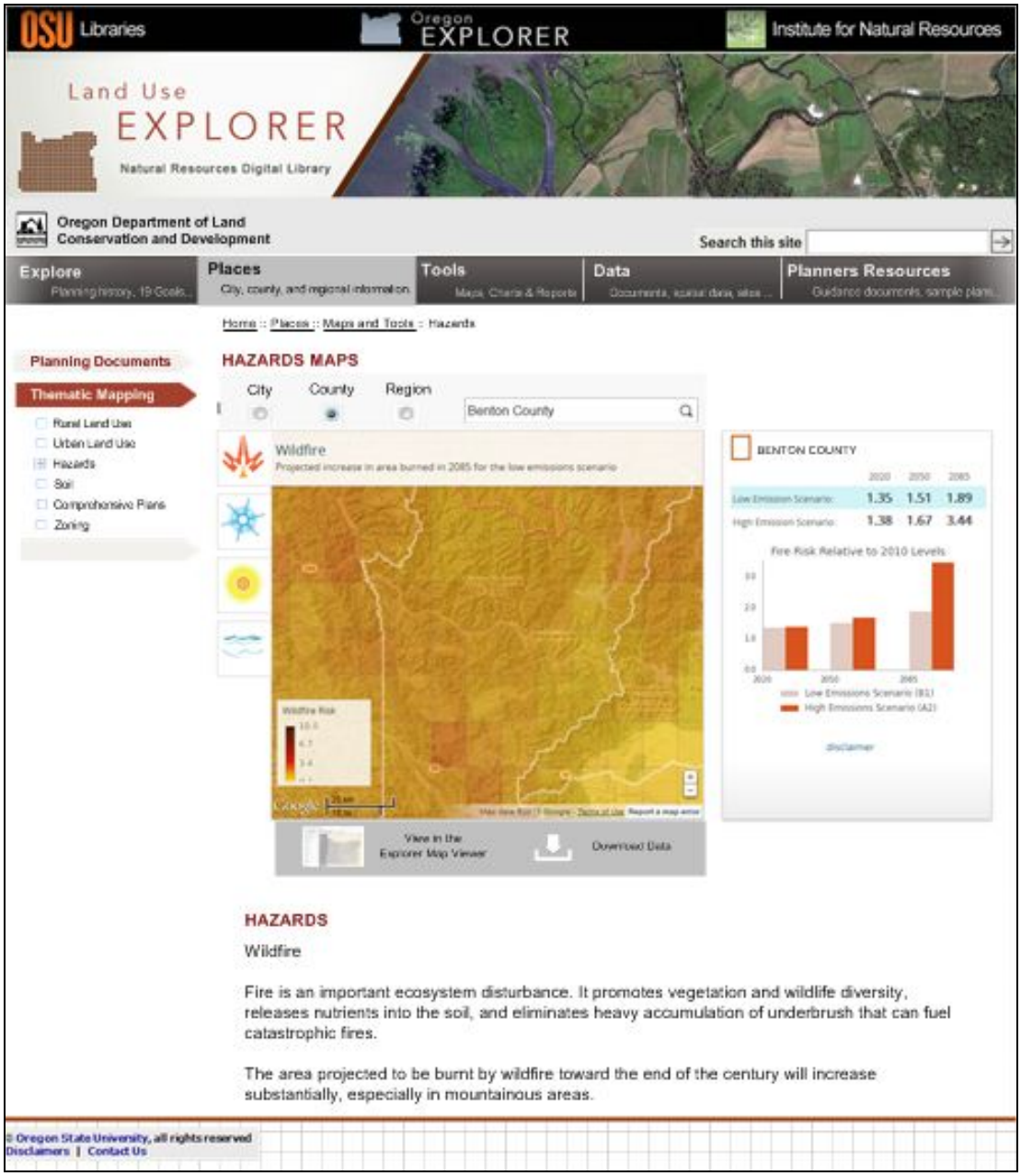
EXPLORE


OSU Libraries
Oregon EXPLORER
Institute for Natural Resources
Land Use EXPLORER
Natural Resources Digital Library
Oregon Department of Land Conservation and Development
Search this site
Explore
Planning history, 19 Goals...
Places
City, county, and regional information
Tools
Maps, Charts & Reports
Data
Documents, spatial data, sites ...
Planner's Resources
Guidance documents, sample plans...
Home :: Explore :: History
History
Oregon's 19 Goals
Online Training Materials
Coastal Land Use
Ecosystem Services
Expertise and Contacts
The Oregon Story of Land Use. Who owns the land? Who controls it? These two questions frame the story of land use planning in Oregon. View a short multimedia story on Oregon land use planning, past and present.
HISTORY OF LAND USE IN OREGON
In 1919 the State of Oregon granted authority to cities to plan and zone; this was challenged in court and upheld as valid in 1925, two years before the U.S. Supreme Court established a national precedent for such authority.
Planning remained solely a city function until 1947, when the legislature extended similar authority to counties in response to chaotic growth of urban fringe areas during the boom years after World War II. Counties were authorized to form planning commissions which were required to develop zoning and other regulations to carry out their plans.
Some of the most notable features of our present land use program were formed early in Oregon's history. For example, Crater Lake was recognized as a unique and special treasure and President Cleveland withdrew it from homestead claims in 1885. In 1913, Governor Oswald West convinced the legislature to designate all Oregon beaches as a public highway; tl Columbia River to the California border, the entire beach between low and high tides would be for land in farm zones became effective in 1961, and by 1963 Exclusive Farm Use zones had b farmland.
Tools
Planning Map Viewer
Plan Amendment Locations
Transparency Map
Rural Lands Database Soil Classification
Data & Documents
Place-Based Access to Documents, Maps, and Information
Search
Search LibraryFind and the Oregon Spatial Data Library for resources:
© Oregon State University, all rights reserved
Disclaimers | Contact Us

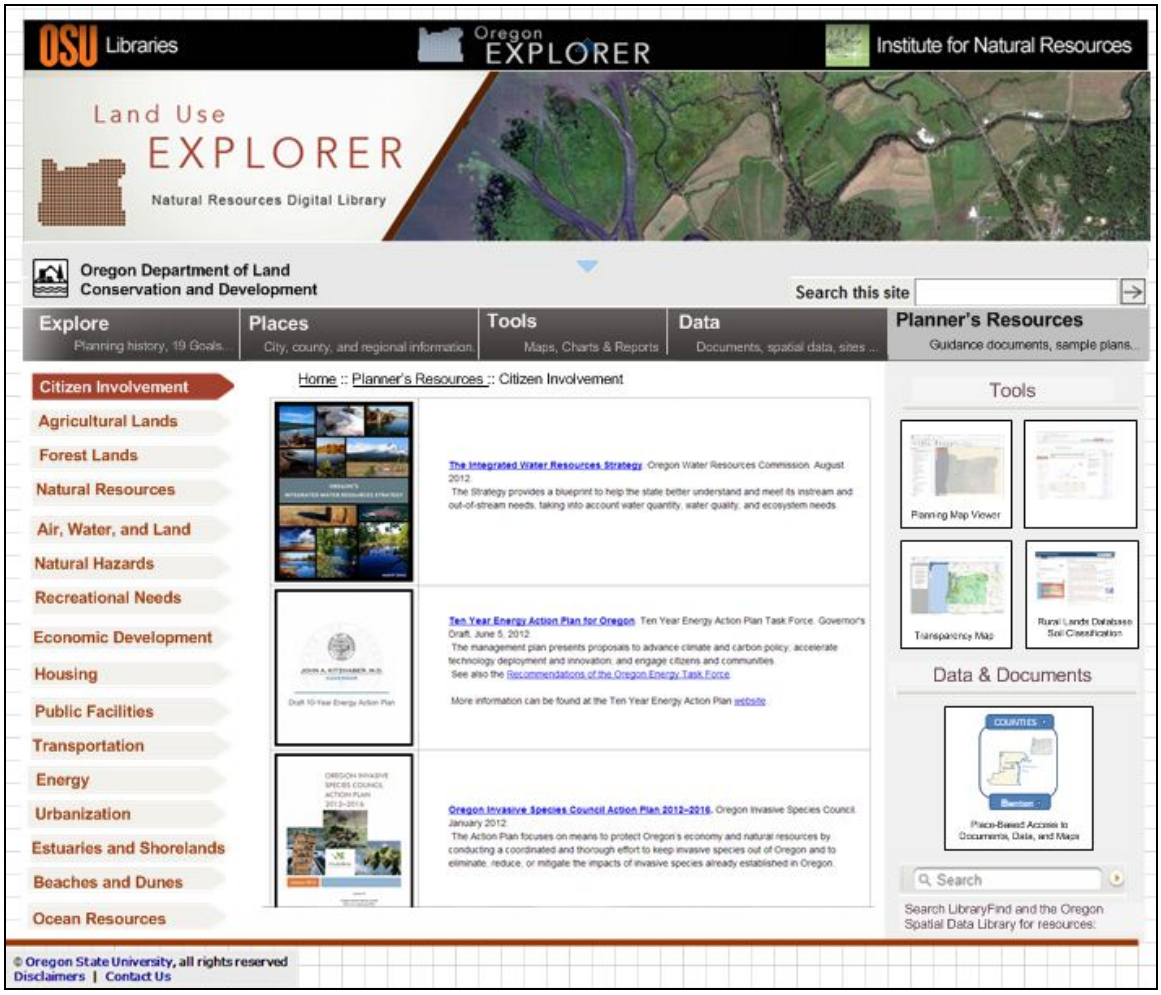
PLANNING DOCUMENTS



SIMPLE THEMATIC MAPPING



PLANNER'S RESOURCES



APPENDIX 7: WORKPLAN

	Task	Lead	Time Allocated
1	**Work with graphics consultant on final visual design**		
1.1	Preliminary meeting with design consultant	Myrica	1 day
	Contractor first draft of visual design	Sub-Contractor	1 week
1.2	OE Team reviews draft visual design	Myrica	1 day
1.3	Design consultant revises based on OE team input	Contractor	3 days
1.4	Core project team reviews second draft	Myrica	1 day
1.5	Design consultant revises based on core project team input	Sub-Contractor	2 days

		Task 1 Time:	2.5 weeks

2	**Site Development**		
2.1	Drupal Development incorporating new visual design	Susan/Marc	2.5 weeks
2.2	Meet with Terry Reese and/or U of O librarian about back-end logistics of place-based access to Local and Regional Documents Archive	Marc/Myrica	2 days
2.3	Create/incorporate LUT of community IDs	Intern	2 days
2.4	Set up filtering of results by document type	Marc	1.5 week
2.5	Final display of local/regional documents	Marc	1.5 week
2.6	Display list of most recent submissions for geography by default upon opening (if possible)	Marc	1 week
		Task 2 Time:	7 weeks

3	**Mapping Tool Development**		
3.1	Tool Development Meeting (finalize functionality, layer list, source of information for transparency map and map of land use approvals: needs to be dynamic and able to auto-update)	Myrica	2 days
3.2	Map viewer setup and customization	Intern	1 week
3.3	Collect data and services for viewer and place maps	Myrica	3 days
3.4	Development of custom reports (2)	Marc	2 weeks
3.5	Place Maps (set up user interface and back-end interactions with place selector)	Marc	3 weeks
3.6	Firewall permissions for database access	Marc/Dean/DLCD system admin	4 days
3.7	Transparency Map	Marc	1 month
3.8	Map of Plan Amendments or Map of Farm and Forest Permits	Marc	1 month
		Task 3 Time:	16 weeks

4	**Site Population**		
4.1	Content Meeting (specific documents for each section in Planner's Resources)	Myrica	2 days
4.2	Assemble list of documents to be linked through Planner's Resources	Myrica	1 week

4.3	Format pages (Explore, Places, Maps, Data, Planner's Resources	Myrica/Marc	2.5 weeks
4.4	Compile list of local GIS pages	Myrica	2 days
4.5	Populate all main pages	Myrica	2 weeks
		Task 4 Time:	6.5 weeks

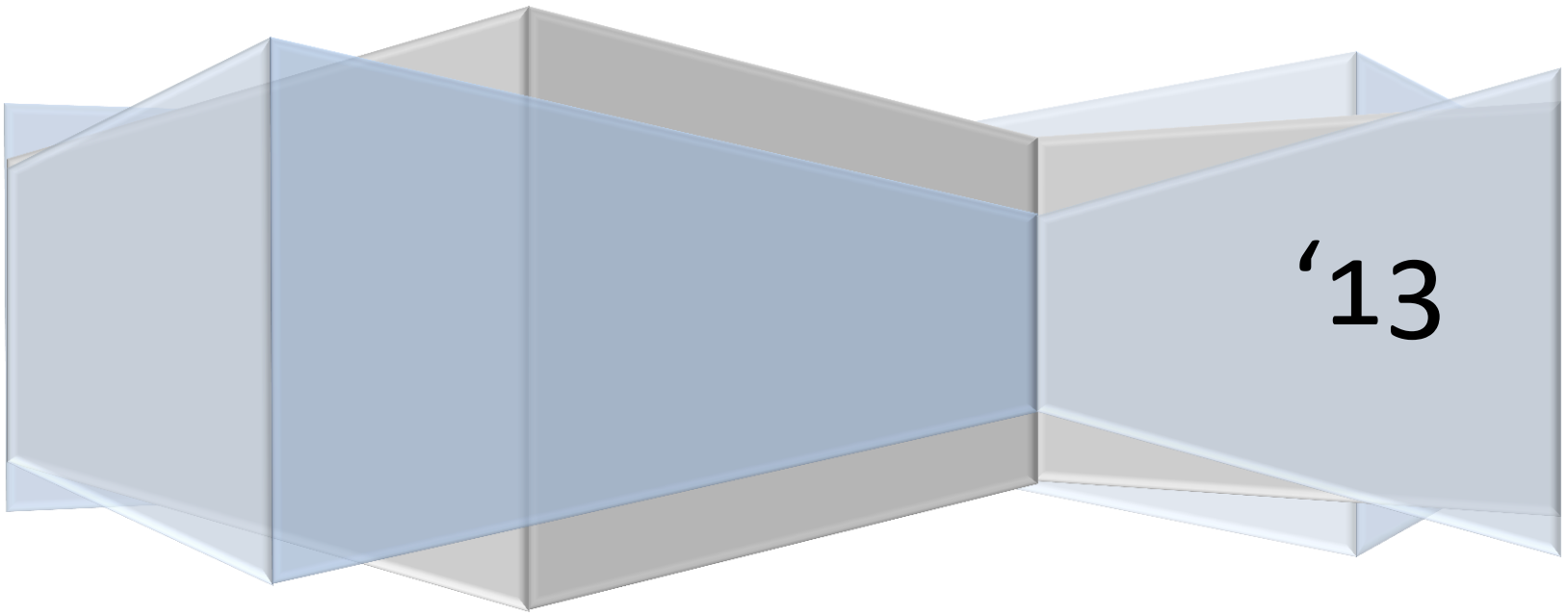
5	**User Testing, Training, and Outreach**		
5.1	Identify user group for testing	Myrica	1 day
5.2	User group testing	Myrica	2 days
5.3	Incorporate user group feedback where feasible	Myrica	4 days
5.4	Training materials (short video tutorial introducing site)	Myrica	3 days
5.5	Outreach	Myrica	1 week
		Task 5 Time:	3 weeks

Oregon Department of Land Conservation and Development

I-Plan

DLCD Intranet Deployment Plan

Marquam Group



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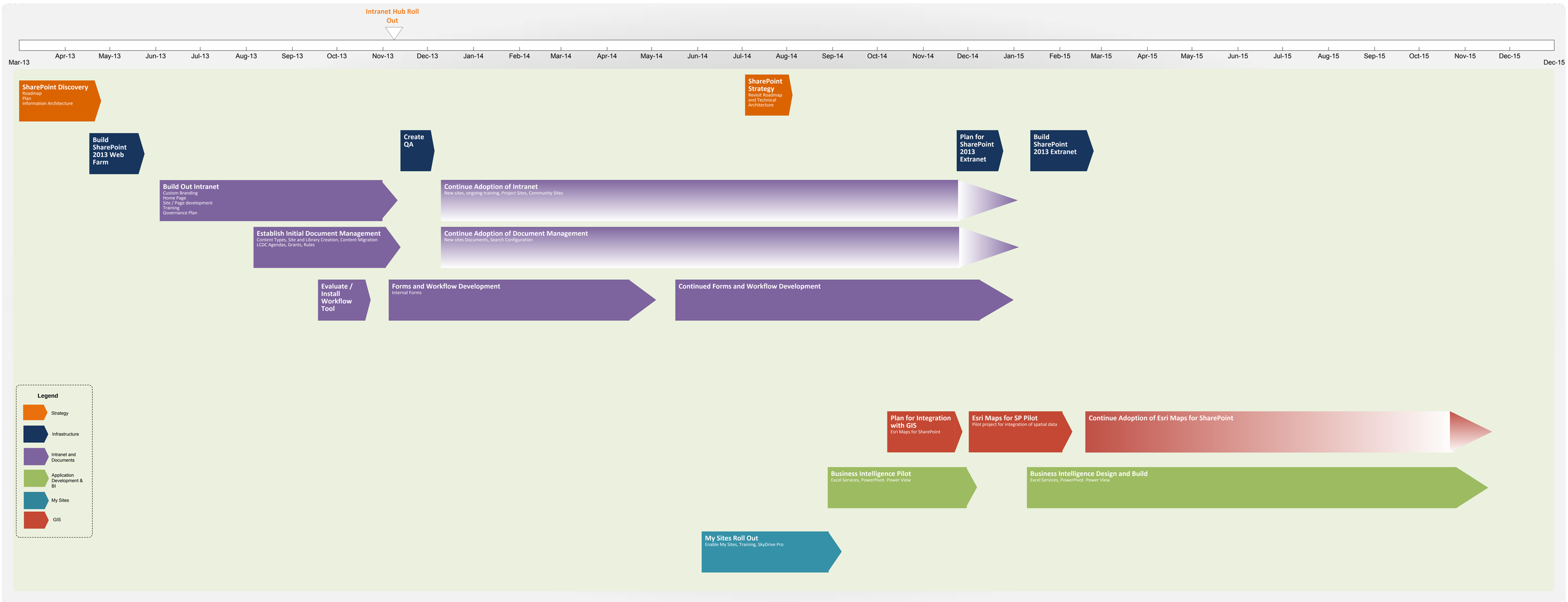
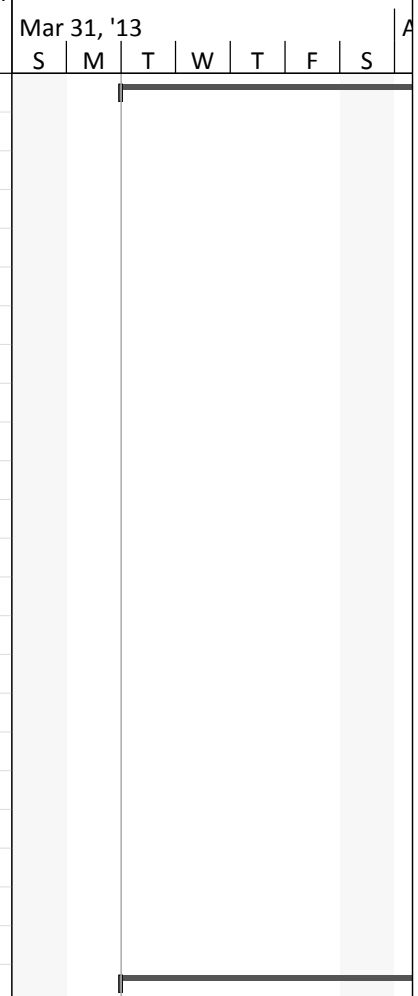
SharePoint Execution Roadmap
Oregon Department of Land Conservation and Development



