Strategic Plan for Geospatial Data Management

Executive Summary

The Oregon Geographic Information Council, authorized in statute by the 2017 Oregon Legislature, has developed this strategic plan to guide the development, management and use of geospatial data in Oregon. Based on the legislative mandate given to the Council, this plan focuses specifically on geospatial Framework data and how that subset of geospatial data is shared between public bodies.

The strategic vision of the Council is that authoritative, reliable geospatial data is available and accessible when and where needed by Oregonians. By fulfilling this vision, the Council will achieve its primary desired outcome of ensuring government services can be provided consistently across the entire state of Oregon.

The status evaluation of the geospatial Framework data is currently underway and will continue throughout most of 2019. The preliminary results of this status evaluation are presented later in this document. The strategic plan includes five goals, each with a primary expected outcome, as well as several key objectives that will be pursued to implement each goal. The five goals and outcomes are:

Goal 1: Improve Data Sharing and Accessibility
(Outcome – Support informed decision-making)

Goal 2: Increase Data Stewardship
(Outcome – Improve management of data assets)

Goal 3: Expand Collaborative Governance
(Outcome – Engage stakeholders in data management)

Goal 4: Strengthen Communications
(Outcome – Strengthen understanding and use of geospatial data)

Goal 5: Support Sustainable Funding
(Outcome – Support appropriate funding for data management activities at all levels

The importance and prevalence of geospatial data has increased significantly in the last few years. Despite huge gains for consumers and stakeholders through increased accessibility to technologies for creating and accessing these data, not all geospatial data is created equally, nor does it all meet the requirements of government applications and public services. The importance and utility of these data has been widely recognized, creating opportunities to collaborate among consumers and stakeholders in ways that will improve the use and management of geospatial data, thereby improving operations as well. Stakeholders have made progress in development and management of some of the most critical Framework data sets, which also creates opportunities for collaboration and improvement. If appropriate investments are made by all the stakeholders, the Council's strategic vision can be realized.

Introduction

Information about people, places, and events in Oregon are key to effective and consistent provisioning of government services. This information represents nearly all information used by government organizations and their partners to manage resources on behalf of Oregon's citizens. When integrated by location (geography), information about people, places, and events can be used to ensure government services are provided consistently across our entire state. For example, coordination among

and between government organizations and their partners to efficiently collect, use and maintain this information using geographic information systems (GIS) has steadily improved resource management over the past several decades. But, economic pressures, increased population, and the rapidly increasing quantity and complexity of information required for effective resource management make it necessary to dramatically improve the way geospatial (location) information is managed.

In 2017, the Oregon Legislature formally recognized the growing need to improve geospatial data sharing among government organizations by passing a law that strengthens the way Oregon government organizations manage and share this type of data ORS 276A.500-515. Geospatial, or location, data – particularly foundational data such as road centerlines, surface water, address points, city limits, and tax lot boundaries – are key to providing government services. Sharing geospatial data is essential to providing consistent services that cross local, county, and statewide boundaries. Public-private partnerships are important to statewide geospatial data management as private sector organizations also develop and use a significant amount of geospatial data. Geospatial data and data sharing is vital because: (1) many government services need access to the same and other foundational data for a multitude of government purposes; (2) almost everything government does for citizens relies on location data; and (3) almost all government services require collaborative action, and thus data sharing, within the same levels and across multiple levels of government. However, data sharing has challenges to overcome (Appendix A)

The new law will ensure that anyone anywhere in Oregon who needs help finding a job, getting an ambulance to the right place at the right time, figuring out where to locate a new small business, buying a development permit, getting drug or alcohol treatment, finding affordable housing, and much more, can get the help they need. But implementing this new law will also help government organizations do a better job when it comes to bridge and culvert repair, stream restoration, wildfire response, supporting economic development, protecting farmland and forests, ensuring our air and water remain clean, fighting crime and drug abuse, and all the other tasks that require agencies to share information with each other to do their jobs effectively.