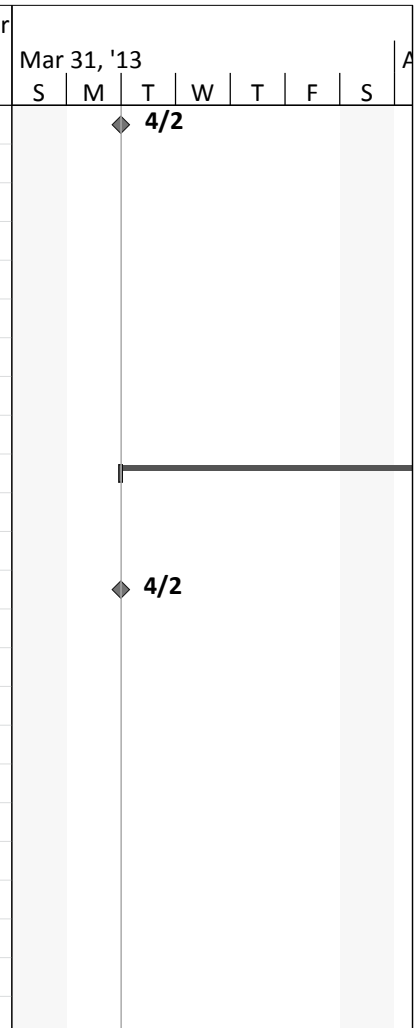
ID	Task Name	Duration	Start	Finish	% Compl	Predecessor
1	**Intranet Deployment Project**	**79 days?**	**Tue 4/2/13**	**Fri 7/19/13**	**14%**	
2	**Metadata and Content Type Planning**	**2 days**	**Mon 5/20/13**	**Tue 5/21/13**	**10...**	
3	Create Initial Content Type and Term Definition Docum	2 days	Mon 5/20/13	Tue 5/21/13	10...	
4	**Establish Core Team**	**2 days**	**Mon 6/24/13**	**Tue 6/25/13**	**0%**	
5	Create core team of power users and site administrator	1 day	Mon 6/24/13	Mon 6/24/13	0%	
6	Develop communication plan with core team	1 day	Tue 6/25/13	Tue 6/25/13	0%	5
7	**Site Admin and Power User Training**	**4 days**	**Mon 6/24/13**	**Thu 6/27/13**	**0%**	
8	Prepare Training Materials	1 day	Mon 6/24/13	Mon 6/24/13	0%	
9	Build Out training site	1 day	Tue 6/25/13	Tue 6/25/13	0%	8
10	Site Admin Training	2 days	Wed 6/26/13	Thu 6/27/13	0%	9
11	**Governance Planning**	**5 days?**	**Mon 7/1/13**	**Fri 7/5/13**	**0%**	
12	Define Governance Committee	1 day	Mon 7/1/13	Mon 7/1/13	0%	
13	Revise Draft initial Governance Plan	3 days	Tue 7/2/13	Thu 7/4/13	0%	12
14	Publish and distribute plan	1 day?	Fri 7/5/13	Fri 7/5/13	0%	13
15	**Site Visual Design "branding"**	**4 days?**	**Mon 6/24/13**	**Thu 6/27/13**	**40%**	
16	Design look and feel	1 day?	Mon 6/24/13	Mon 6/24/13	0%	
17	Develop Mock ups	2 days	Tue 6/25/13	Wed 6/26/13	0%	16
18	Develop wire frames for home pages	3 days	Tue 6/25/13	Thu 6/27/13	80%	16
19	**Design Site Hierarchy**	**63 days?**	**Mon 4/8/13**	**Wed 7/3/13**	**20%**	
20	Interview stakeholders	1 day?	Mon 4/8/13	Mon 4/8/13	10...	
21	Develop Information Architecture	1 day?	Mon 4/22/13	Mon 4/22/13	10...	
22	Map existing data sources to IA	5 days	Mon 6/24/13	Fri 6/28/13	0%	
23	Develop Content Migration Plan	3 days	Mon 7/1/13	Wed 7/3/13	0%	22
24	**SharePoint 2013 Platform Build Out**	**14 days**	**Tue 4/2/13**	**Fri 4/19/13**	**99%**	



Project: Intranet Deployment Plan
Date: Thu 7/25/13

Task		Inactive Task		Start-only	
Split		Inactive Milestone		Finish-only	
Milestone		Inactive Summary		Deadline	
Summary		Manual Task		Progress	
Project Summary		Duration-only		Manual Progress	
External Tasks		Manual Summary Rollup			
External Milestone		Manual Summary			

ID	Task Name	Duration	Start	Finish	% Compl	Predecessor
25	**Design New Farm**	**0 days**	**Tue 4/2/13**	**Tue 4/2/13**	**0%**	
26	~~Infrastructure Planning Workshop~~	~~1 day~~	~~Wed 4/24/13~~	~~Wed 4/24/13~~	~~0%~~	
27	~~Create Technical architecture Document~~	~~1 day~~	~~Thu 4/25/13~~	~~Thu 4/25/13~~	~~0%~~	~~26~~
28	~~Review Document~~	~~1 day~~	~~Tue 5/7/13~~	~~Tue 5/7/13~~	~~0%~~	
29	**Build New Farm**	**4 days**	**Tue 4/16/13**	**Fri 4/19/13**	**10...**	
30	~~Define Pre-requisites~~	~~1 day?~~	~~Mon 5/13/13~~	~~Mon 5/13/13~~	~~0%~~	
31	~~Establish baseline environment (Windows, Service Ac~~	~~5 days~~	~~Tue 5/14/13~~	~~Mon 5/20/13~~	~~0%~~	~~30~~
32	Install SQL Server 2012	1 day	Tue 4/16/13	Tue 4/16/13	10...	30
33	Build and Configure SP 2013 farm	3 days	Wed 4/17/13	Fri 4/19/13	10...	32,31
34	**Intranet Development and Configuration**	**79 days?**	**Tue 4/2/13**	**Fri 7/19/13**	**0%**	
35	**Develop Custom Branding**	**1 day?**	**Mon 7/8/13**	**Mon 7/8/13**	**0%**	
36	Develop custom master pages and CSS	1 day?	Mon 7/8/13	Mon 7/8/13	0%	
37	**Applications**	**0 days?**	**Tue 4/2/13**	**Tue 4/2/13**	**0%**	
38	~~Create custom web parts / applications~~	~~1 day?~~	~~Mon 5/27/13~~	~~Mon 5/27/13~~	~~0%~~	
39	~~Purchase / Download 3rd party web aprts / applicatio~~	~~1 day?~~	~~Mon 6/3/13~~	~~Mon 6/3/13~~	~~0%~~	
40	**Initial SharePoint configuration**	**4 days**	**Mon 6/24/13**	**Thu 6/27/13**	**0%**	
41	Create Site Collections	2 days	Mon 6/24/13	Tue 6/25/13	0%	
42	Create Site Columns, Terms and Content Types	2 days	Wed 6/26/13	Thu 6/27/13	0%	41
43	Establish Content Type Hub	2 days	Wed 6/26/13	Thu 6/27/13	0%	41
44	**Intranet Dev. and Config**	**50 days**	**Wed 5/8/13**	**Tue 7/16/13**	**0%**	
45	**Site build out**	**2 days**	**Wed 6/26/13**	**Thu 6/27/13**	**0%**	
46	Global Nav and Home Page Build -Out	2 days	Wed 6/26/13	Thu 6/27/13	0%	41
47	**Build-out Wave 0**	**17 days**	**Mon 6/10/13**	**Tue 7/2/13**	**0%**	**46**
48	Build Sites	2 days	Fri 6/28/13	Mon 7/1/13	0%	46



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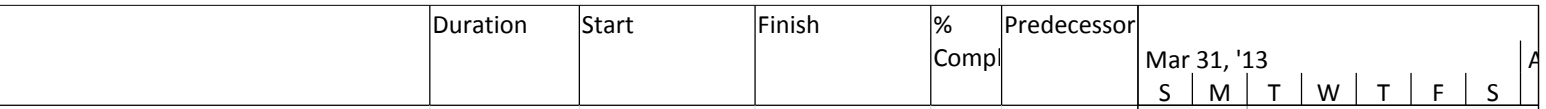
External Milestone	Manual Summary	

ID	Task Name	Duration	Start	Finish	% Compl	Predecessor
49	Provide content migration assistance	2 days	Mon 6/10/13	Tue 7/2/13	0%	48SS+1 day
50	Transition sites to Site owners and Define Permissi	1 day	Fri 6/28/13	Fri 6/28/13	0%	49SS+2 day
51	Activation of sites	2 days	Mon 7/1/13	Tue 7/2/13	0%	50
52	**Build-out Wave 1**	**42 days**	**Wed 5/8/13**	**Thu 7/4/13**	**0%**	**46**
53	Build Sites	5 days	Fri 6/28/13	Thu 7/4/13	0%	
54	Provide content migration assistance	3 days	Wed 5/8/13	Tue 7/2/13	0%	
55	Transition sites to Site owners and Define Permissi	2 days	Fri 6/28/13	Mon 7/1/13	0%	
56	activation of sites	1 day	Wed 5/15/13	Fri 6/28/13	0%	
57	**Build-out Wave 2**	**12 days**	**Mon 7/1/13**	**Tue 7/16/13**	**0%**	**56**
58	Build Sites	5 days	Mon 7/1/13	Fri 7/5/13	0%	
59	Provide content migration assistance	4 days	Mon 7/8/13	Thu 7/11/13	0%	58
60	Transition sites to Site owners and Define Permiss	2 days	Fri 7/12/13	Mon 7/15/13	0%	59
61	activation of sites	1 day	Tue 7/16/13	Tue 7/16/13	0%	60
62	**Configure Search**	**3 days?**	**Wed 7/17/13**	**Fri 7/19/13**	**0%**	
63	Define Search scopes	2 days	Wed 7/17/13	Thu 7/18/13	0%	57
64	Review best bets, refinements etc	1 day?	Fri 7/19/13	Fri 7/19/13	0%	63



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Task
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Summary
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External Tasks
External Milestone
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Inactive Summary
Manual Task
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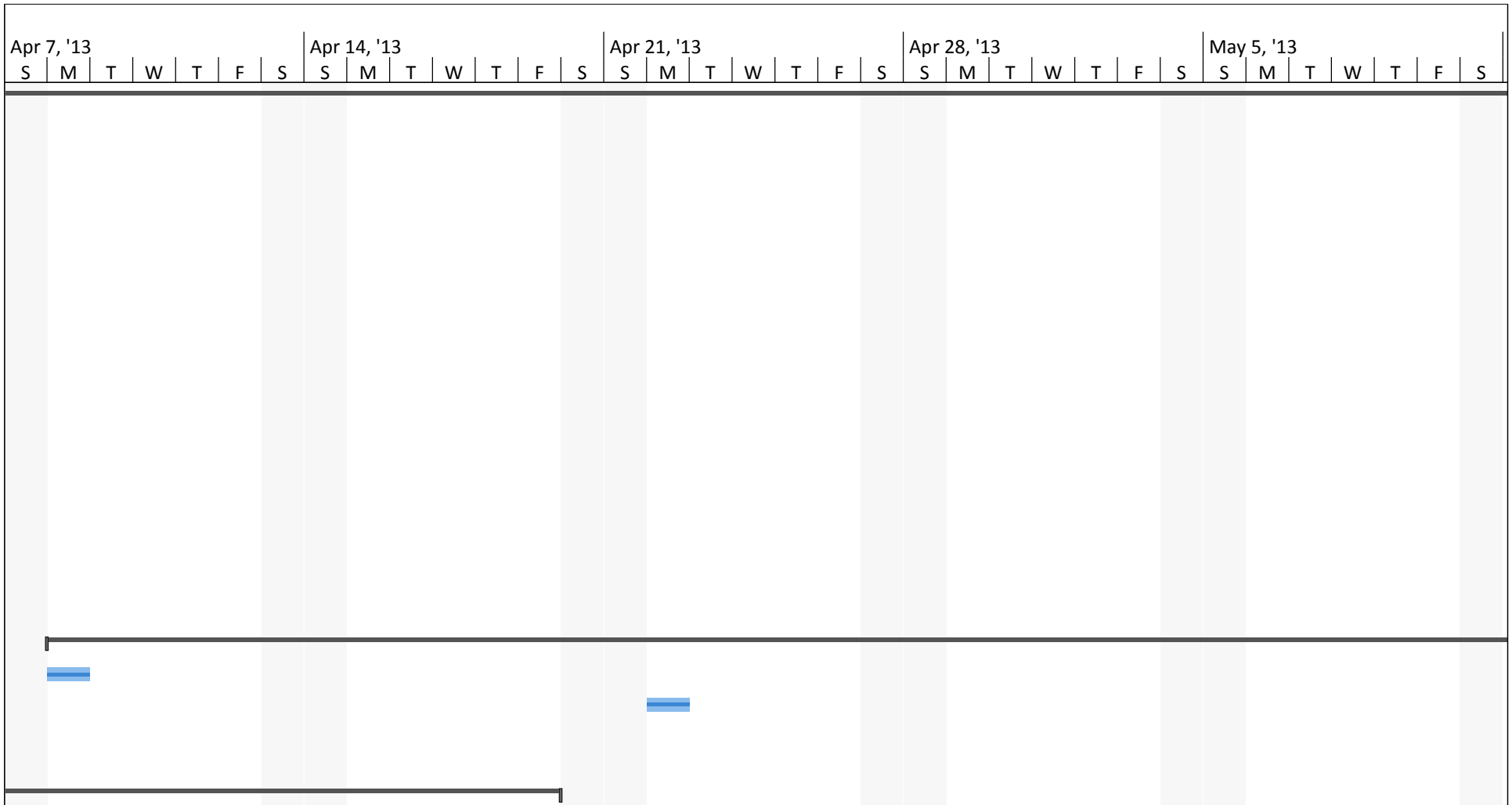
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Deadline
Progress
Manual Progress



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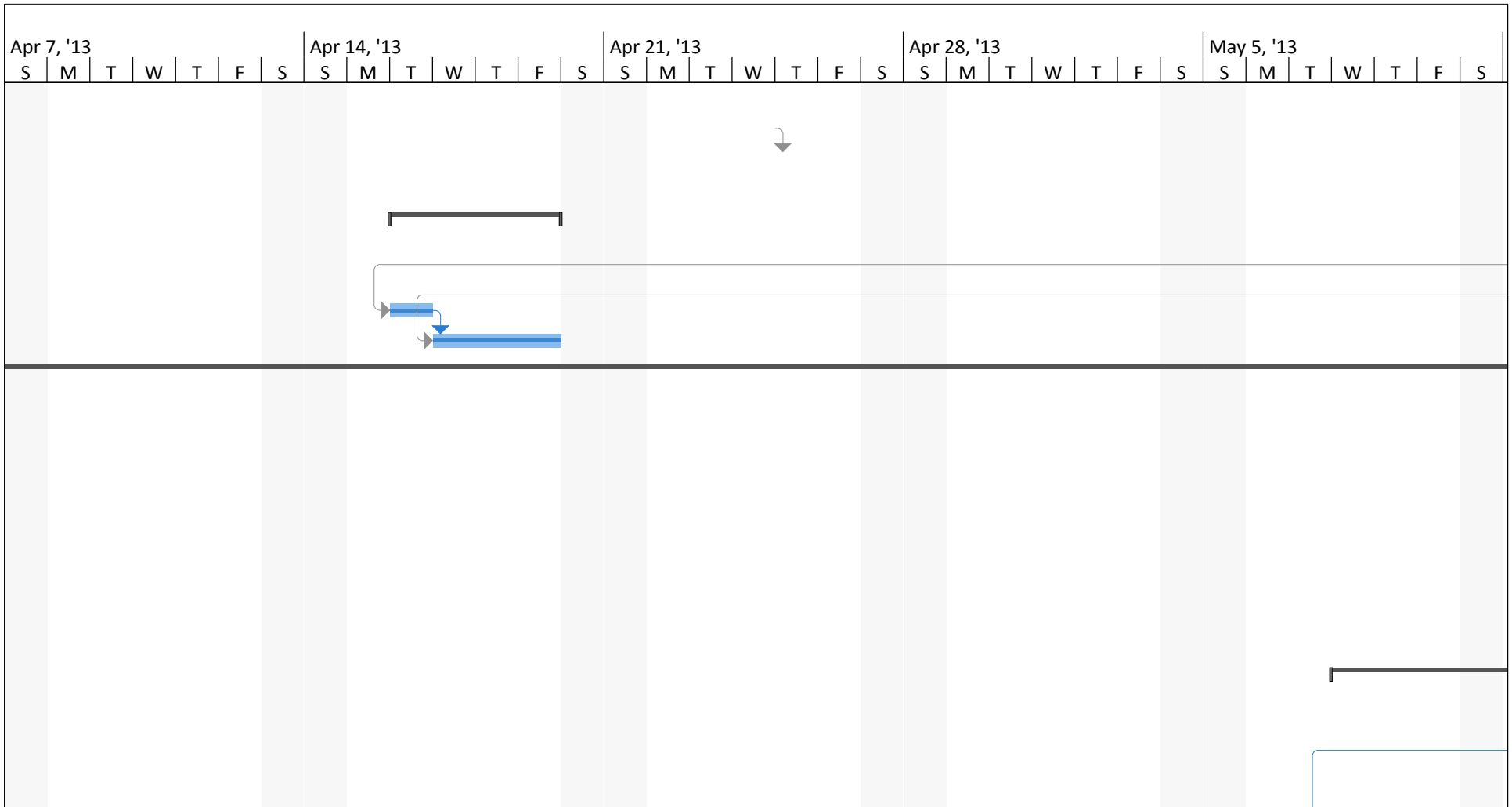

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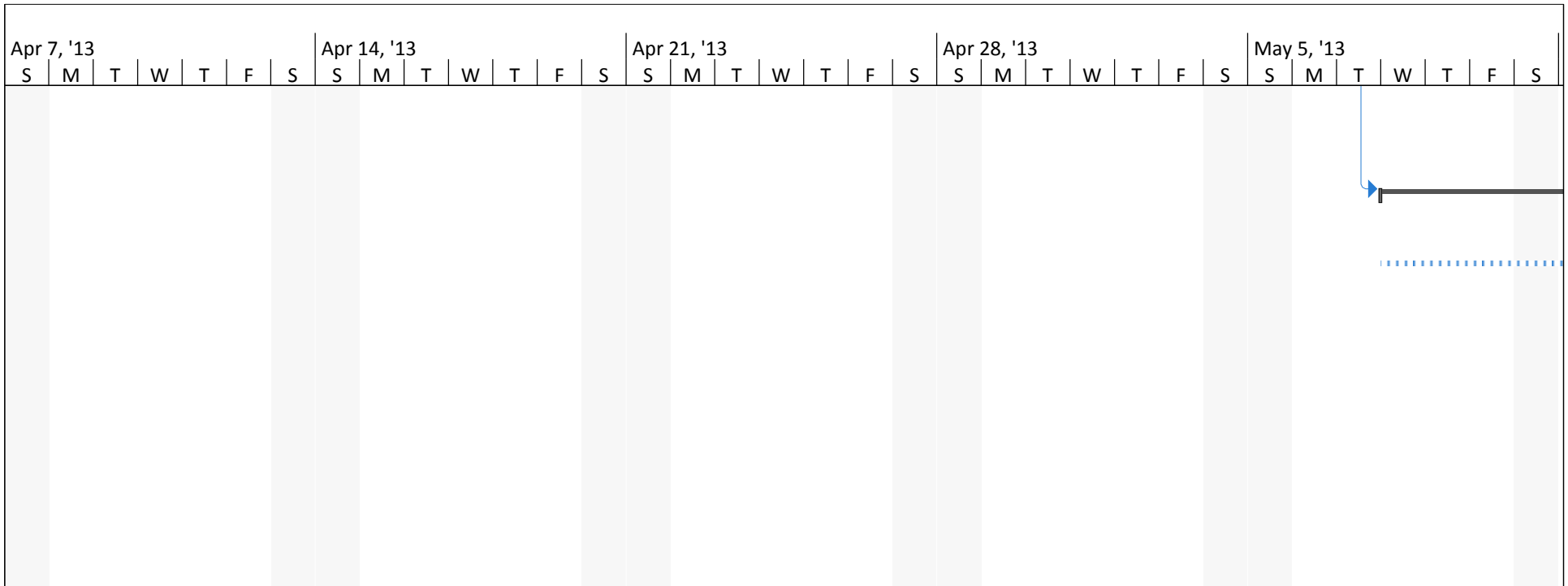

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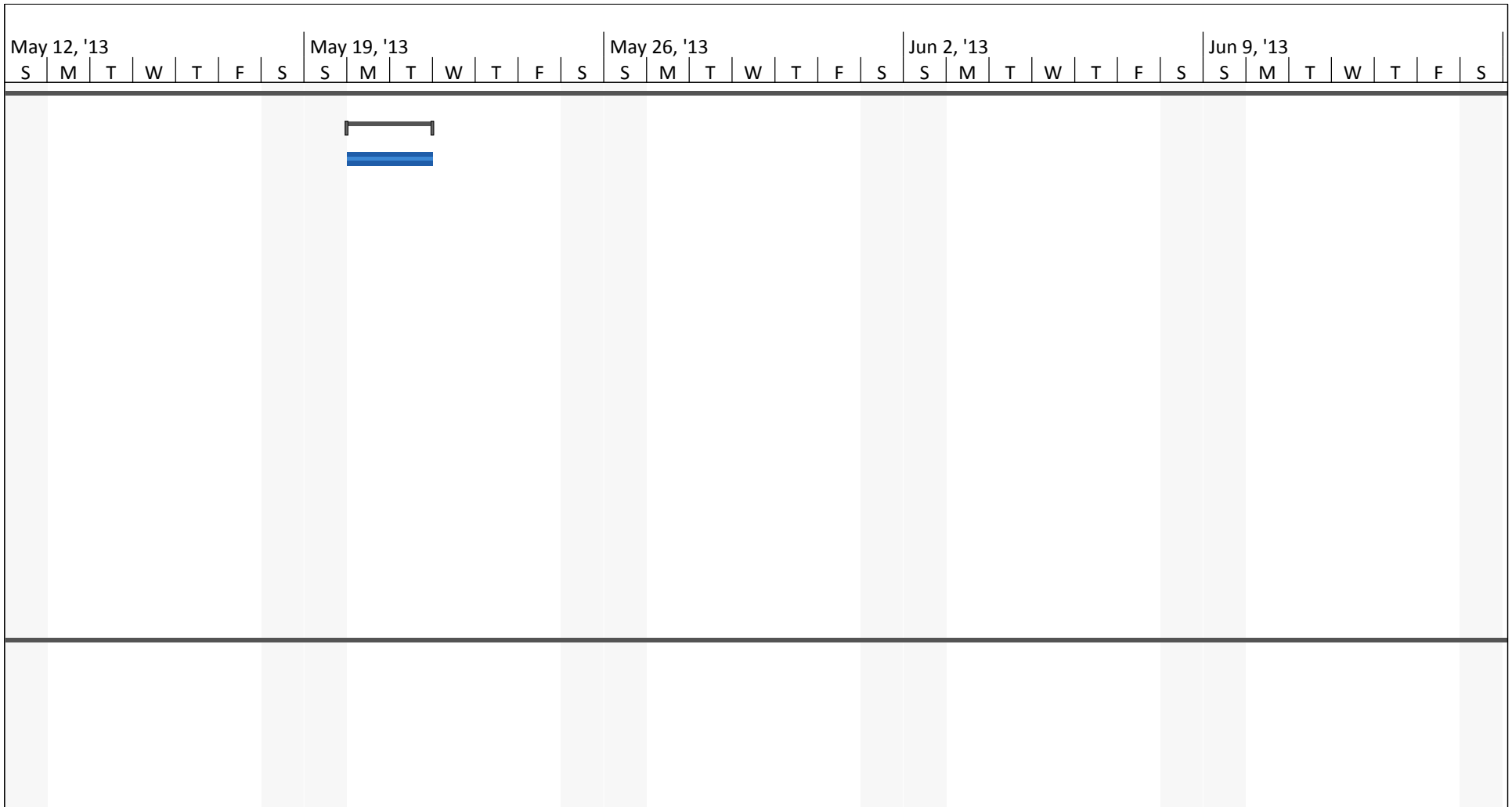

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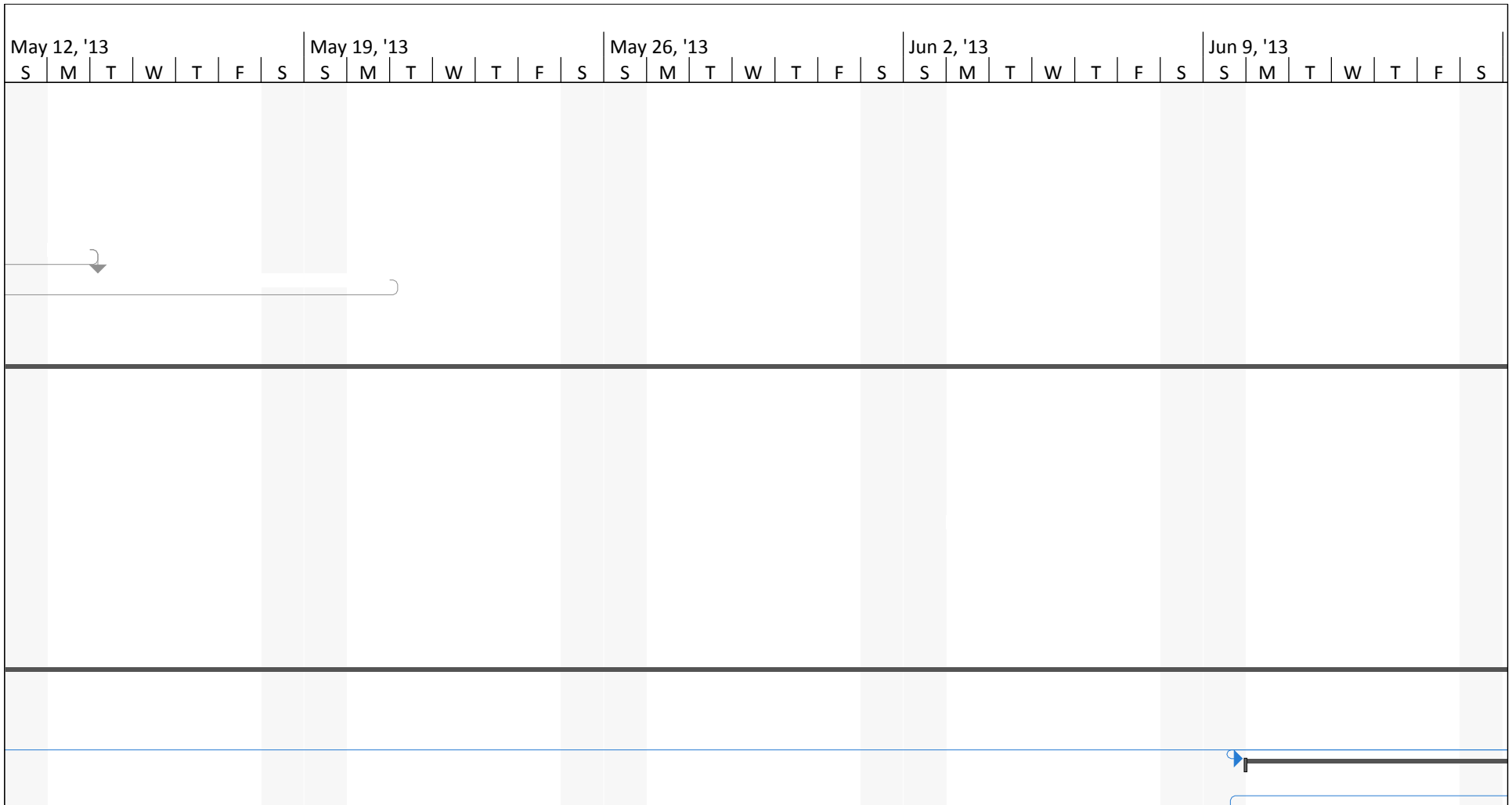

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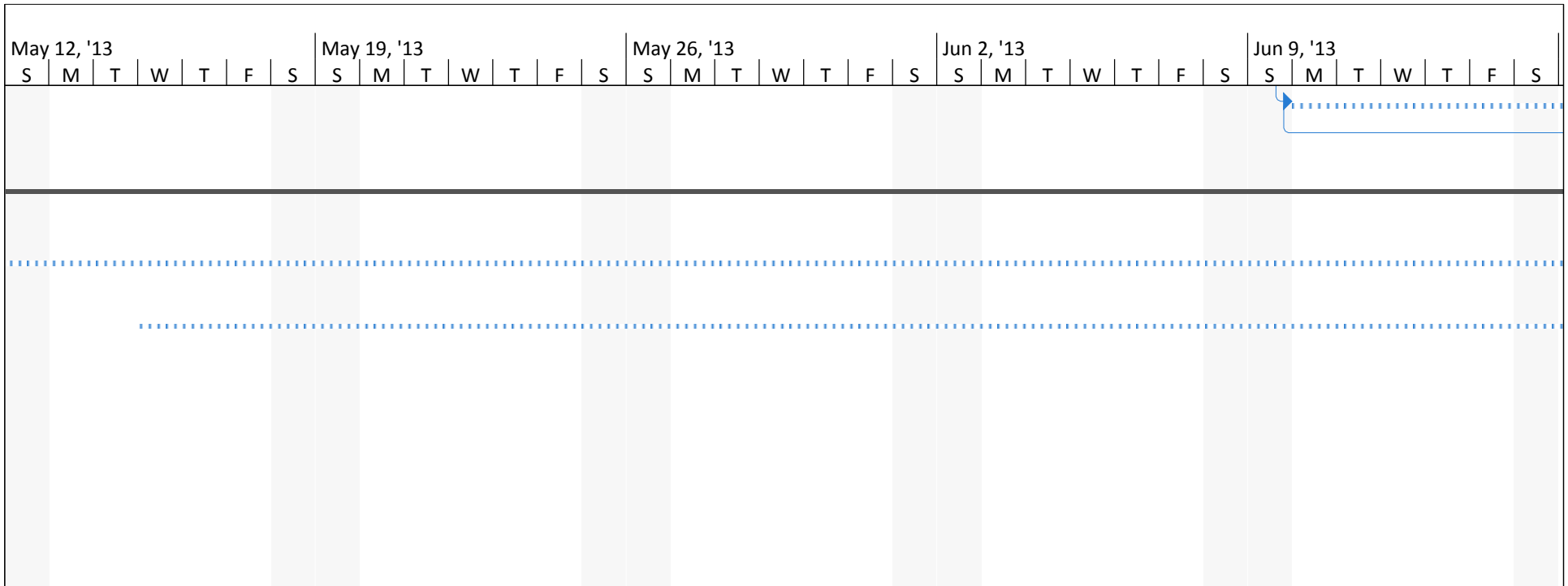

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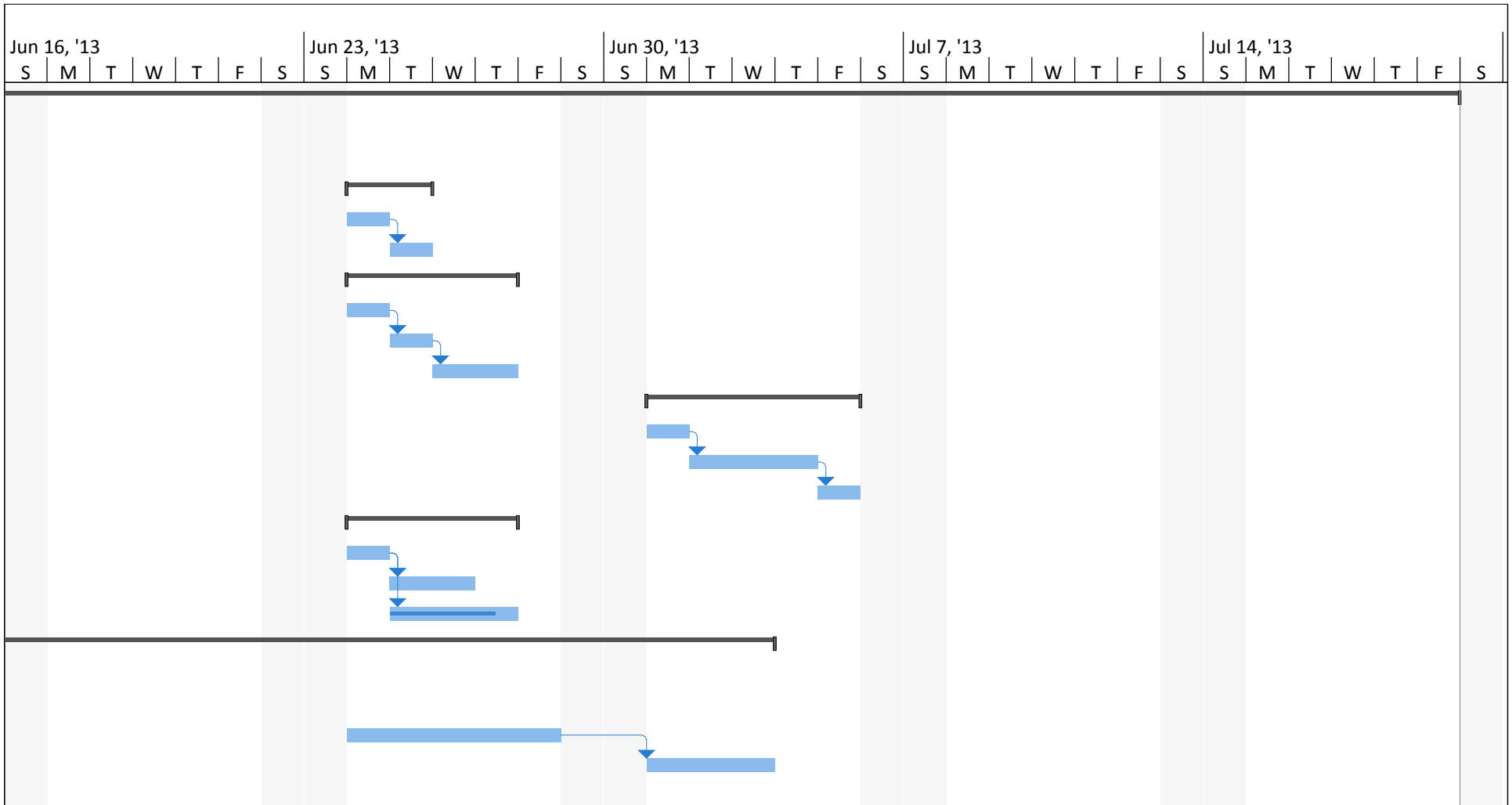

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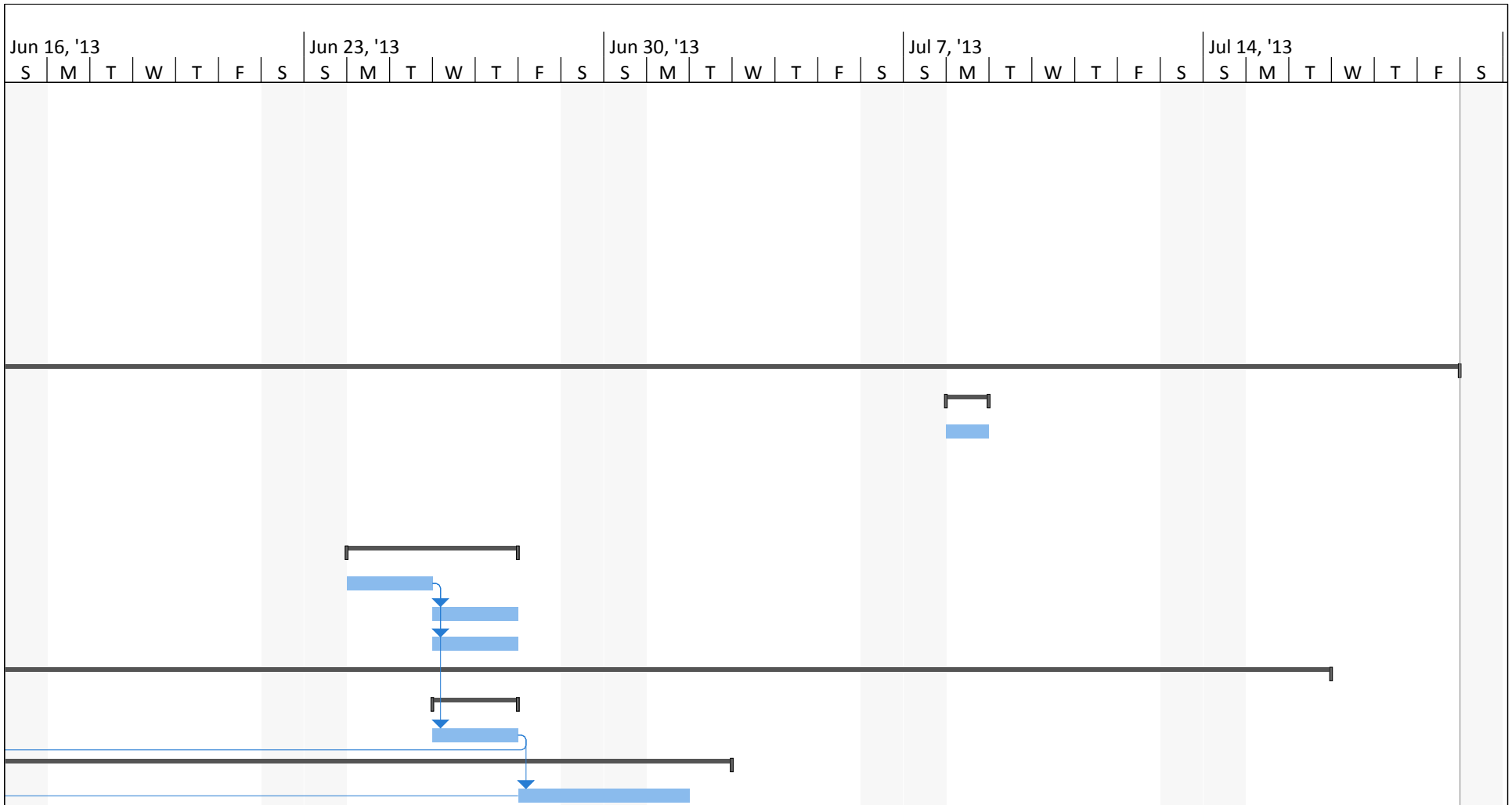

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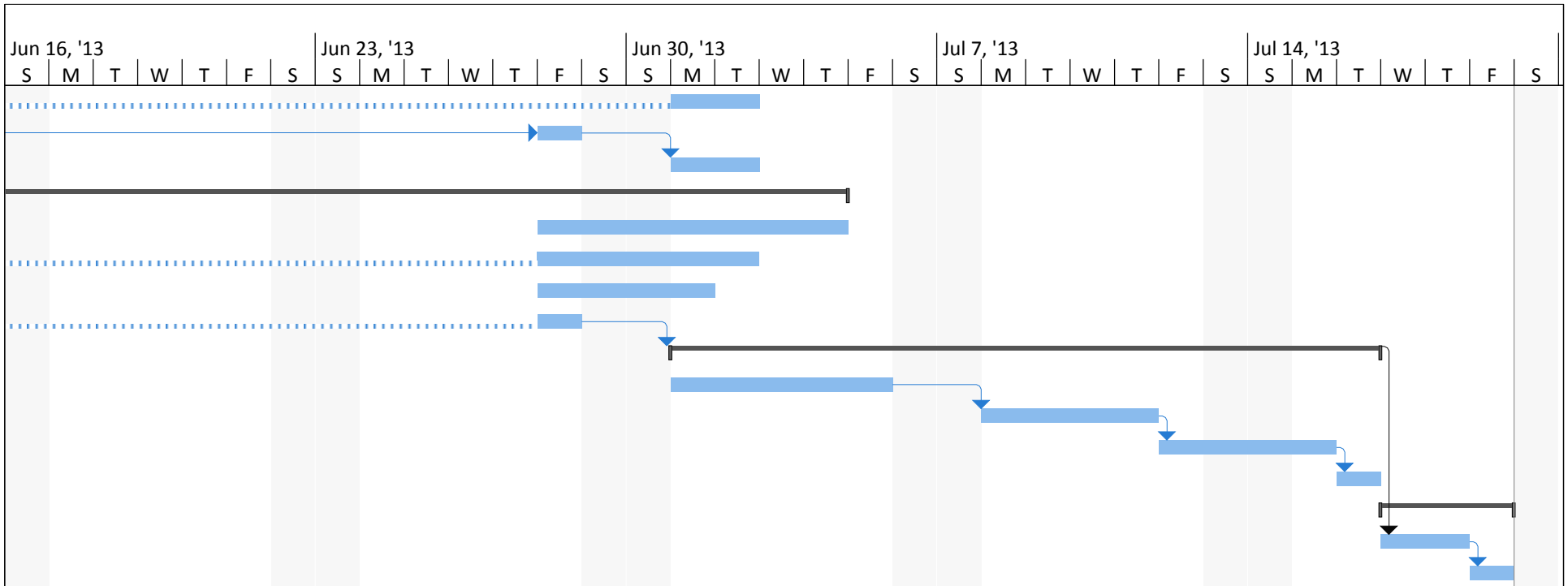

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SharePoint Implementation Plan – Governance

Prepared by Marquam Group

Governance Overview

Deploying Microsoft Office SharePoint Server 2013 introduces new ways of sharing information, collaborating, and implementing business processes within the agency. SharePoint is a broad system that provides a wider range of development, configuration, and contribution options than many other IT systems. Consequently, there are unique considerations for governing SharePoint that go beyond typical system issues. This document intends to provide a framework for governing the SharePoint environment so that the service offerings developed are maintained to meet agency goals and provide value to state employees as a whole.

Roles and Responsibilities

The following roles and responsibilities are important for the successful governance and operation of the Portal.