WHY GEOSPATIAL DATA & DATA SHARING IS IMPORTANT

Example: Workforce Development

If you live in the Portland area and you need help finding a job, the workforce development partnerships coordinate services among many government providers, helping them access data about jobs, training, childcare, healthcare, transportation, housing, etc. Those providers can help you find a job, but they can also make sure you have the other resources you need to get and keep that job, because the data they need to help you is available. In rural areas, that is not typically the case.

There are several opportunities of which the Oregon GIS community can take advantage in the next several years. Because the GIS community has worked together to develop many critical Framework data sets and supported the development of an enterprise GIS technology environment and the establishment of an enterprise license for ESRI software, the Geospatial Enterprise Office (GEO) is positioned to lead the development of web-based tools that use GIS to help agencies plan the location of projects and measure the impact of those projects.

Another key opportunity is the proliferation and importance of systems that continue to surface at the municipal, county, and regional levels of government throughout the State in response to a wide range of needs. There are also many opportunities to coordinate and collaborate with federal agencies as they collect various elements of Framework data throughout Oregon. Oregon is in a relatively good position to work closely with federal agencies in this regard due to our highly collaborative coordination and governance infrastructure.

OGIC's navigatOR initiative incorporates all aspects of the enterprise approach to GIS development in Oregon. A business case for navigatOR was conducted in 2006 and refreshed in 2007. The business case and a number of additional associated documents are available on the GEO website. More recently, a proposal for a significant investment in location data development and sustained data management was made by the Council to the Legislature to implement the mandate in ORS 276A.500-515.

Based on these opportunities, the Oregon Geographic Information Council (Appendix B) has developed this strategic plan to guide ongoing geospatial initiatives and activities by public and private organizations across the state. The strategies identified by the Council in this plan are intended to improve the management, accessibility and sharing of geospatial information. Better, more efficient management and sharing of geospatial information will enable government agencies at all levels to provide services more consistently across Oregon.

WHY GEOSPATIAL DATA & DATA SHARING IS IMPORTANT

Example: Wildfire

When a wildfire occurs, government agencies at multiple levels respond. They consult digital data and maps to figure out how to get responders and equipment to the right places to fight the fire. They need to know the locations of homes and other buildings that may be at risk. They need to know where surface water can be found to help fight the fire. They need to know where above and below ground utilities are located. They need to be able to estimate the fire perimeter and determine where, when, and how to evacuate people at risk. All of this data must be readily available in the right format to enable them to cooperatively fight wildfires.

The Plan

Vision

Authoritative, reliable geospatial data available and accessible when and where needed by Oregonians.

Strategic Mission

The strategic mission of the Council is to provide suitable access to accurate, authoritative and relevant geographic information and technology to support consistent government services across the state.

Strategic Goals & Objectives

The Council's vision and strategic mission are translated into strategic goals and programmatic objectives below. The plan relies on a basic foundation composed of five goals, each aimed at a particular outcome. The objectives are laid out to accomplish each goal.

Goal 1: Improve Data Sharing and Accessibility

Outcome – Support informed decision-making

- Objective 1a. Fully deploy enterprise geodatabase functionality (store once for access by all)

- Objective 1b. Expand deployment of web-based geospatial services in support of specific business processes
- Objective 1c. Deploy Framework GEOHub for secure data sharing with all public bodies

Goal 2: Increase Data Stewardship

Outcome – Improve management of data assets

- Objective 2a. Implement methodology to recognize authoritative data sets for Framework layers
- Objective 2b. Enable geospatial data maintenance through formal assignment of stewards
- Objective 2c. Initiate and manage Framework data development projects with appropriate providers

Goal 3: Expand Collaborative Governance

Outcome – Engage stakeholders in data management

- Objective 3a. Develop remaining pieces of OGIC governance structure, including committees
- Objective 3b. Develop process for engaging all stakeholders, including government decision-making executives (state, regional/COGs, tribal, county, city, special district, multi-state)
- Objective 3c. Align OGIC processes with other data governance processes at statewide/regional levels
- Objective 3d. Support & encourage local/regional governance processes to enable long-term coordination and connections related to Framework data development and maintenance

Goal 4: Strengthen Communications

Outcome – Strengthen understanding and use of geospatial data

- Objective 4a. Implement enterprise geospatial communications plan with explicit responsibilities
- Objective 4b. Continue geospatial standards forums for standards promulgation and education
- Objective 4c. Develop communications mechanisms (web, email, blog, social media, newsletter)