			Initial Governance Plan
Business Owner	Executive sponsor and final decisions maker on the use, content, and other governance policies regarding the Portal.	This is not a SharePoint permissions level but a role played within an organization, typically oversees the governance committee.	
Farm Admin	Technical role, configure SharePoint services, apply patches, tune servers, performance monitoring	This is a SharePoint administrative account. Individuals who can use this account will have access to SharePoint Central Administration and all of the features that are managed at that level.	This will only be granted within the IT organization to a limited number of people
Site Collection Admin	Controls features that are managed at the site collection level (search configuration, site collection features), available, manage full permissions,	This is the highest level of User Account in SharePoint. A site collection administrator can access all sites and content within the site collection	This will initially be an IT function.
Content Owner	division, bureau or section manager responsible for determining the content to publish and appropriate permissions within each of their sites	This is not a SharePoint permissions level, but it is typical to identify an individual who is responsible for the timeliness and quality of the content being manages in a site.	Each Division will establish a Content Owner
SharePoint Designer	Power Users who can create new sites and assist Site Owners with maintaining current sites	This is a role within an organization which can be implemented in many different	There are one or two individuals who could assume this role with the appropriate training

		ways within SharePoint. For example “full control” at the root site level.	
Site Owners	maintain existing sites and content under the direction of the Content Owner	This is a SharePoint user account level that has site administration capabilities. This means the individual can manage permissions, create and manage libraries etc.	A Site owner will be established for each site. Site owners will need appropriate training in SharePoint configuration.
Content Contributor	contribute content to sites as determined appropriate by the Content and Site Owners	This is a SharePoint user account level that allows users to add and maintain content. This can be set at a site, library or content level.	Content Contributors will be assigned by the Site Owners
End User (Content Consumer)	navigate and access content on sites	This is a SharePoint user account level that allows users to read or view content. This can be set at a site, library or content level.	

Guiding Objectives

The Portal is an important tool for both communicating to employees and providing an environment for all employees to communicate and collaborate together. The following objectives represent the vision for the Portal and will ensure its adoption and ongoing success:

Objective	Description
Promote change and adoption of best practices	By providing easy access to guidance, sample content, templates, etc., encourage employees to adopt best practices.
Improve accessibility and ability to find information for all	Organize to make it easy to find through simple and clear navigation menus. Classify content to improve search results.
Promote the organization's mission	Educate and raise awareness on the mission, goals, and objectives of the organization.
Provide resources and services to end users in a one-stop environment	Create environment that is extensible, allows for the addition of similar service offerings to site, and will eventually become the single source of internally provided organization resources and content.
Improve productivity of staff maintaining content	Make it easier to publish information. Easier to maintain information. Create a self-service environment that reduces the amount of questions.
Secure content appropriately	Unless a business need exists, content will be viewable all users. The ability to contribute will be restricted as determined appropriate by the business.
Provide portal to communicate and share information with and among employees	Provide a secure and reliable platform for managers to communicate updates and messages to content consumers along with enabling more dynamic exchange of information amongst all users.
To greatest extent possible, design portal capable of integrating with existing state systems	Common terms, data fields, naming conventions, etc., will take into account existing systems whenever possible; making future integration and data exchange more likely.

Governance Principles

The governance principles are separated into four categories:

- Branding & IA – to keep a consistent look-and-feel, drive adoption
- Site Change Control – define expectations for reviewing and approving changes to site
- Content Management – promote frequent refresh, good organization, and required retention/archiving of content
- Taxonomy – promote consistent naming conventions and enable Search

Specific governance principles for each category are presented below.

Branding & IA

Branding and Information Architecture (IA) determine the overall look and feel of the site as well as how content (sites, pages, libraries, etc.) are organized within the site.

Issue:	Navigation
Rationale:	Create a consistent menu navigation on the top of the site that is consistent and available in all areas of the site
Governance Procedures:	o The global navigation will be designed and documented on the Information Architecture Diagram o Changes to the global navigation are not authorized without prior review and approval by the governance board o Left (Quick) navigation options are to be site specific and determined by each Site Owner
Considerations	The Governance Board should decide whether to use structured or managed navigation. This is a new feature in SP 2013

Issue:	Appearance
Rationale:	Create a consistent visual experience for all users throughout the site
Governance Procedures:	o The visual appearance of the overall site will be implemented by creating unique Master Page(s) and CSS. o SharePoint Themes will not be authorized without prior review and approval by the governance board o Site owners cannot change the logo for the site o No changes to the global master pages or other branding features on the site are allowed without formal approval of the governance board

	o Any changes to the branding must follow a design process, be implemented on the Dev/ QA for final testing, and only migrate to Production after formal review and approval o Changes or creation of new page layouts must be reviewed and approved by the governance board o Page content must follow the Guideline for Plain Language Writing Standards and Portal Style Guide
Considerations	The Governance Board should consider if it will permit "theming" for any type of sites. For example if someone creates a site for a small workgroup which will not be accessed by most users is it ok for the site owner to "create their own look"?

Site Change Control

Determine the degree and type of control on the creation of new sites and changes to existing sites. Does not include content contained within existing sites.

Issue:	Site Creation & Deletion
Rationale:	Prevent proliferation of sites without a clear owner or business purpose

Governance Procedures:	o A site is considered a primary site if it is accessible from the global navigation menu (first or second level menu option)
	o All new primary sites must be approved through the governance board. A request for a new site must be accompanied by:
	  o A description of the intended use and business value of the site
	  o An initial Information Architecture diagram
	  o Name of Site Owner
	o All sites must have a clearly identified Site Owner
	o The governance board must approve the deletion of all sites.
	o Prior to deletion, the content located in the site must be archived according to state record's retention policy
	o All primary sites must be created using the SharePoint Publishing Site Template

Considerations	Should non-primary sites require any governance control at all? Should there be a set of site templates that are used for non-primary sites? Should there be quotas established for non-primary sites?

Issue:	Site Maintenance
Rationale:	Ensure changes are in compliance with the original intent of the site.
Governance Procedures:	o Site Owners can make minor configuration changes (minor = adding a column, creating a new view, list or library) without a formal review or approval from the governance board o Major changes to existing sites (departure from original business objective or intended audience) must be reviewed and approved by governance board prior to deployment

Issue:	Customization
Rationale:	Ensure the site remains stable and changes do not result in service interruption to end users
Governance Procedures:	o Major customizations involving Microsoft .NET, addition of third party features or web parts, or changes to core SharePoint functionality (such as master pages) must be validated in the QA environment prior to deployment to production. o Customizations using SharePoint Designer must be completed in the QA environment and then replicated on production o Simple configuration changes can be made directly within the production environment
Considerations	o At the time of writing there is no QA environment. This needs to be planned or at a minimum a separate site collection be created in Production to test new features.

Content Management

Establishes policies around the creation, maintenance, and destruction/archiving of content on sites.

Issue:	Content and Page Management
Rationale:	Encourage that content is not duplicated in multiple areas and require that content be validated prior to publishing on the site.
Governance Procedures:	o Prior to uploading new documents, it is the responsibility of the content owner to make a best effort attempt to validate the content is not replicated elsewhere on the site. o The intentional duplication of documents on the site is

	forbidden. o All content added to the site must comply with appropriate use policies. o All images uploaded and used on the site must be owned by the agency or be confirmed to be free of any copyright restrictions o Users should "tag" document appropriately o Users should ensure that documents have valid document titles
Considerations	Is policy required around the use of versions? E.g., "Within Primary Sites, Page and Document libraries must use the *Create major and minor (draft) versions* option and require content approval. Content approval can be at a peer level at the discretion the content owner."

Issue:	**Content and Page Management**
Rationale:	Require that content is stored in SharePoint rather than file shares or local drives
Governance Procedures:	o Prior to saving new documents, it is the responsibility of the content owner to make a best effort to determine what the proper location for that content is. o The intentional saving of documents which should reside in SharePoint to files shares and local drives duplication of documents on the site is forbidden. o Certain "large" documents such as videos should still be saved to file shares.
Considerations	Quotas can be applied to file types and over all file size.

Issue:	**Standardization**
Rationale:	Wherever possible, standardize on layout, images, fonts, language, etc.
Governance Procedures:	o Images that are appropriate for cross-site use will be stored in an images library at the top site

Issue:	Permissions
Rationale:	Ensure broad access to content (read) with tightly and appropriately assigned edit rights.
Governance Procedures:	o All employees will have View rights to the site by default o Prior to restricting View rights to a site or content within a site, a business need must be identified and the restriction must be approved by the governance board o Edit permissions to the Pages library in all primary sites will be restricted to the Site Owner and identified back-up (s) o Based on business need, the Site Owner is responsible for determining and assigning edit permissions to content within their site, subject to periodic review by the governance board

Taxonomy

Establishes rules for creating and maintaining the terms, terms sets, and other mechanisms for classifying and organizing content within the site.

Issue:	Site Columns & Content Types
Rationale:	Ensure consistency and allow for future integration and data exchange with other state systems, including ORMS.

Governance Procedures:	o The governance board will draft a taxonomy document defining common used terms and term sets in use at the agency
	o No changes to the base SharePoint Site Columns and Content Types are allowed
	o Cross division terms will be set-up as Site Columns
	o Changes to existing or the addition of new site columns and content types must be reviewed and approved by the governance board
	o All site columns will be created at the site collection level
	o The SharePoint Designer or Site Owner will assess (in the following order) the use:
	  o List or Library template
	  o Content type
	  o Site column
	  o Custom columns
	when building out new lists or libraries within their site
	o New document content types will inherit from the Base Organization Document content type

SharePoint Governance Roles

Site	Business Owner	Site Administrator	Major Content Contributors
Home	Jim Rue/Carrie MacLaren	IT	IT
Directors Office	Jim Rue/Carrie MacLaren	Casaria Taylor	Amie Abbott
Citizen Involvement Advisory Committee	Bob Rindy	Casaria Taylor	Bob Rindy
HR / Payroll	Vickie McDermott	Vickie McDermott	Vickie McDermott
Land Conservation & Development Commission	Jim Rue/Carrie MacLaren	Amie Abbott	Amie Abbott
Local Official Advisory Committee	Jim Rue/Carrie MacLaren	Amie Abbott	Amie Abbott
Rulemaking Committee	Jim Rue/Carrie MacLaren	Casaria Taylor	various
Urban growth Design Group	Jim Rue/Carrie MacLaren	Casaria Taylor	Bob Rindy
Administrative Services	Teddy Leland	Teddy Leland	various
Finance	Teddy Leland	Teddy Leland	various
Information Technology	Teddy Leland	IT	IT
Purchasing	Teddy Leland	Teddy Leland	Julie Hall; Mara Ulloa; Heather A; Linda S
Travel	Teddy Leland	Teddy Leland	Mara Ulloa; Linda S
Community Services	Rob Hallyburton	Rob Hallyburton	various
Grants Advisory Committee	Rob Hallyburton	Rob Hallyburton	Larry French
Ocean Coastal Services	Patty Snow	Andy Lanier	various
Planning Services	Matt Crall	Matt Crall	various
Employee Resources	DLCD Managers	Casaria Taylor	various
Project (any specific identified?) IMMI	Steering Committee	Gail Ewart	Gail Ewart; various

Site: Oregon Dept Land Conservation & Development
Category: Collaboration
Type: Team / Publishing Site

- My Sites
- Agency Wide Announcements
- Current Topics
- Calendar
- Legislative Links
- Agency Jobs
- Resource Links
- DLCD In the News
- DLCD Internet Link
- New Employee Introduction

Site: Director's Office
Type: Team / Publishing Site

- Orders
- Performance Measures
- **Site**: Citizen Involvement Advisory Committee
  Type: Team / Publishing Site
  - Formal Comments
- **Site**: HR/Payroll
  Type: Team / Publishing Site
- **Site**: Land Conservation & Development Commission
  Type: Team / Publishing Site
  - LCDC Commission Agenda
  - LCDC Reports
- **Site**: Local Official Advisory Committee
  Type: Team / Publishing Site
- **Site**: Rulemaking Committee
  Type: Team / Publishing Site
  - Policy
- **Site**: Urban Growth Design Group
  Type: Team / Publishing Site

Divisions

- **Site**: Administrative Services
  Type: Team / Publishing Site
  - In Case of Emergency
  - DLCD Asset Library
  - **Site**: Finance
    Type: Team / Publishing Site
    - Budget Prep
    - Budget Execution Reports
    - Budget Execution Support
  - **Site**: Information Technology
    Type: Team / Publishing Site
  - **Site**: Purchasing
    Type: Team / Publishing Site
    - Contracts
  - **Site**: Travel
    Type: Team / Publishing Site
- **Site**: Community Services
  Type: Team / Publishing Site
  - **Site**: Grants Advisory Committee
    Type: Team / Publishing Site
    - Grants
- **Site**: Ocean Coastal Services
  Type: Team / Publishing Site
- **Site**: Planning Services
  Type: Team / Publishing Site

Site: Employee Resources
Type: Team / Publishing Site

- Internal Forms
- Internal Policies
- Phone List
- Applications
- Travel Requests
- Oregon Explorer
- Templates

Projects

- **Site**: <Project Name>
  Type: Team / Publishing Site
  - KPI
  - Gantt Chart
  - Task List
  - Issues
  - Document Library

Search Center

Legend

Team Site	Status Report
Site	Contacts List
Search	Discussion Board
Content Page	Announcements
Document Library	Links Library
Custom Lists	Tab — Global Nav tab w/ hover expansion
Form Library	Admin (Site Administrator) Content (Site Content Owner)
Calendar	

SharePoint 2013 Information Architecture Design

DESCRIPTION	AUTHOR
Initial Information Architecture Site Hierarchy for the ODLCD SP2013 environment.	Marquam Group - Portland, Oregon

DATE CREATED	VERSION	PAGE
3.27.2013	0.1	1 of 1

Oregon Department of Land Conservation and Development

Agency Wide Announcements

Current Topics

Upcoming DLCD Events
(calendar)

Picture Link to
http://www.oregon.gov/lcd/
pages/index.aspx

Legislative Links

DLCD in the News

New employee introduction
(picture with short bio and hobbies)

Resource Links

DLCD Employment

Field	DLCD Document	LCDC Commission Agenda	LCDC Reports	Orders	Grants	Policy	Formal Comments	Budget	Performance Measures	Contracts	Business Rules	Retention Rules	Permissions Mgmt
Name	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default			
Title	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	<insert any business rules associated to these documents>	<insert any retention rules associated to these documents>	<insert permissions associated to these documents>
Jurisdiction		R Term Store, no default	R Term Store, no default	R Term Store, no default									
Month		R Choice, no default	R Choice, no default						R Choice, no default				
Year		R Choice, no default	R Choice, no default		R Choice, no default	R Choice, no default			R Choice, no default				
Subject	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default	R Text entry, no default			
Process		R Term Store, no default	R Term Store, no default										
Division		O Term Store, no default											
Owner	R People picker, no default	R People picker, no default	R People picker, no default	R People picker, no default	R People picker, no default	R People picker, no default	R People picker, no default	R People picker, no default	R People picker, no default	R People picker, no default			
Order #				R Text entry, no default									
Date Signed				R Date picker, no default					R Choice, (1-20), no default				
KPM's									R Term Store, no default				
Vendors										R Term Store, no default			
Grant Type					R Choice, no default								
Policy type						R Choice, no default							
Goal #						R Choice, no default							

Introduction

This plan applies to training and resource planning for the new SharePoint platform.

Roles and Responsibilities

A successful SharePoint implementation requires that a wide range of skills are learned by a wide range of people. The table below identifies the major roles that are required and what responsibilities they have:

Role	Responsibility
SharePoint Farm Administrator	System administration of the SharePoint Farm and all components
SharePoint Developer / Configurator	Application development, content migration assistance, SharePoint solutions, SharePoint Configuration
Site Owners / Power User	Site creation and maintenance, content authoring, site design
Content Contributors	Basic system use and ability to contribute and/or manage content with sites or pages
Users	Basic system use, navigation, search

Training Plan

The primary training objectives include, but are not limited to:

- Ensure that technical resources are able to support the environment
- Ensure that development resources understand configurations and custom features so that they can maintain them in the future.
- Encourage adoption by ensuring the general user community know how to access and use the Intranet and understand basic SharePoint functionality
- Encourage adoption through the creation of a number of power users who can create sites and SharePoint business solutions
- Enable the distributed governance model outlined in the governance plan.

Training Needs by Phase

Build Out Intranet and Initial Document Manamgement

Role	Training Need
SharePoint Administrator	Understanding of SharePoint Administration Understanding of SharePoint configurations Understanding of implementation of QA
SharePoint Developer / Configurator	None necessary unless there are plan for custom branding. This would require an understanding of the SharePoint master pages and CSS.
Site Owners	Power user training to develop a basic understanding of SharePoint features and site administration, including permissions management, page editing, content types and lists / libraries.
Content Contributors	End user training to gain basic understanding of SharePoint features, management of documents, version control, search
Business Users	SharePoint basics, navigation, search

Forms and Workflow Development

Role	Training Need
SharePoint Administrator	Installing and configuring workflow tool
SharePoint Developer	Nintex workflow design and development. Workflow promotion from QA to PROD. InfoPath for design and development
Site Owners	Application training for custom features and solution configurations. Possible lightweight workflow development
Content Contributors	Workflow execution
Business Users	No need

Business Intelligence

Role	Training Need
SharePoint Administrator	Configuration of BI Services including Excel Services, Performance Point, SSRS SQL Configuration (SSAS SharePoint integrated mode) Possible Kerberos implementation
SharePoint Developer	Report development – Report Builder PowerPivot & DAX Performance Point Designer

Role	Training Need
Site Owners	Dashboard Design, Excel Services,
Content Contributors	Excel and Excel Services (pivot charts, pivot tables,) Power View
Business Users	

Training Approaches

Microsoft Training Partner Classes

Instructor lead, classroom style from a Microsoft Training Partner, such as SharePoint Administration.

Marquam Group Custom Classes

Custom training delivered onsite. The following classes can be made available. These classes are tailored based on the user's access rights and skill sets:

- **SharePoint 2013 Power User Class** – This is a one day class that is appropriate for SharePoint users that will have a moderate level of site administration access. This class is best suited for a class size of 8 to 10 students. See Appendix A for the course agenda.
- **SharePoint 2013 End User Class** – This is a half day class intended for users at a site contributor level of access. This class is best suited for a class size of 10 to 15 students. See Appendix B for the course agenda.

Web training

Microsoft offers various videos online for developers and administrators.

SharePoint Content - Documentation / videos

Content can be added to SharePoint sites to explain site features to users.

Self Guided

There are lots of good books and online resources for those who prefer a self-guided approach. There are also local user groups and industry conferences which can be a good source of information.

Suggested Training Activities

Build Out Intranet and Initial Document Manamgement

Activity	Description	Audience
End User Class	Hands-on class for site administrators.	Site Owners who are part of the governance committee or identified as potential site owner in the future.
Power User Class	Hands-on class for site administrators.	Site Owners who are part of the governance committee or identified as potential site owner in the future.
SharePoint training Site Development	Dedicated site to SharePoint training, including FAQs, Links to online resources and videos,	All SharePoint users
Intranet basics documentation / videos	Create content to describe how to navigate and search within the Intranet	All SharePoint users
SharePoint Developer self-study	SharePoint development basics	SharePoint Developer

Resource Plan

The following is a description of the resource requirements by role.

SharePoint Farm Administration

The amount of time required to manage a SharePoint farm on an ongoing basis varies by what level of management is desired. The following table outlines typical management strategies.

Low Management	Medium Management	High Management
Backup and Restore On Demand Troubleshooting	Active Patch Management	Active Health monitoring and performance tuning Advanced Search Monitoring and Ongoing Configuration
10% FTE	20% FTE	50% FTE

There are also planned projects which create spikes in demand for this role including:

- Disaster Recovery
- Upgrades

SharePoint Developer

The amount of time required to develop solutions on a SharePoint farm on an ongoing basis varies by the development strategy (configure, build, buy) and the level of automation requirements.

Out of the Box Configuration / Low Need	OOTB plus tools / Moderate Needs	Custom Development / Moderate Needs
New Site build out Content Migration	Workflow development Form Development	Custom Web Parts / App Parts Advanced Workflow and Forms
33% FTE	50% FTE	75% FTE

There are also planned projects which create spikes in demand for this role including:

- Custom Application Development Projects
- Custom Branding

Site Owners

The amount of time required to maintain sites in a SharePoint farm on an ongoing basis varies by the degree of change in the site and the feature complexity

Low rate of change / Simple Features	Moderate Rate of Change / Moderate Features	High Rate of Change / Complex Features
Permissions Management Page Maintenance Views	Web Part Configuration Multiple Sub Sites	Workflow configuration Solution Design / Build / Testing
5-10% FTE	10-20% FTE	33% FTE

Content Contributors

The amount of time required to create and maintain sites in a SharePoint farm on an ongoing basis is similar to using other methods of content storage (file shares) and collaboration (email). Some tasks will take more time in SharePoint (document indexing) but the majority will take less time and there can be significant productivity gains (search).

Business Users

The amount of time required to find and consume content will be significantly improved with a SharePoint environment.

Appendix A

SharePoint 2013 Power User Course Agenda (1 Day Class)

Ref	Training Topic	Content
1	Introduction to SharePoint 2013	Collaboration and Sharing Versions Integration with Office Key Points
2	Navigation	Site Hierarchy Browsing lists and libraries Customizing navigation Web Part pages
3	Creating and Managing Sites	Creating sites and child sites Site users and permissions Applying themes Site templates
4	Working with Lists	Default lists Creating lists Datasheet views Editing list columns Sorting and filtering Alerts
5	Creating and Managing Libraries	Creating document libraries Creating form and picture libraries Creating folders Checking in and out Versioning Working with workflows
6	Working with Library Settings	Configuring a library Using content types Document library settings Securing a library
7	Document and Meeting workspaces	Creating and maintaining
8	Surveys and Discussion Boards	Creating surveys Viewing results of surveys Creating and using discussion boards
9	Working with Web Parts	Web part pages Adding and removing web parts Customizing web parts Creating new web parts
10	Finding Information	Understanding search Executing a search query
11	My Sites and Social Networking	My Site Profiles, My Content Organizational Browser Social Networking

Appendix B

SharePoint 2013 End User Course Agenda (Half Day Class)

Ref	Training Topic	Content
1	Introduction	Collaboration and Sharing Key Points Overview of Permissions
2	Navigation	Site Hierarchy Global Navigation Browsing lists and libraries Customizing navigation
3	Page Layouts	About Web Parts About Site Themes
4	Working with Lists	Datasheet views Editing list columns Sorting and filtering Creating custom views Import / Export
5	Libraries	Document libraries Form and picture libraries Folders Uploading / Downloading Checking in and out Versioning Working with workflows
7	Calendars	Adding items Changing views Integration with Outlook
8	Alerts	Overview Subscribe / Unsubscribe
9	Finding Information	Understanding search Executing a search query

Appendix

MARQUAM GROUP

SharePoint Training Services

Overview

INTRODUCTION

Marquam Group's SharePoint Training services are designed to provide supplementary training to enhance your investment in SharePoint. Many organizations have deployed the SharePoint platform with no formalized training, leading to misuses and misunderstandings among users as to their roles and the way users may contribute or use the system. The resulting confusion detracts from user participation, causes site sprawl, and segments data. Organizations may overcome this obstacle with formalized training:

Increasing user participation: Understanding navigation is the first step to inviting users to participate. By overcoming intimidations of the software in a non-sensitive environment, users will seek and contribute essential data more effectively in the production environment. Users who understand the integration of SharePoint with Microsoft Office are more likely to incorporate both platforms to increase productivity.

Greater adherence to governance planning: Users must have a uniform understanding of the roles and permissions they will have in the SharePoint environment. Site Owners must understand the policy *and the procedures* to comply with complex governance and branding requirements. Information Workers must know the appropriate places to store data, the types of data they can store, and the procedure to store data correctly.

Reduced technical assistance: Help-desk calls related to SharePoint can be drastically reduce when a user understands the restrictions and functionality of the SharePoint platform. Common questions shared during a collaborative training environment will reduce end-user mistakes.

To meet these goals, Marquam Group can provide comprehensive training at the Power User level and the End User level in both standard SharePoint functionality as well as SharePoint Designer. The training is tailored for the needs of your users. We customize the content to focus on the features that are important to you.

CUSTOMIZABLE TRAINING

Marquam Group can customize every aspect of the training depending upon your SharePoint strategy.

TRAINING ENVIRONMENT

The training environment can be hosted by Marquam Group, or we can work with your SharePoint team to develop a custom training portal that reinforces your branding, navigation structure, and governance plan. We will help you design a system that gives users the opportunity to explore features in a non-sensitive environment.

TRAINING LAB

In most cases, any computer lab with an internet or intranet connection can be used for SharePoint training. Marquam Group can provide a fully deployable training lab, with up to 8 computers, to almost any location with a high-speed Wi-Fi or LAN connection.

TRAINING MATERIALS

Marquam Group utilizes a generic training template developed by our experienced training team. Depending upon the types of users to be training, Marquam Group recommends our custom training guide be supplemented with Microsoft's "Step-by-Step" training guide as future reference material. These guides may be loaned for the day of training or purchased by you. We believe it is a best practice to develop a unique training guide with customized screen shots and content that reinforces branding and governance planning.

SIZE OF WORKSHOP

Marquam Group strongly recommends training workshop sizes exceed no more than 12 to 16 individuals. Marquam Group will host larger workshops, but we have found that large workshops detract from individual learning.

READY-TO-GO WORKSHOP WITHOUT CUSTOMIZED CONTENT

Marquam Group has developed "Ready-To-Go" workshops for End-Users, Power Users, and SharePoint Developers. These workshops are intended for organizations or individuals seeking nonspecific SharePoint training. The training is based on "out-of-the-box" SharePoint environment. We will provide all of the materials for this workshop.

COURSE TOPICS

Typical agendas and content for various workshops include:

Half-day “Content Contributors” for information workers.

REF	TRAINING TOPIC	CONTENT
1	Introduction	Collaboration and Sharing Key Points Overview of Permissions
2	Navigation	Site Hierarchy Global Navigation Browsing lists and libraries Using the Ribbon
3	Page Layouts	About Web Parts Site Templates
4	Working with Lists	Datasheet views Editing list columns Sorting and filtering Creating custom views Import / Export
5	Libraries	Document libraries Form and picture libraries Avoiding Folders Uploading / Downloading Checking in and out Versioning Working with workflows
7	Calendars	Adding items Changing views Integration with Outlook
8	Alerts	Overview Subscribe / Unsubscribe
9	Finding Information	Understanding search Executing a search query

"Power User" Training, intended for site owners, this training should be between one and two-days in length:

Ref	Training Topic	Content
1	Introduction to SharePoint	Collaboration and Sharing Versions Integration with Office Key Points
2	Navigation	Ribbon Site Hierarchy Web Part pages
3	Creating and Managing Sites	Creating sites and child sites Site templates Applying themes Site users and permissions
4	Working with Lists	Default lists Creating lists Sorting and filtering Datasheet views Editing list columns Column Validation Alerts
5	Creating and Managing Libraries	Creating document libraries Creating form and picture libraries Avoiding Folders Checking in and out Versioning Working with workflows Custom Views
6	Working with Library Settings	Configuring a library Using content types Document library settings Securing a library
7	Surveys and Discussion Boards	Creating surveys Viewing results of surveys Creating and using discussion boards
8	Working with Web Parts	Web part pages Adding and removing web parts Customizing web parts Creating new web parts
9	Finding Information	Understanding search Leveraging metadata Executing a search query
10	Permission Groups	Creating Groups Applying Permissions to Lists and Items
11	Social Networking	My Site Overview

OTHER SERVICES

Informal mentoring and workshops: Mentoring and Workshops are designed to follow the formal training by providing workshop time for users to practice the skills they have learned. These are open sessions for users to work in a lab setting supported by a Marquam Group SharePoint expert. Users can work on specific tasks while receiving one-on-one mentoring to reinforce and practice the skills they learned in training. This is a great way for users to have that level of "hand holding" that we all need as we explore new systems. These are open sessions designed for users of various skills to have direct access to SharePoint expertise on a one-on-one basis in a "tutoring" setting.

Administrative Mentoring: Training and mentoring on the administrator level is extremely complex, and separated from SharePoint designers. We prefer to work with administrators with a one-on-one approach or in very small groups.

Remote training: Marquam Group strongly believes that successful understanding requires in-person demonstrations and discussion in order to foster the most collaborative environment. In cases where this is impractical we may use live web-conferencing services as a substitution.

Recorded training: If needed, Marquam Group may record parts of a training session for reference or future employee training. This can be delivered in a digital video format.

Microsoft Office training: Some SharePoint deployments coincide with Microsoft Office deployments. Marquam Group can provide half-day and full-day familiarization and training on the various versions of the Microsoft Office platform.

Web-Developer training: Marquam Group can provide HTML and CSS training to assist SharePoint Site Owners or SharePoint Designers.

Costs

The cost for the Marquam Group SharePoint Training Services are based on an individual day of training, and supplemental custom development and consulting. This rate is effective through August 31, 2013:

Price Per Day
$2,500

Rates regarding consulting and custom development related to training are available upon request.

Cancelations: Upon agreement, cancellations may be made no later than fourteen days prior to the date of training. If a date of training is canceled less than fourteen days from the date of training, Marquam Group will charge 100% of the cost.

THE GARTRELL GROUP
Increasing Location Intelligence

Attachment 8

Database Foundation Plan

For the Database Foundation Plan Project

Oregon Department of Land Conservation and Development

January 10, 2013

The Gartrell Group, Inc.
Bryce Gartrell
Dr. Tim Fiez

Table of Contents

Introduction

This draft version of the DLCD's Database Foundation Plan presents a detailed plan for redesigning the Oregon Department of Land Conservation's (DLCD's) Post Acknowledgement Plan Amendment (PAPA), Periodic Review (PR), M49, and Farm and Forest (F&F) databases. It also includes strategic guidance for how data from each of these existing databases may be effectively migrated into the proposed database design, to be implemented in Microsoft's SQL Server relational database management system (RDBMS).

The design process represented here has been informed by close work with DLCD stakeholders through a series of workshops. Each workshop focused on both the current deficiencies and unmet needs related to the subject databases and also desired "wish list" capabilities that stakeholders envisioned when asked to describe an ideal future-state data system and the features it should support.

The included database designs have been cross-checked against use cases[1] collected during workshops to verify that that they are capable of supporting the data entry, tracking, querying and reporting criteria called for by stakeholders. They have also been cross-checked and adapted to satisfy relevant requirements gathered from statutes and other background documents.

One overriding concern reinforced through multiple stakeholder comments had to do with the perception that one of the key failings of the DLCD's current data management systems, and one element that should be at the heart of any new system, is the capability to "better record and help tell the story of land use and development in Oregon." In addition to creating a design that will satisfy the individual and specific requirements and use cases identified in preceding project tasks, the design proposed here is meant to help the DLCD meet this high level objective. The elements of time and geography are richly integrated into the designs that follow. And although it is impractical to expect that the quality of temporal or geospatial information may be greatly improved through a migration process, the proposed migration process is intended to leverage these elements in existing data content and to apply them to the greatest possible effect through the process of moving them into a newly designed data platform.

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[1] From Wikipedia: In software and systems engineering, a **use case** (a case in the use of a system) is a list of steps, typically defining interactions between a role and a system, to achieve a goal. In many cases use cases are used to represent missions or stakeholder goals that should be satisfied by the system to which they refer.

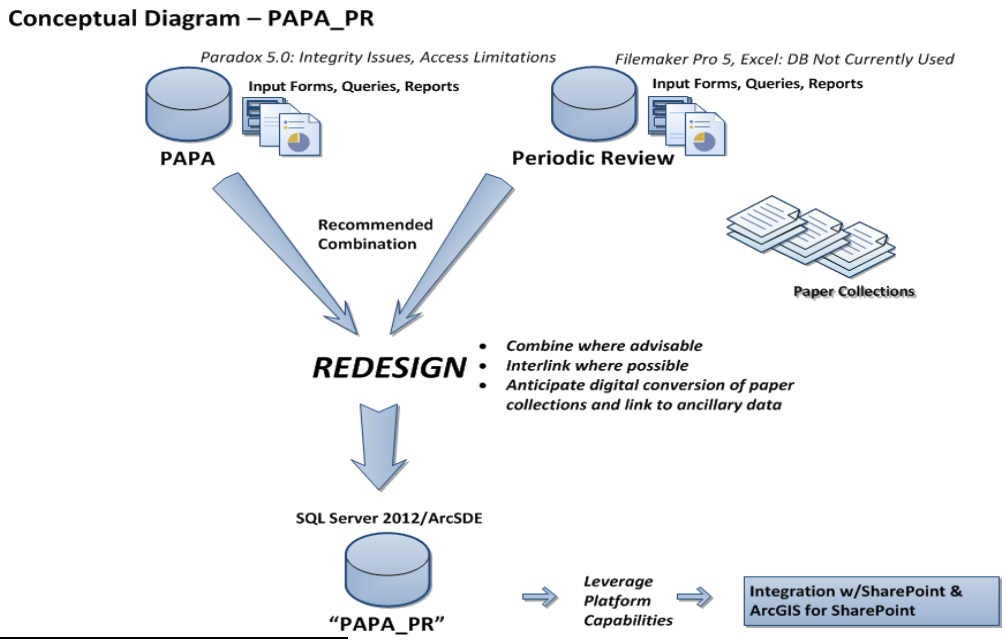
Merge PAPA and Periodic Review into a Single Geodatabase

Recognizing their similarities in content and function, the DLCD has considered the possibility of merging the PAPA and PR databases into a single database at the time when they are "re-platformed" into a modern relational database management system. We concur that data entry, storage, and retrieval functions associated with both PAPA and PR processes would be best served if they were supported by a single database.

The recommendations and database design details that follow are premised on the assumption that PAPA and PR will be merged (this merged database will be referred to as the "PAPA_PR" here forward). We also recommend that Microsoft's SQL Server product would be the most ideal software selection for the PAPA_PR database; this is due primarily to the de facto and formal software standards of the State of Oregon and the demonstrated compatibility of SQL Server with other enterprise software products (e.g. SharePoint, Esri GIS) being used by, or anticipated for use by, the DLCD.

Additionally, we recommend that the PAPA_PR database be implemented as a "geodatabase[2]" with native geospatial capabilities and datasets. The level of geographic and temporal integration called for by stakeholders will be served most efficiently and comprehensively if GIS-related capabilities are built into the database rather than derived through interlinking with

Figure 1: Merging PAPA and PR



[2] In this document, a "geodatabase" refers generically to a relational database that is enhanced with specialized capabilities to support storage and retrieval of geospatial data. Although our recommendations include using Esri's ArcSDE middleware to extend SQL Server's geospatial capabilities, our use of the term "geodatabase" is not meant to refer to any vendor-specific product or format.

external data sources that offer spatial capabilities. This approach is illustrated at a conceptual level in Figure 1.

*UGB-URA Expansion Database Included with Periodic Review Design Strategy

Late in our study and design planning, we learned of an additional database referred to as the "UGB-URA Expansion" database; this database is used to store data related to urban growth boundary (UGB) and urban reserve area (URA) expansions greater than 50.1 acres in size and occurring in jurisdictions with populations of 2,500 or more people. There is a high degree of similarity in the UGB-URA Expansion Database content and that stored in the Periodic Review database. There is also a similar need for tracking a series of time-sensitive and sequenced activities (submittals, adoptions, actions, referrals, meetings, approvals, remands, deadlines, etc.) and managing associations between expansion events and various state statutory compliance requirements and planning goals. The UBG-URA expansion database also has fields for tracking local government contacts associated with particular UGB or URA expansion records.

We are comfortable that all the content and related data entry, retrieval, and reporting requirements that may be inferred from the materials and information we have received about the UGB-URA Expansion database may be accommodated by the design strategy we propose for PAPA_PR. In essence, the UGB-URA database is set up to treat UGB and URA data "in the manner of periodic review." Here forward, any reference to how the needs of Periodic Review database users will be addressed may be understood to include the needs of UGB-URA Expansion database users, and the design strategies for working with Periodic Review data are inclusive of UGB-URA data.

Merge Farm & Forest and M49 Databases into a Single Geodatabase

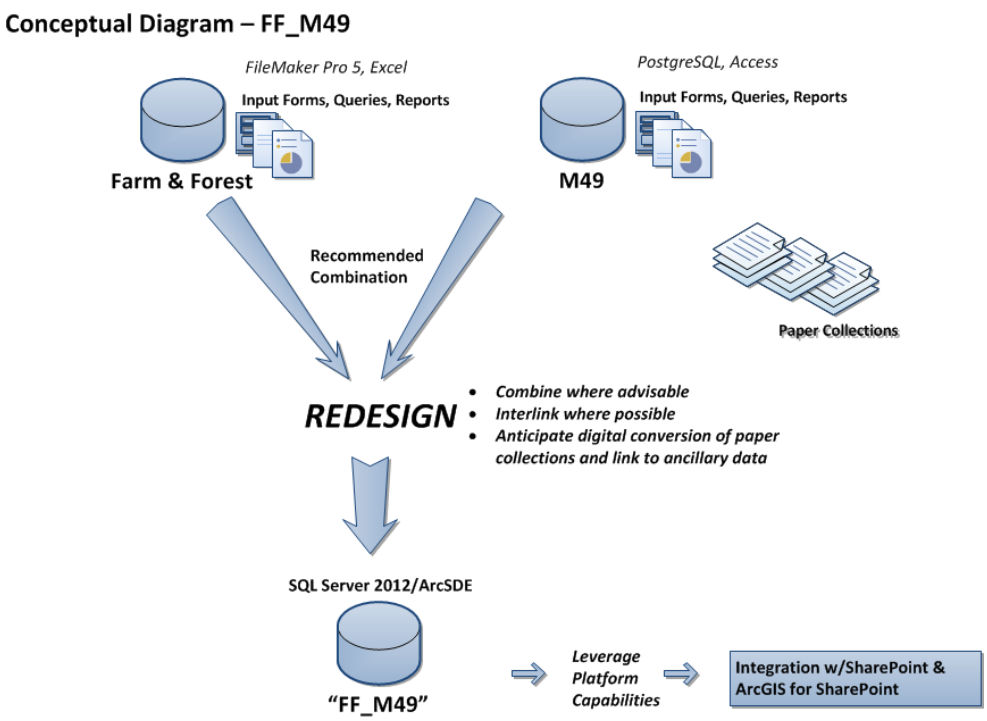
We also find compelling reasons to propose that the F&F and M49 databases be merged into a single geodatabase implemented in SQL Server. There is a high level of compatibility in the content which these databases are intended to manage and the existing design of the M49 database provides a valuable foundation upon which a merged database can be developed.

Further recommendations and design details related to F&F and M49 are based on the assumption that these databases will be combined into a single database with native geospatial capabilities ("FF_M49") and that this will also be implemented in SQL Server.

We further recommend that the merged FF_M49 remain a distinct database from PAPA_PR primarily because this will result in data models which are simpler, have simpler and more easily manageable security and permissions models, and are more easily extensible. We envision that with the design recommendations described in following sections, these independent databases

will facilitate interlinking and combination of data as may be desirable in applications and data access tools.

Figure 2: Merging Farm & Forest with M49



Create Third Geodatabase to Store Common Spatial Geometry

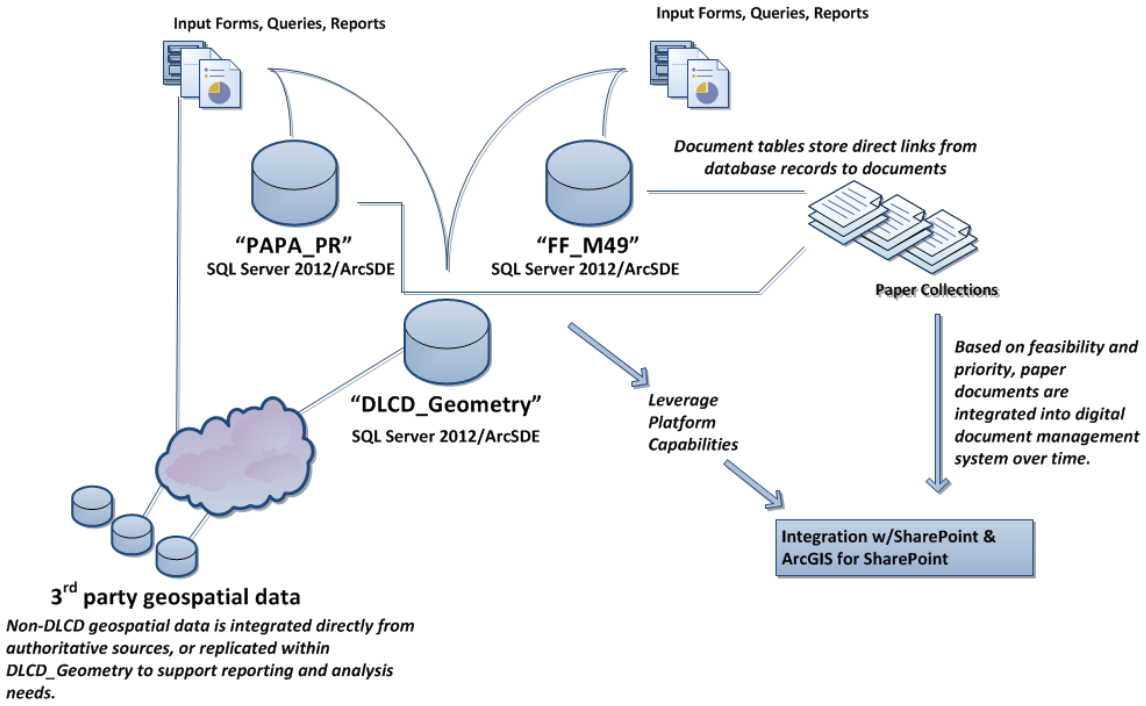
Both PAPA_PR and FF_M49 will be designed to store specific geospatial information relevant to their data content and purposes. A variety of additional geospatial data will be required to support some of the reporting and analysis capabilities desired by end users of these databases. Many of these geospatial data will be needed to support criteria for both users of the PAPA_PR database and the FF_M49 database; rather than duplicating the data across both databases, we recommend that a third geodatabase ("DLCD_Geometry") be established to store geospatial datasets that will be needed to contextualize and help frame the specific content of PAPA_PR and FF_M49.

When and where possible and practical, it will be consistent with best practices to retrieve geospatial data from the parties responsible for its stewardship or from an aggregating source or geospatial library other than the DLCD. Ideally, the majority of the geospatial data that is stored in DLCD_Geometry will be data that is under DLCD stewardship. However, there may be value for this geodatabase to store non-DLCD datasets as well – for instance, if the reliability or

performance of data retrieved dynamically from third party sources is inconsistent or problematic, it may be best to replicate those datasets within a geodatabase local to the DLCD.

Figure 3: Resulting Data Platform

Conceptual Diagram – New Database Foundation



Means for meeting the significant unmet needs of the current databases

General Summary of Unmet Needs

The deficiencies and unmet needs of the current PAPA and PR databases have been addressed in separate documents and will not be extensively detailed here. Their significant shortcomings may generally be categorized as follows.

PAPA and Periodic Review Databases:

- Both databases are implemented in antiquated software.
- Instability problems affect their reliability and accessibility.
- Workaround systems have been developed to help circumvent limitations related to the data content and/or the capabilities of the software within which the databases have been implemented.
- Error-prone, manual manipulation of data is often required to produce required data products that cannot be furnished through use of the native capabilities of the databases.
- The elements of time and geography are not adequately integrated into the databases and querying by period and/or location cannot be done effectively.
- Data entry procedures and means are not ideal and lack strict enforcement, resulting in incomplete and inaccurate submissions being entered into the databases.
- The structural layouts of both the PAPA and PR databases are relatively flat in nature, and do not conform to contemporary relational database design standards; this limits their flexibility, extensibility, and efficiency.
- Customers, partners, and data contributors have demanded a more efficient, modern, and simplified means of making data entries and updates to the databases. Currently, error-prone hardcopy submittals are the norm for providing data that matriculates into each database.
- Explicit database references to the DLCD's extensive paper documents and document collections are lacking.
- There is no easy way to track database content and activity in association with the DLCD's Key Performance Metrics (KPM's) or specific state planning goals.
- There is no way to determine whether a local government has adopted or modified a transportation plan or any other topical sub-plan.
- This falls outside PAPA and PR – there is no easy way to track comments and/or appeals by DLCD to local quasi-judicial decisions.

Farm & Forest:

- Farm & Forest is also implemented in outdated software that is not compliant with agency standards. In addition to being unsupported, the software prevents system upgrades from being possible on the host machine.
- Challenges with the data entry and query interfaces, data manipulation and calculation needs, a somewhat mysterious and ill-understood backend data structure, and general

reliability issues have led to the creation and maintenance of a shadow/workaround Farm & Forest system that is maintained in Excel. Use and effectiveness of the primary F&F database is extremely limited.

- The majority of use cases collected from Farm and Forest stakeholders have geospatial elements, but the current F&F system does not adequately support map-based visualization, querying, reporting, or analysis.
- There is no capability for determining whether Farm & Forest issues are appealed or resolved.

M49:

Although M49 is the most robust and high-functioning database of those reviewed in this study, it still could be improved substantially to better satisfy the goals and task objectives of end users.

- M49 is implemented in PostgreSQL and data entry, query, and retrieval is facilitated by a series of web-based forms. While PostgreSQL is an excellent database platform, it is not compliant with official or de facto DLCD standards.
- The web forms used for interaction with M49 are inflexible and do not fully satisfy the needs of end users. Data entry is spread across multiple tabbed forms which users find very cumbersome to use, and query/reporting capabilities associated with data entry and quality checking needs do not show all entry fields, so user-validation of entered data is limited.
- Currently, most analysis of M49 data is performed using Access, populated with text files exported from the M49 database.
- Although the M49 data structures have entries for taxlot values, and these have been populated with care, the M49 database does not yet have any inherent geospatial capabilities for storing a geometric representation of properties relevant to entered records or for directly supporting map-based visualization of the contents of the database.
- Geospatially oriented questions, queries, and reports which are at the very heart of the M49 database's purpose are often impossible or too cumbersome to develop or support.

How Needs May Be Met by Recommended Database Design

The proposed database designs and associated recommendations will address the unmet needs noted above in the following ways:

- ✓ Both the PAPA_PR and FF_M49 databases will be implemented in contemporary, fully supported, and broadly used RDBMS software (Microsoft SQL Server 2012). In addition to providing a dependable software platform for the revised databases, it will be far

easier for the DLCD to either train staff or attract the expertise necessary to administer this database product.

- ✓ The native capabilities of SQL Server software and its high level of compatibility with desktop database and spreadsheet programs like Access and Excel will remove the need for external data manipulation such as that being performed at the DLCD currently. This will reduce the likelihood of data errors and help create a more straightforward and standardized process for querying and reporting that may be extended to any appropriate users without fear of disruption to the underlying software system and data integrity. If some users find it preferable to use programs like Access as the interface to query, analysis, and reporting of data stored in SQL Server, this option will remain available, but can be done through direct links to the SQL Server data rather than exports or duplicates of data from the primary data store.
- ✓ If implemented, the PAPA_PR and FF_M49 designs will result in more relational and normalized structures that will flexibly accommodate a dynamic environment with evolving reporting, querying, and application integration requirements. Some concerns have been voiced about the challenges of working with normalized data and the need to link to lookup tables – however, database "views" and other objects may be created to allow the benefits of normalized data while assuring the accessibility of certain integrated datasets needed by end users.
- ✓ Both the PAPA_PR and FF_M49 database, leveraging native SQL Server spatial data types and Esri's ArcSDE middleware, will have robust geospatial integration (this is treated in detail in a successive section).
- ✓ The element of time will now be deeply integrated, so granular exploration of change and activity over time will be possible.
- ✓ Both databases may be set up with front-end applications to enforce more complete and accurate record entries and updates.
- ✓ Both the PAPA_PR and FF_M49 designs will includes structures that flexibly support references to letters, notices, maps, appeals, decisions, and many other unstructured hardcopy or digitally scanned documents and document collections.
- ✓ The PAPA_PR and FF_M49 designs are each highly extensible structures with repeatable design patterns that will accommodate object additions that may be called for over time, as requirements for data input, storage, and retrieval may change.

Recommended database models for each of the reviewed databases

As noted, we are recommending that what are currently four separate databases be significantly renovated and combined into two databases. PAPA and Periodic Review will become PAPA_PR and Farm & Forest and M49 will become FF_M49. We recommend that the structure and design of PAPA_PR be largely redeveloped in a manner consistent with best practices in relational database design. M49 exhibits good design strategies, and so we propose that its structure be used to form the core of FF_M49, with certain focused enhancements being made to enable geospatial capabilities and to create options for flexibly serving the functional

requirements of different Farm and Forest and M49 end users. As an alternative to exhaustively treating entire entity relationship diagrams (ERDs), this section provides an overview of some of the key design structures and concepts that will be used to provide the core functionality of the PAPA_PR and FF_M49 geodatabases and to satisfy the requirements of stakeholders.

We are also recommending the creation or adaptation of a third geodatabase, DLCD_Geometry, which will be used to store, maintain, and provide geospatial datasets that are called for as references to satisfy needs of both PAPA_PR and FF_M49 stakeholders. We envision this database as a very standard and simple geodatabase implementation, and beyond discussion of its content, we are not including specific detail on its design or structure. It is likely that what we refer to as DLCD_Geometry could be combined with or incorporate the data of other existing geodatabases at the DLCD that are beyond the scope of this study.

Process Tracking – Deadlines, Journal, and People-Tracking Tables

Discussions with stakeholders of the PAPA and PR databases revealed a strong desire for better database support for process and performance management tracking. The data content associated with plan amendments, periodic reviews, and amendments that are treated "in the manner of periodic review" is very important, but the DLCD workflows also call for a data management system that is designed with an awareness of elapsed time and its significance to different steps in the amendment and review cycles.

The DLCD is mandated to track a considerable amount of sequential activity, interrelated procedures, and deadlines associated with both plan amendments and periodic reviews. Each set of processes has particular triggers and events which define start points and/or end points for new phases and procedures of plan amendment and periodic review work. The consequences of missed deadlines can be significant, causing statutorily prescribed actions to go into effect and potentially impacting such matters as the validity of decisions, funding for planning support, or the assignment of sanctions.

Multiple stakeholder comments related to both the PAPA and PR databases indicate a desire to better be able to "get a quick view of the status of [an amendment/review]". The "Deadlines" and "Journal" tables are two key resources featured in the proposed design for PAPA_PR which are intended to provide valuable capabilities for better processing, tracking and reporting.

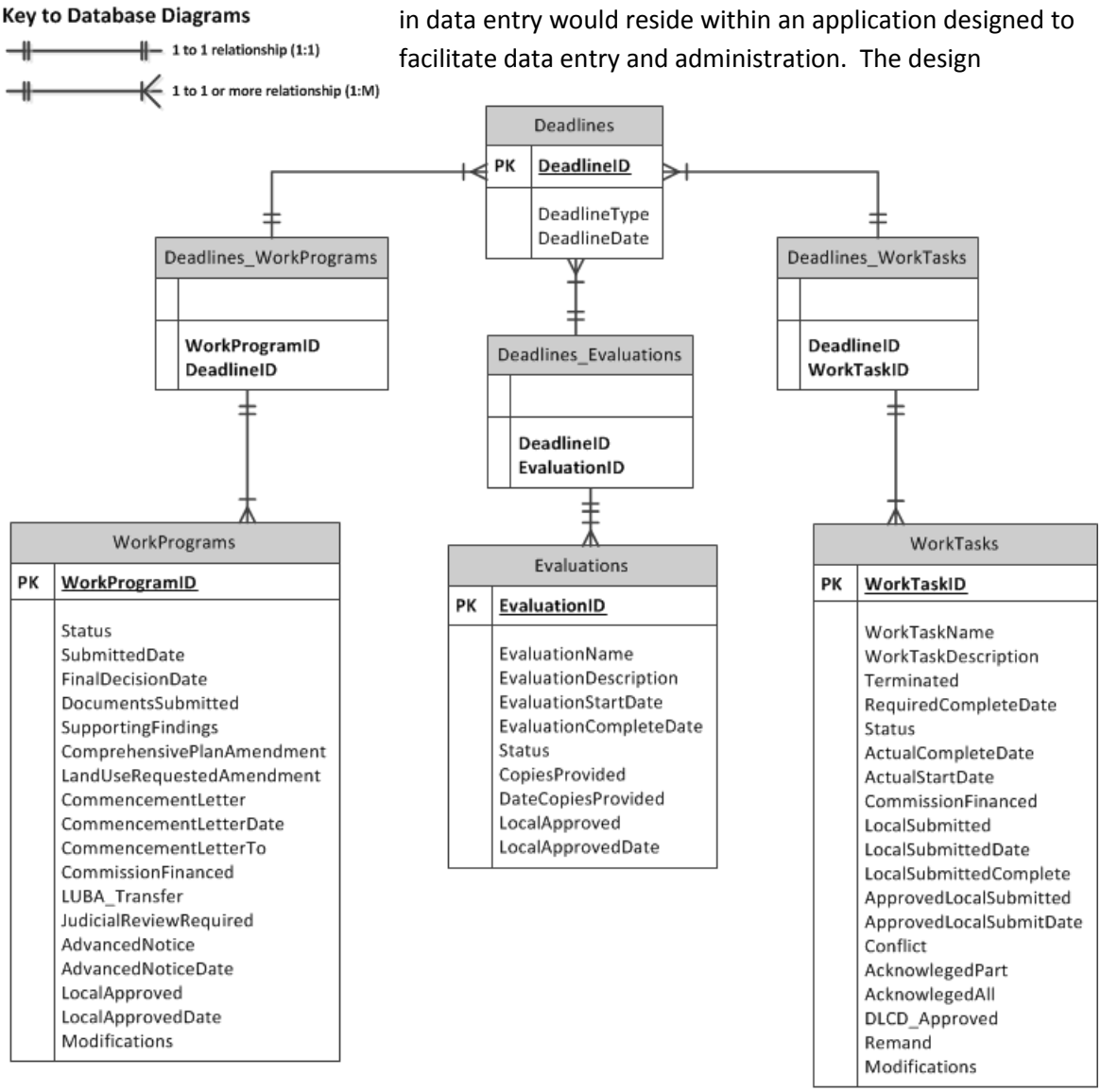
Deadlines Table

Below is a subset of the PAPA_PR database design focused on tracking deadlines. Although this subset diagram only shows three other objects connected to the deadlines table, the full entity relationship diagram provides connections to many more. Using a series of cross-reference, or

join tables, the Deadlines table will be related to all other database objects containing data for which deadlines are applicable.

A review of PAPA and PR business rules suggests that certain record entries that go into the theme or source tables (e.g. WorkPrograms, WorkTasks, or Evaluations in Figure 2) may automatically trigger corresponding updates in the Deadlines table and the relevant join table. However, due to complexities related to such factors as furlough days, holiday schedules, and other time-based calculations, the best approach may be to present designated data entry staff with recommended deadline record entries, and either store deadlines provisionally or only commit them once they have been approved or edited and submitted by the DLCD's data entry personnel. The logic and means governing this intervention in data entry would reside within an application designed to facilitate data entry and administration. The design

Figure 4: Deadlines Table



featured above will accommodate either automatic updating or updating through staff review and approval workflows.

The Deadlines table and associated join relationships will support query or reporting needs that are focused on tracking deadlines associated with any periodic review process or plan amendment process or any subcomponents thereof. Automated email alerting to parties associated with particular deadlines will also be possible with this proposed design (the actual functionality will depend, in part, on database and application logic but will be fully supported by the database design and platform capabilities of SQL Server).

TRACKING DEADLINES IN FF_M49

Tracking land use actions in farm and forest zones and tracking M49 claims and decisions are also multi-step processes where tracking progress and deadlines is crucial (deadlines were especially significant under measures 37 and measure 49). The current M49 database contains fields for tracking the date a notice was received and the deadline dates for comments and appeals. There are no automatic calculators for these dates; each of 36 Oregon counties has its own deadlines, based on its ordinance. While automatic calculation of deadlines may be possible, updating deadline records based on submitted notices from counties is apparently a satisfactory and practical approach that we recommend the DLCD continue.

Should they not appear fully adequate to meet the combined process monitoring and deadline calculation and storage needs, adding structures such as those depicted for PAPA_PR's deadline management will be relatively straightforward.

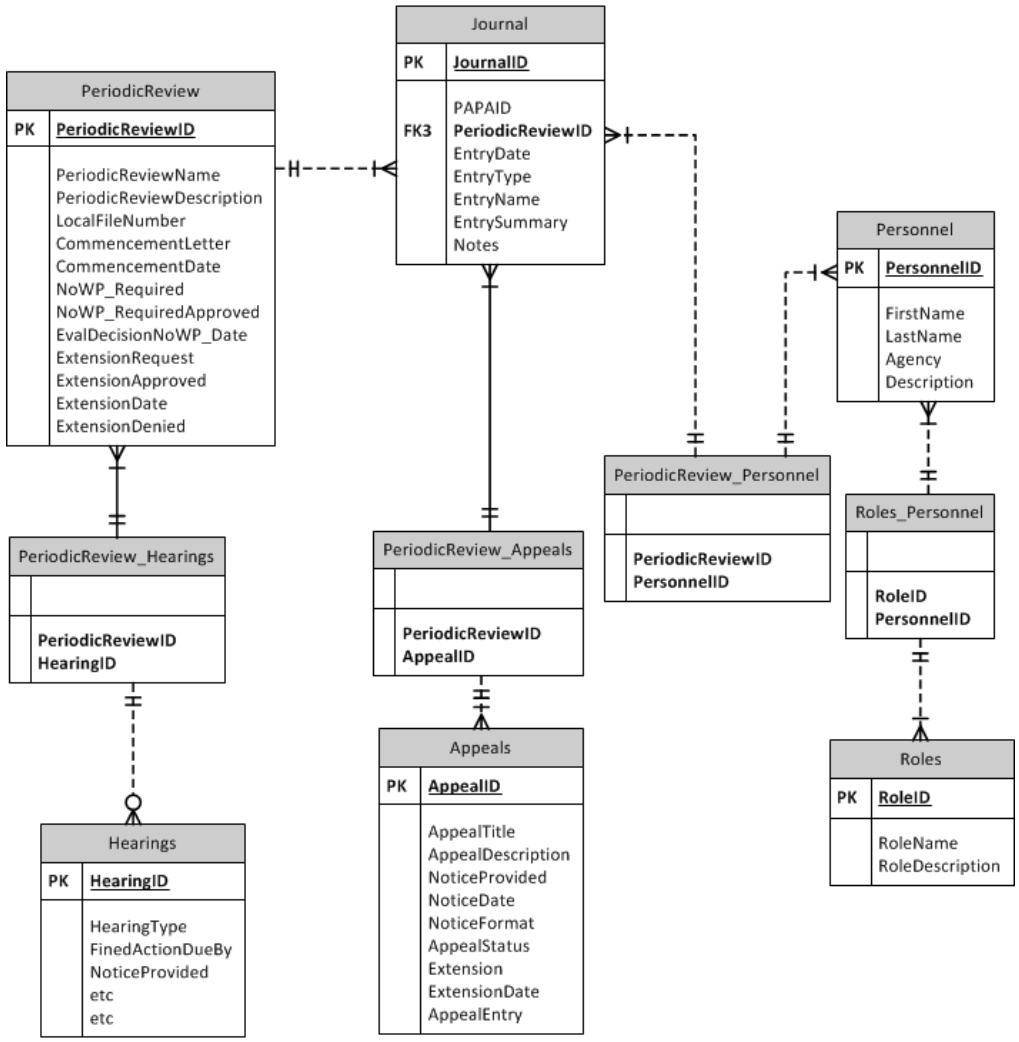
Journal Table

PAPA and Periodic Review stakeholders also seek ways to track and assess progress and status measures of processes above and beyond their associated deadlines. The "Journal" table depicted in Figure 3 is intended to support this need. Like the Deadlines table, the Journal table is envisioned as one that may be populated through a combination of automatic triggers and individually prepared entries. Every record going into the Journal table will be time-stamped (via the Journal.EntryDate field).

Note-making, descriptive entries will be supported through use of native Journal table fields including Journal.EntryName, Journal.EntrySummary, and Journal.Notes. These types of entries are envisioned for use, for instance, in cases where a DLCD planner might wish to make a "journal entry" related to a particular meeting that may have been held, a discussion with a local government official, or findings or thoughts stemming from an internal review of particular submitted materials.

The full chronology of a review or amendment proposal and adoption sequence, however, would not be fully captured by descriptive entries alone. For this reason, the Journal table will support an extensive number of relationships with join, or cross-reference tables, and it will be configured to auto-populate with new records that are created in the tables referenced through the join tables. For instance, when any significant step in the periodic review process occurs, such as the scheduling of a hearing date, or the filing of an appeal, a new time-stamped record in the Journal table will record the action; the action may then be displayed within the chronological sequence of all actions and notes associated with a particular periodic review process. This same approach will apply to PAPA processes and the design will support querying and reporting related to the overall status and activity on a certain review or amendment process, or on particular actions, or cross-process activity in a certain geographic area (geo-enabling of the PAPA_PR database is treated in detail separately).

Figure 5: Journal Table



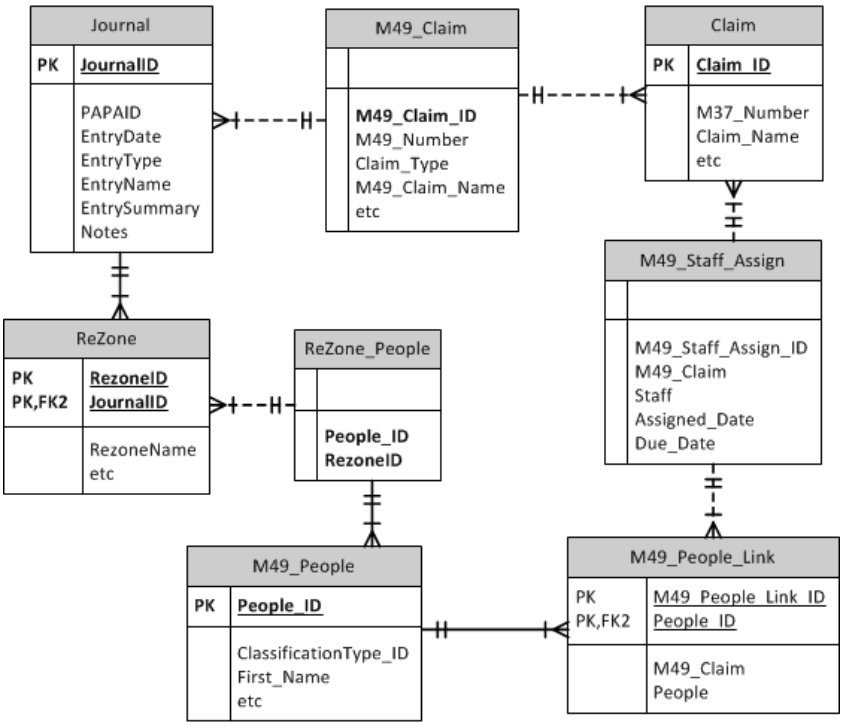
Records in the Journal table may also be linked to particular documents and other event and action records through use of a similar join table strategy as that depicted in Figure 5.

"JOURNALING" IN FF_M49

Stakeholders interested in the Farm and Forest and M49 databases were not as emphatic about the importance of tracking each step in an elaborate work process, but the need to "tell the story" about individual decisions and claims is considered critical nonetheless. M49's current design will support the ability to track and report on the chronology of events, and there are many, extensively used "comments" fields peppered throughout the data model. However, particularly to accommodate the needs of Farm & Forest end users, who currently are able to do very limited tracking of activity and related reporting, we recommend that the design be enhanced to include a similar journaling capability such as that proposed for PAPA_PR. This will provide the option of observing and reporting on activity in a very granular fashion for both M49 and Farm & Forest users; it will also allow both groups of users to record more narrative and descriptive information associated with particular events and activities in the claims and decisions processes upon which FF_M49 will be focused. The Journal table basically aggregates any significant activity or event that is coded within the database, and entries may be made directly (truly, as 'journal entries') or automatically when record entries or updates are made in related tables.

As an example, the figure below illustrates how relationships maybe be established to record: a) generation of a claim and staff assignments to work on a claim, and b) the entry of a new Rezone action and association of people with connections to the action.

Figure 6: Journal Table Integrated into FF_M49



Tracking of Personnel & Parties of Interest

PAPA and PR stakeholders also expressed a keen interest in being able to determine what people were involved in particular reviews or amendment projects. Statutes for both PAPA and PR also identify a variety of different parties that may have particular roles, responsibilities, rights, and obligations within the periodic review and/or plan amendment processes and associated sub processes.

The PAPA_PR database will support affiliating and reporting on DLCD staff, non-agency partners and personnel, and other third parties with amendment or review processes in either a general or a highly granular manner. Additionally, the "people-related" tables of the PAPA_PR database will also support the DLCD's need to maintain notification and distribution lists associated with particular types of issues, actions, and geographic areas.

Figure 7: Personnel, Team, & InterestedParty Tables

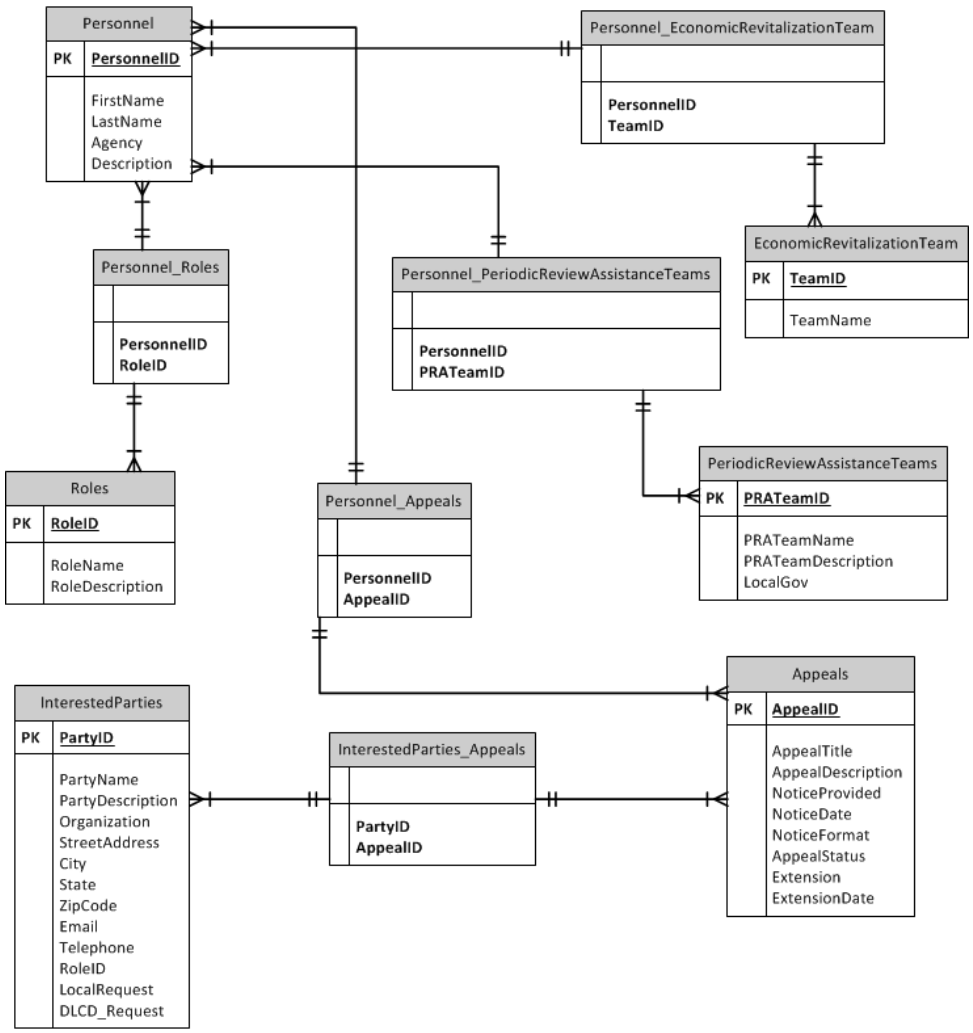


Figure 7 depicts a subset of the PAPA_PR ERD featuring some of the "People Tables." The Personnel table allows for storage of personnel from the DLCD or other agencies. Through the use of a series of join, or cross-reference tables to the Personnel table, we are able to affiliate individual members of the Personnel table with particular roles, and teams that are composed of multiple people.

Figure 7 also demonstrates how members of the Personnel table or of the InterestedParties table can be connected with a sub process of periodic review or plan amendment; in this case the InterestedParties_Appeals table and the Personnel_Appeals table may be used to connect members of the respective source tables with individual appeals. This information could then be used, for instance, to facilitate communication with all required parties about the details of appeal activity. The same structural approach will allow members of the Personnel or InterestedParties tables to be connected with any low or higher level component of the PAPA or PR processes.

TRACKING OF PERSONNEL AND PARTIES OF INTEREST IN FF_M49

As depicted in Figure 6 above, M49's structure currently accommodates for tracking individuals and roles. The role values allow for record entries to include individuals outside of the DLCD (e.g. Department of Justice personnel). These same structures can be included and used with FF_M49 for the purpose described above for PAPA_PR, however, to avoid duplication of records and associated maintenance burdens, we propose that a single Personnel table that will serve both PAPA_PR and M49_FF be used to serve basically as a common address book for both databases. This will provide a single source for maintaining people records pertaining to DLCD staff and individuals from other agencies. Roles, responsibilities, and affiliations with different events and actions particular to PAPA_PR or M49_FF will each be managed using objects specific to those databases, but the Personnel "address book" will be located in just one of the databases. We feel it could be located in either; perhaps the decision may be made based on which database is implemented first.

Time Integration

Time is integrated pervasively throughout the PAPA_PR database design. Nearly all objects will have timestamps associated with record entries and updates. As described above, any activities related to PAPA and periodic review processes will instigate corresponding, time-stamped updates in the Journal table which may then be enlisted to track or review the progress of an amendment, review, or series thereof, over time.

Significantly, dynamic data content such as spatial boundaries (e.g. urban growth boundaries) that have different conditions at different moments in time will be made accessible in time-specific "snapshot" fashion so as to enhance the temporal accuracy of the database and the information products derived from it.

In terms of the actual design, this time integration is largely represented by various fields of the date/time type which are added appropriately to different tables throughout the database. Spatial snapshots are described in more detail in the "Geospatial Integration & Related Strategies" section that follows.

Time Integration in FF_M49

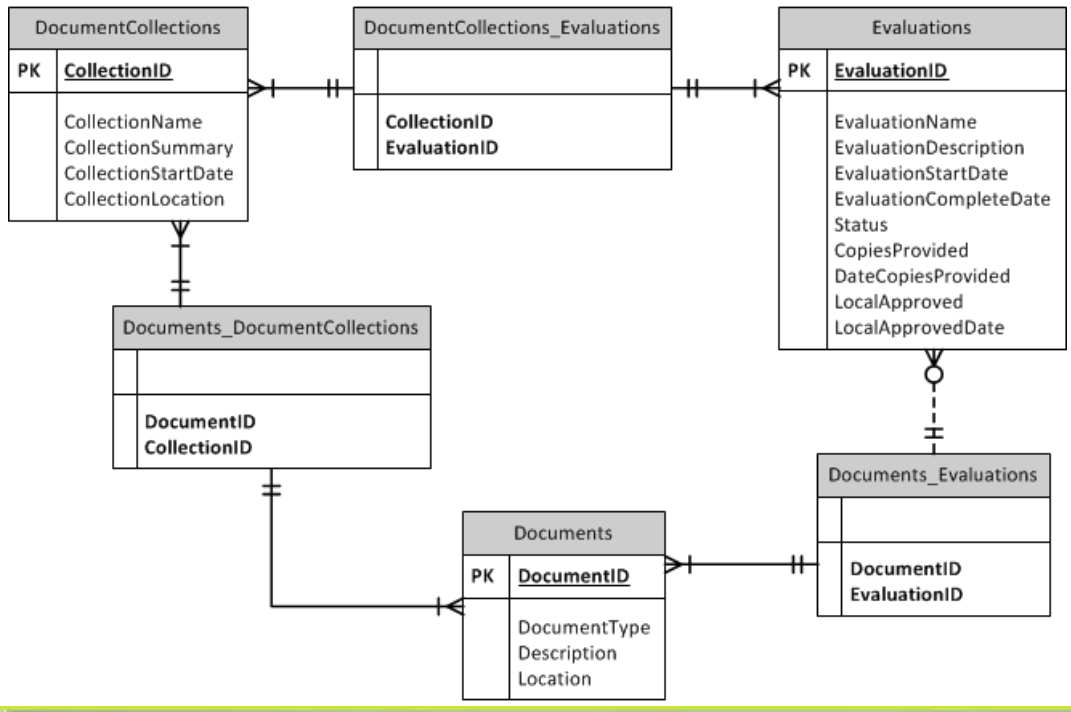
Datetime fields abound in the current structure of M49 and will generally do well to support time-based analysis of activity as it relates to the content of FF_M49. The spatial snapshots and geotemporal considerations discussed in following sections will also be applied within FF_M49 to lend it the robust time storage capabilities as described for PAPA_PR.

In following sections, we do recommend the addition of certain standard relational tables to the current structure of M49. Certain of these tables will include datetime fields so the database is remains consistently "time-aware".

Referencing Unstructured Data such as External Documents

The Documents and the DocumentsCollections tables will facilitate the ability for PAPA_PR to make references to hardcopy documents or digitally scanned documents residing outside of the database itself. Through joins, each of these document tables may be used to connect particular external documents or file sets either with a particular amendment or review process in general, or with a specific sub-component of the process, such as a decision, a materials request, a sanction, a hearing, or a particular evaluation.

Figure 8: Document-Related Tables



In the subset of the ERD featured in Figure 8, we can see that an individual document may be affiliated with a document collection through cross-referencing via Documents_DocumentCollections entity. Furthermore, the individual document or the collection to which it belongs may each be affiliated with a particular Evaluation. The same relationship method depicted here with the Evaluation table may be applied to any other step, task, event, or condition of the amendment or periodic review processes.

DOCUMENTS IN FF_M49

Farm and Forest and M49 database users agree that it would be very valuable to "have a hotlink to a final order on a claim or other [relevant documents]." Based on the M49 data model we have been provided, it does not appear that the current design will easily accommodate a direct link to specific documents not stored within the database. The strategy depicted above for PAPA_PR may be integrated into FF_M49 to provide this capability. We recommend that a Documents and a DocumentCollections table each be added to the database. Join tables with many other data objects (e.g. Claims, People, Taxlots, and Decisions) may then be created to facilitate easy search and retrieval of documents relative to database content but stored externally in either digital or hardcopy formats.

Other Design Considerations Specific to FF_M49

Key/Foreign Key Relationships

M49 generally exhibits good relational design, but it could use certain improvements to gain improved logical integrity and to be more conforming to current best practices in database design. One area for improvement has to do with key and foreign key relationships among related tables. Currently, it appears that in certain tables M49 has fields with different names that are designed to store the same data values. Especially as a database grows in complexity, this can lead to confusion and inefficiencies on multiple levels, from database administration, to querying and reporting, to application development, and design extension.

We have learned that certain database design modifications were made to deal with the exigencies of Measure 37 and then Measure 49. For instance, separate tables are used to store records for Measure 37 claims ("CLAIM") and Measure 49 claims ("M49_CLAIMS"). While this approach supports tracking individual claim data, it does obfuscate key and foreign key relationships among tables. The design logic for fields used for referencing counties associated with claims is also confusing; this apparently stems from an obsolete requirement to group counties into different regions for delegation of claims processing work.

Modifying some of M49's table and field structures to more clearly depict logical relationships among data (e.g., creating a single new CLAIMS table that stores and distinguishes both measure 37 and measure 49 records) would improve the intelligibility of M49_FF and increase the ease with which it could be extended.

Making changes to field names and generally applying consistent field-naming conventions across the existing M49 design would be a simple task that could be managed in the data crosswalk and migration strategy discussed below. We recommend that this step be included in the implementation of FF_M49. It will also be important to identify database interface tools and related database objects and structures which are obsolete and to remove these from the database, as practical.

Additional Relational Tables

Parcels, Dwellings, Comments

Based on the M49 data model we have reviewed, it appears that further isolating certain data elements could provide the longer term benefit of affording greater flexibility from a management and analysis perspective. Currently, it appears that parcels, dwellings, and comments have not been abstracted, or normalized, as discrete data objects within the database. Although this may be sufficient for the current logical requirements of M49 users, we do not view the task of separating parcels and dwellings out from their associations with taxlots or separating out comments from claims as very onerous if it is done during the data migration phase of implementing FF_M49. Treating parcels, dwellings, and comments as distinct database entities will not break their connection with parent entities, such as taxlots or claims, and it will facilitate specific analysis and greater ease and flexibility in reporting that involves these objects going forward.

Done properly, this degree of normalization will create a database that can be used far more flexibly for querying and reporting. Through various forms of table joins, stored procedures, and stored data views, users will have more options for querying, aggregating, and reviewing data according to changing requirements and areas of inquiry.

Statewide Planning Goals and/or Key Performance Measures

Another recommended addition to the M49 design is a “Statewide Planning Goals” table. Tracking and associating planning goals and DLCD key performance measures (KPMs) was not explicitly called for by Farm & Forest or M49 stakeholders, so it may not be viewed as a crucial capability, or maybe the content of these databases is such that the goals and KPMs are clear and consistent for all records. However, we recommend you consider including this table in the interest of supporting cross-topic / cross-database analysis of how and where high level agency goals are being fulfilled or challenged.

Currently M49 does have a “state_lu_type” field in the “tax lot” table that is used to store values from a state land use type table. Migrating and populating the “Statewide Planning Goals” table with additional land use type and KPM values and then making these more extensively

available for assignment to tables beyond the "tax lot" table will improve the DLCD's ability to measure performance in accordance with agency performance metrics and planning goals.

Geospatial Integration & Related Strategies

The database foundation plan incorporates two components, a spatial keyword-based and a geometry-based set of spatial descriptors. These two sets of descriptors will provide consistent descriptions of PAPA and PR record locations and allow for effective reporting as well as spatial search for records using any form of geometry ranging from selection boxes drawn on a map to queries by a named location, such as Polk County.

Geographic Infrastructure

The geospatial strategies will utilize the spatial capabilities of modern enterprise databases such as SQL Server which support the storage of geographic data so that the database stores the item's geography such as points, polylines, and polygons. Applications can work with these spatial tables through direct SQL spatial queries or through more advanced mapping service providers such as ESRI's ArcGIS for Server.

In addition to the enhanced database capabilities, to incorporate repeatable and consistent geographic information within the databases, DLCD must build sets of base mapping data that describe the geography of items they work with. Base mapping data would include cities, counties, tax lots, zoning, comprehensive plans, unincorporated communities, urban growth boundaries, urban reserves, and other relevant geographic boundaries. No statewide tax lot data exist, and a statewide layer is not required for this plan. However, the design should incorporate tax lot data where it is obtainable (data for 26 counties are available from ORMAP) as it will provide significant benefit for analysis purposes. These base mapping data sets could ostensibly be part of either or both the PAPA_PR and FF_M49 databases, however, we recommend they be developed and stored within a third geodatabase ("DLCD_Geometry") that is focused solely on storage, maintenance, and provision of geographic data that is called for across functions and disciplines within the DLCD.

Since the list of base data includes many items where the geography of features will change over time, the design incorporates effective date ranges (EffectiveStart and EffectiveEnd fields in the geography tables) and will support multiple copies of the same item that differ in their effective date range. With this structure for keeping historical copies of the spatial data, users could execute queries such as finding all land use actions that fell in the area that was added to an urban growth boundary within a specific time period or view a map of boundaries at some point back in time.

Assigning and Storing Record Geometry using a Spatial Keyword Approach

PAPA and Periodic Review

In this first approach, the design mimics the current PAPA and Periodic Review process of describing the location of a record through controlled sets of spatial keywords such as county names or township, range, and section descriptors.

The Foundation Plan provides two ways for assigning a component's spatial keywords. If the submission includes digital geographic data such as urban growth boundary and urban or rural reserve actions which are required to have accompanying spatial data by statute, that data will be stored in a spatial database table (PRPAPAGeometryPolygon). The PAPA and PeriodicReview tables will have a field, HasGeometry, which indicates if a record has an accompanying spatial record in the PRPAPAGeometryPolygon table. With the record's geometry, the spatial keyword values will be calculated by using spatial intersect operations with the base mapping data. For example, select CityName from Cities where CityGeometry.STIntersects([uploaded geography]).

If there is no geographic data, the submitter will have to select the appropriate spatial descriptors. However, with the base geographic data, the system can verify that the selections were compatible, such as verifying that the selected city falls in the selected urban growth boundary.

As result of either the digital geometry or submitter selection methods, a record will be geographically located by assigning it all applicable spatial descriptors:

- Township, range, and section (TRS) – if data are available
- County
- City – if applicable
- Unincorporated Community – if applicable
- Urban Reserve – if applicable
- Tax lots – if applicable

While every item can be located in a township, range, and section and a county, the other descriptors will only apply if the record is located within an item of that type.

In the absence of digital geographic data with the PAPA/PR submission, tax lot boundaries provide the best spatial description of an affected area. Thus, if the affected area description lists tax lot numbers, the implemented system should search the tax lot layer in the base mapping data to see if spatial data exist for those tax lots. If found and approved, geographic data for those tax lots should be copied into the PRPAPAGeometryPolygon table and the records marked as HasGeometry equals true. By copying the tax lot geometry into the

PRPAPAGeometryPolygon table, DLCD can delete old tax lot data from the base mapping data if needed because of space or performance concerns without breaking database references.

One table, GeoReference, will store all the spatial descriptors assigned to all PAPA and PeriodicReview items. Using words instead of the primary and foreign keys for illustration purposes, the GeoReference table looks like the following.

Table1: Georeferences

GeoReferenceID	PAPAID	GeometryType	GeometryID
1	1	County	Polk
2	1	UrbanGrowthBoundary	Salem
3	1	TRS	7 S 3 W 35
4	2	County	Benton

In this illustration, the PAPA Record with ID equal 1 is in Polk County, the Salem Urban Growth Boundary and in TRS 7 S 3 W 35, while PAPA Record ID equal 2 is only identified as in Benton County.

Farm and Forest and Measure 49

The Farm and Forest and Measure 49 data use tax lot identifiers and township range and section descriptors. Thus, the selection of spatial keywords will follow the same procedures outlined for the PAPA and PR records. Just as with the PAPA and PR records, the system should first use digital geographic data if included with the submissions and in the absence of that search for matching tax lots in the base mapping data and then use this data to compute the spatial keywords. If neither of those cases apply, the spatial keywords would be based on the TRS values. The table FFM49GeometryPolygon will store the geometries used to calculate the spatial keywords and will be analogous to the PRPAPAGeometryPolygon used for PAPA and PR records.

Describing Affected Areas using Geometric Data

PAPA and Periodic Review

In addition to describing PAPA and Periodic Review records using spatial keywords, the system will store as geometric data (series of x y coordinate pairs) the best possible spatial descriptor that contains (the spatial extent of the PAPA or PR record exists entirely within the spatial descriptor) the PAPA or PR records. These can be of the following types:

1. Uploaded digital geometric data
2. A selection or selections from one and only one of the base geometry features
    a. TRS
    b. Tax lots

c. UGB
d. City limit
e. Unincorporated community
f. Urban reserve
g. County
h. Sub-watershed

In addition the starting geometric features, the feature selections should include synthesized descriptors such as buffers of key boundaries (5 mile buffer of urban growth boundaries) and rural (non-urban) county areas.

With the one and only one constraint, the data submitter must choose the best descriptor even though more than one could apply. For example, a record might exist within a city limit and an urban growth boundary; however, the best descriptor would be the one that best contains the PAPA or Periodic Review record.

Because the spatial descriptor will be a container of the PAPA or Periodic Review record, it is important for interpreting search results to know how well the container fits the PAPA or Periodic Review record. The system will store a value from the discrete list of equal, > 75%, 25 – 75%, and < 25% values in a field called RecordToContainerRatio. If a section (TRS section) was selected as the best container for an 8,000 square foot residential lot, the RecordToContainerRatio would be < 25% whereas if uploaded digital geometry data were the spatial descriptor, the RecordToContainerRatio would be "equal".

The container geometry data will be stored in the table PRPAPAContainerGeometry. The records will appear as follows:

Table 2: Container Geometry

ID	PAPAID	Periodic ReviewID	Geometry	Spatial Descriptor	Descriptor Name	RecordToContainerRatio
1	1			digital	digital	equal
2	5			UGB	Salem	< 25%
3	6			UGB	Salem	< 25%
4	9			TRS	7 S 3 W 35	< 25%
5	21			County	Polk	< 25%
6	40			City Limit	Salem	< 25%

Farm and Forest and Measure 49

The description of the Farm and Forest and Measure 49 records using geometric data will follow the same procedures outlined for PAPA and PR records. The table FFM49ContainerGeometry

will contain the best spatial descriptor that contains the affected area. While it is anticipated that most of the Farm and Forest and Measure 49 data will have either digital geographic data that came with the submission or tax lot data copied from the base mapping data, because not all counties have their tax lot data within ORMAP, the system must assume that for some records the best spatial descriptor will be a TRS definition.

Utilization of Spatial Information in Applications

The spatial descriptors allow two important types of operations. First is finding records within or outside of areas described by the spatial keyword descriptors such as selecting records that exist for Marion County. In these situations, the query would not be a direct spatial query but instead would be a query of the table (GeoReference) that stores all of the spatial descriptors for all records.

The second important operation is finding spatially coincident records. The stakeholder interviews identified multiple use cases that involve finding records that apply to the same location. If all records had digital geographic data, these operations would be simple intersect or contains type of queries. However, the new foundation database will include a mixture of records with and without digital geographic data. The PRPAPAContainerGeometry and FFM49ContainerGeometry tables provide the best description of an item's geometry.

To create queries that produce meaningful results for coincident queries, the item for which we are finding coincident records must have a defined spatial boundary. This could be a digital geography record, a polygon drawn on a map control, or any record in the base mapping data tables (i.e. Multnomah County from the County table). The query would be of the general form of "find all items that are contained by the defined geometry of interest and or find all items that are overlapped by the defined geometry of interest".

Interpretation of the search results grid

The database design will allow spatial searches by both "contain all" and "contains some" (overlap) operations.

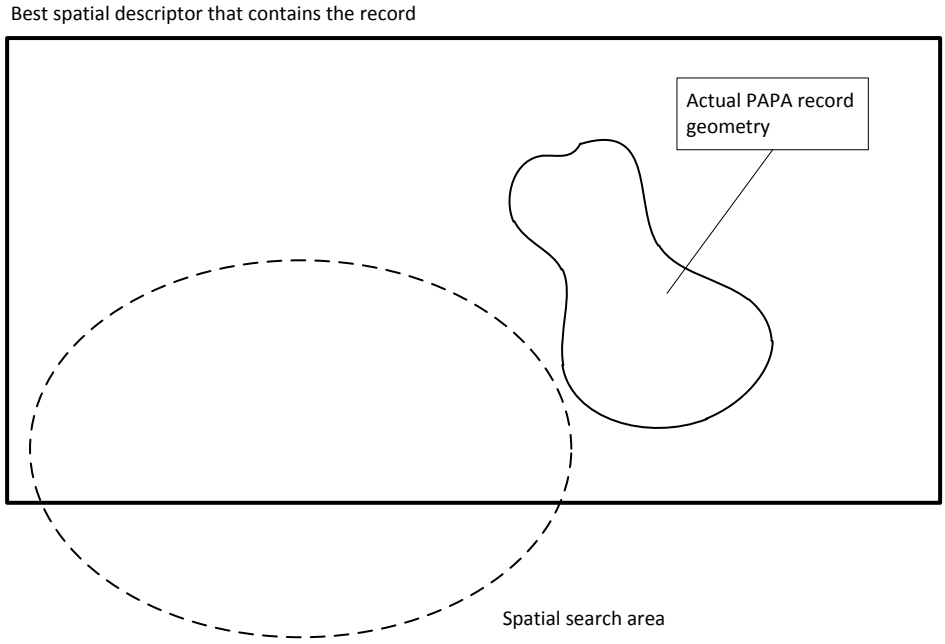
Table 3: Overlap Operations

Geospatial search operation	Interpretation of search result
contains all	record is 100% within search area
contains some (overlap)	If RecordToContainerRatio == equal at least some of the record is within the search area Else the record may be within the search area.
contains none [these results would not be returned]	The record is not within the search area

If a user wanted to find records that were definitely at least partially within the search area, they would search for all records contained within the search area and for those records partially contained within the search area where the item's RecordToContainerRatio was "equal." While all of these records are guaranteed to be at least partially within the search area, it will exclude some records that might be within the search area.

If the user wanted to get a list of records that could be within the search area, they would have to retrieve all "contains all" and "contains some" results. However, this record set could contain some records that were not within the search area because the spatial descriptor is not an exact fit of the records geometry. Below is an illustration of such a case. The best spatial descriptor contains the record's geometry as required but is not equal to its geometry. The search area (the ellipse) contains some of the spatial descriptor so the PAPA record is returned by the "contains some" search. However, the actual physical area affected by the PAPA record is not in the search area so this would be a false result. Such results are unavoidable unless the exact geometry is known for every PAPA or PR record. The "contains some" search is important if the user must find all records that might be within an area. They will just have to examine the record's other data to determine if the record is applicable.

Figure 9: Spatial Descriptors



Extensibility & Scalability

Perhaps stemming in part from the current status of the DLCD's data systems, there is abundant concern that any replacement data platforms should be extensible and scalable so they may grow to suit the evolving needs and requirements of end users. The relational design patterns depicted in the ERD and exhibited in the preceding examples are very flexible, adaptable, and accommodating of the potential need to integrate new data content into the PAPA_PR database. The limitations of flat data structures have been carefully avoided in favor of maintaining a more normalized set of data objects that are better equipped to handle a broad variety of interrelationships among data with a minimized level of redundancy.

Means for interlinking independent databases

PAPA_PR

The importance of establishing links between PAPA and PR databases is diminished given that they will be merged into a single geodatabase. The PAPA and PR processes will actually share a considerable number of structural elements within PAPA_PR. The design of this database, though, will accommodate interlinking with other external databases.

Similar to the way external assets such as documents and document collections may be referenced within PAPA_PR, unique identifier fields that refer to external databases may be established, allowing for PAPA_PR records to maintain references to relevant data content from other systems. As PAPA_PR is concerned with amendment and periodic review processes, the internal keys will be the PAPAID and PRID fields. Any external data that may be connected with these values, may then be linked to nearly any data content within PAPA_PR.

As an example, if a key / foreign key relationship with records in the Land Use Board of Appeals (LUBA) information systems could be established, then interlinking and merged function reporting or other data integration and exchange between PAPA_PR and LUBA data could be managed with ease.

FF_M49

A unique record ID will exist for each record in the FF_M49 geodatabase, and key fields will be used to identify and associate distinct Farm & Forest-type and M49-type records. Every piece of data in FF_M49 will be connected with the unique record ID and will be typed by FF or M49. Any of these fields, or any attributes tied to them, may be used to select and match records within FF_M49 and thus to create associations with related records in other data systems.

The taxlot fields now present in M49 are designed specifically to concatenate into the statewide taxlot id formats used by the Department of Revenue, and those used by Oregon counties. This

convention / structure will be preserved. The geospatial capabilities of FF_M49 will significantly extend and enhance the ability to interlink data with other spatially enabled systems, even in cases where no obvious record association beyond location may be available.

Migration Strategy

An essential component of the Database Foundation Plan Project is the process for migrating data from the existing databases into the new system. The migration process will include the following steps:

1. Create a data crosswalk document that maps tables and data fields from the existing databases to corresponding tables and fields in the new database.
2. Extract data from the existing databases and import such data into temporary equivalent SQL Server tables.
3. Use Transact-SQL (T-SQL) scripts to import data from the temporary SQL Server tables into the new database tables.

Data Crosswalk

The data crosswalk document establishes relationships between the existing and new data fields. The data crosswalks would take several forms:

1. Direct correlation where Table t_x Field f_x equals New Table t_y Field f_y
2. Derived keywords or lookup table values where a defined set of words in a field in the existing database are mapped to a single lookup table value in the new database. For example, if a field for type of action used an uncontrolled set of key words such as “urban growth boundary” and “UGB”, the crosswalk might map both terms to a lookup table value of “Urban Growth Boundary”.
3. Deriving keywords or lookup table values from the content of free form text fields such as a text-based description field. For these cases, the data crosswalk document would establish searches within these text fields such as “contains ‘urban growth boundary’. Because these types of searches find the words but do not know the context of their use, keywords found through this process may require human approval to make sure the use of the words agrees with the keyword/lookup table value.
4. Derivation of geospatial location or extent from text fields containing geographic names and mapping these to geospatial membership tables and fields in the new database.

Data Extraction from the Existing Databases

The first step in the actual physical data migration is to extract the data from the existing databases (Paradox 5.0 for PAPA and Excel for Periodic Review and Farm and Forest) and import the data into a temporary SQL Server database. The Paradox 5.0 tables will first be exported into comma separated value files and then imported into SQL Server using SQL Server

Management Studio. SQL Server Management Studio can import Excel files directly so the import process does not require an intermediate export step.

Transact-SQL Import of Data to New Database Tables

In the final step of the migration process, a database administrator will create T-SQL scripts to implement the data crosswalk outlined in step one. Depending on the complexity of the processing that is required the scripts could range from simple select into type of statements to very complex cursor operations with logic provided through if else and case statements.

The scripting process will follow the relational structure established in the new database design so that primary and foreign key relationships are not violated.

Lifecycle, Maintenance, & Support Recommendations

Training & Mentoring

The DLCD should have staff or readily accessible support resources with expertise in SQL Server and some administrative understanding of Esri geodatabases and SharePoint technology in order to gain the fullest benefit from the re-platformed databases. Skills that will be of particular value to the organization include:

- ✓ SQL Server Administration with knowledge of User-Defined Server Roles, Contained Database Authentication, and Database Recovery Advisor functions within SQL Server Management Studio.
- ✓ Knowledge of SQL Server Reporting Services, the use of the Report Builder authoring environment, and strategies for publishing reports to document libraries or embedding them in pages within a SharePoint deployment.
- ✓ Knowledge of SQL Server Integration Services (SSIS) to support the design, deployment, and administration of extraction, transformation, and loading (ETL) tasks.
- ✓ Knowledge of basic ArcSDE and SQL Spatial functions, tasks, and administration techniques.

Task work associated with the migration of data into the new PAPA_PR and FF_M49 designs could be designed to include Quality Control support and post-migration mentoring that would provide a useful orientation and training opportunity for DLCD staff. DLCD staff participation in helping to design data input and updating interfaces to the new database and to define data submittal requirements and constraints and reporting output would also provide good mentoring opportunities for the function and administration of the newly deployed PAPA_PR and FF_M49 databases.

Whether the DLCD elects to retain all required expertise in-house, or to contract certain elements of database administration and support, it will be helpful to delineate what responsibilities are expected to be managed by agency resources and what responsibilities will be managed through outside support.

Review and Refine Stewardship Plan and Practices

The PAPA_PR and FF_M49 databases will each represent substantially different and high-value resources for the DLCD; this degree of change warrants a close review of associated data stewardship practices and the development of a revised plan for protecting the quality and integrity of the data content in the new databases. Topic areas that should be included in this review include:

- ✓ Plans for developing and testing archiving, backup, and restore processes to help guarantee the recoverability and long term availability of important business data. Setting up appropriate schedules for both incremental and full backups and restores should be considered (based on historic and anticipated transaction volume and frequency). Agency and state backup and archiving practices and resources should be examined, with consideration of both on-site and off-site options. A Testing Plan that includes steps for trial restores of dropped tables, incremental backups, and full database restores should be developed. DLCD archiving practices should also be assessed to determine whether they are consistent with current best practices and optimal to assure the authenticity and long term availability of PAPA_PR and FF_M49 data.
- ✓ Clearly establishing the ownership and assigned stewards for critical datasets comprising the PAPA_PR and FF_M49 databases. It may be that that certain data content integrated into these databases does not have a clearly established owner of record and an official steward with clearly defined responsibilities. The DLCD should review the major data components of the database (e.g. geospatial data, external documents, PAPA, PR, FF, M49-specific tables) and ascertain that all critical datasets have owner and steward assignments. The security architecture of the databases and associated applications should be adapted to complement a refined Stewardship Plan.
- ✓ Integrating metadata generation, maintenance, and publishing practices and schedules into the Stewardship Plan for the principal datasets included and related to the new databases.
- ✓ Designing and establishing practices to support the use of more digital documents throughout the entire PAPA, PR, FF, and M49 processes. These practices could then provide a model for the potential conversion of historic hardcopy documents. (Note: the new designs will accommodate both hardcopy and digital document references).

- ✓ A forward-looking assessment of the paper collections relevant to the PAPA_PR and FF_M49 databases and consideration for how these might be organized differently to take fuller advantage of the renovated capabilities. Also consider how they might be transitioned in a phased and prioritized manner into structured digital assets that are more combinable with other relevant data.

Workflows, Data Input, and Querying/Reporting

Many of the unmet needs of the current PAPA, PR, FF, and M49 databases may be satisfied through the process of implementing the proposed design in contemporary RDBMS software. However, data entry, maintenance and updating, and reporting tools provided through database-integrated applications will be needed to create a more complete solution that addresses the requirements and wish list items of interviewed stakeholders.

Data Input

Currently, most of the inputs to the PAPA, PR, FF, and M49 databases are completed through a process by which paper forms are filled out, often partially, by third parties and then submitted to the DLCD where actual database entries (or entries in proxy, workaround systems, in the case of PR) are made by DLCD staff.

Local government partners and other PAPA and PR stakeholders have emphasized the perceived value of a web-based date entry/submission process. Enabling web-based submissions and data entry will be an ideal way to simplify and improve data inputs to PAPA_PR.

Following are some recommendations to help assure success in developing and providing improved data input capabilities:

- ✓ It will be valuable to identify and group all people who have any interest or responsibilities associated with data entry by their roles. Once the major input-related roles have been defined, special consideration for the unique requirements of each may be considered to assure that all critical user needs may be satisfied by a suitable data input solution.
- ✓ The currently used data submission forms (e.g. green sheets, etc.) should provide models for web-based data input tools. They are familiar to current system users.
  - o The elements of the current forms that work well should be noted.
  - o The deficiencies, points causing confusion or where chronic data omissions or mistakes occur should also be noted.
- ✓ The DLCD should closely consider leveraging the new geospatial capabilities of the PAPA_PR and the FF_M49 databases. The DLCD has an opportunity to integrate user-friendly means for specifying location relevant to data submissions. These capabilities

may be extended appropriately to different roles involved with data input and usefully integrated into the data submission tools to be developed.

- ✓ The opportunity to validate the completeness and sufficiency of the different data submissions should be used to advantage to help increase the accuracy, richness, and integrity of new data going into the new databases. This will likely involve balancing the capabilities, available information and resources, and practical limitations of people submitting data against the ideals for reporting and database output. Based on feedback from stakeholders, it seems a good balance that will support high value output without placing impractical burdens on data submitters will be achievable.

Data Quality Checking / Quality Assurance, Editing, Process Tracking

Due to the challenged state of the four subject databases, there may be limited value in looking at current QA/QC and editing practices as models for how these efforts may be carried out in the new system. Improved, web-based data entry that is designed to assure that submissions are more accurate and complete should greatly reduce some of the current burdens faced by DLCD staff charged with correcting and interpreting information provided through current forms of data submission.

The specific workflows and responsibilities of DLCD data entry and QA/QC personnel will likely benefit from a redesign that takes into account the capabilities of the new database and is informed by those data elements and aspects of the current database processes where statute or management preferences call for their involvement.

Workflow elements associated with QA/QC and editing work that the new database design will support include:

- ✓ Alerting to relevant users and roles that is triggered by specific status changes and database actions that have significance with regard to the processes and shifts in responsibility within the amendment and periodic review processes.
- ✓ The ability to query and report on the status of actions and associated dates and deadlines to track progress and manage schedules.
- ✓ The ability to flag submitted information as incomplete or requiring revision and to track associated communication loops.
- ✓ The ability to approve submitted information as complete and satisfactory.
- ✓ The ability to query or generate reports of particular requirements that have been met or not met.
- ✓ The ability to generate templated notices, letters, or other communications and distribute them to members of a distribution list filtered by topics of interest and/or geography.

Data Queries and Reporting Output

Work sessions with stakeholders inevitably focused on desired outputs from a new database platform. The design for PAPA_PR has been created with the intention that each of the use cases captured by PAPA and PR stakeholders may be supported (with limitations imposed by the accuracy and completeness of legacy data).

Query and reporting capabilities generally divide across the four following categories:

- ✓ **Ad Hoc Queries:** SQL Server queries may be executed from within SQL Server Management Studio. These will typically be performed on an *ad hoc*, or intermittent basis to meet occasional needs, and will be executed by someone with a strong technical understanding of SQL Server and a high level of permissions/access.
- ✓ **Standardized Reports:** Standardized reports may be designed and created on demand or on an automated schedule to support repeating, periodic needs of different system end users and their customers. Although many options exist, these will typically be created within SQL Server Reporting Services.
- ✓ **Maps – Static/Interactive:** Visual, map-integrated reporting through integration of PAPA_PR data with Esri mapping products (ArcGIS for Desktop, ArcGIS for Server , and ArcGIS for Server integrated into a SharePoint deployment). As with other types of report and query output, mapping views of PAPA_PR data and map-based query and analysis can be completed on an ad hoc basis or can be configured to produce regular, standardized output for specific reporting needs.
- ✓ **Web:** Any of the above means of output (queries, reports, static, or interactive maps) may be integrated into and distributed to users via the web. This can include users with membership in a SharePoint portal deployment such as that anticipated by the DLCD. Options for conversion and download of output into standard document formats (e.g. Excel, Acrobat, etc.) are also supported.

The above forms of output may be combined in a broad variety of ways and there are many alternative means of querying and reporting that the PAPA_PR design will support. As with the options and workflows for data editing and QA/QC, Process Tracking, the DLCD would benefit from a complete review of the types and options for queries, reporting, and other output that would be optimally supportive of PAPA and PR work. The new system can be flexibly applied to producing the particular forms of output that will be useful at different junctures in the work cycles of each group, and there will be less emphasis on what cannot be supported by the present system.

Attachment 9

Statewide Zoning

Statewide Zoning Project
as of November 2013

- Low-Medium Density Residential
- High Density Residential
- Mixed-Use
- Commercial
- Public/Open Space/Conservation
- Industrial
- Future Urban
- Exclusive Farm Use
- Range Land
- Mixed Farm-Forest
- Primary/Secondary Forest
- Rural Residential
- Rural Commercial
- Rural Industrial
- Native American
- Coastal
- Mineral/Aggregate
- Other

0 30 60
Miles

Oregon
Department of
Land Conservation
& Development

Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

 Location: S:\GISProjects\ZoningWG\Statewide Zoning\PDF\Zoning_Example_11x17_10-22-13.pdf