Goal 5: Support Sustainable Funding

Outcome – Support appropriate funding for data management activities at all levels

- Objective 5a. Establish shared vision of optimal funding model for geospatial coordination
- Objective 5b. Implement a comprehensive, enterprise value/benefit tracking mechanism
- Objective 5c. Document existing methods for resourcing geospatial coordination activities and develop metrics to demonstrate successful coordination efforts
- Objective 5d. Establish the value of participation in geospatial governance activities (stress geospatial information as an asset)

Geospatial Work Program

Responsibilities

The work to be carried out in support of this strategic plan will be performed by a combination of groups and organizations in collaboration with each other. There are many stakeholder groups represented on the Council, including counties, cities, special districts, 911 centers, etc. The Council governance structure has three standing committees: Policy Advisory Committee (PAC), GIS Program Leaders (GPL – technical advisory committee), and Framework Implementation Team (FIT). When the responsibilities are assigned to OGIC, it is assumed that many of those responsibilities will fall to one or more standing

committees of the Council, or to one or more stakeholder groups represented on the Council. In some cases, a specific committee may be called out when only one committee is likely to bear responsibility.

Below is a high level responsibility chart created to identify organizations that bear primary and secondary, or support, responsibility for each of the strategic objectives noted above.

Objectives	Primary Responsibility	Secondary/ Support Responsibility
1a	GEO	Regional bodies
1b	GEO	Regional bodies
1c	GEO	OSCIO
2a	FIT	GEO
2b	FIT	GEO
2c	GEO	FIT
3a	OGIC	GEO
3b	OGIC	GEO
3c	OGIC	FIT
3d	FIT	GEO
4a	GEO	OGIC
4b	FIT	GEO
4c	GEO	FIT/GPL
5a	OGIC	FIT
5b	GEO	Public bodies
5c	GEO	Public bodies
5d	GEO	Public bodies

Timing

This document lays out a five year strategic planning horizon. It will be updated every two years.

Outcomes (Success Indicators)

NOTE: The performance indicators listed below the outcomes are placeholders until the Performance Metrics work group can meet to determine proposed indicators

1. Support informed decision-making
    a. Number of Framework data sets accessed from GEOHub
2. Improve management of data assets
    a. Data asset management and implementation plan developed
    b. Number of stewardship agreements signed
    c. Number of public bodies moved from paper to digital
3. Engage stakeholders in data management
    a. Increased access to Framework data
    b. More Framework data available
4. Strengthen understanding and use of geospatial data
    a. Number of public bodies accessing data from other public bodies through GEOHub
5. Support appropriate funding for data management activities at all levels
    a. Amount of Framework data management funding available

Appendix A: Data Sharing and GIS Coordination Challenges

Data Sharing Issues

There are many reasons why government organizations struggle to share information with each other. Location data is produced by various organizations, often at different levels of government. Some of that data is about critical infrastructure, or personally identifiable information about people. That kind of data has to be handled carefully and the mechanisms to share it safely outside the data source can be expensive. In addition, there are over 1,500 government organizations in Oregon, and sharing data between that many organizations is a big task.

To share information meaningfully between organizations, rather than simply producing it for a single purpose, requires the producer to standardize the data. That often means they have to produce the data with additional information or in a different way than they otherwise would, which makes it more expensive. All of this collaborative activity, particularly between different levels of government (local to state to federal), is either not funded or not funded well enough. Many rural local governments don't have the funds to produce data using modern technology, so they are still using paper or spreadsheets to collect the information they need to provide government services. Such inefficient means of data production in rural areas present huge and costly challenges to providing consistent government services across the state. As a result, people in urban areas often receive better services than people in rural areas. This discrepancy between urban and rural areas is something the Legislature sought to address by forming a new geospatial data sharing partnership.

There are hundreds of statutory exemptions that prevent government organizations from including information about certain classes of citizens in data sets that can be shared outside the originating organization for the data. It is easier and much less expensive to simply not share the data sets that contain sensitive information, even with other government organizations that need the data. In many cases, this means that data which is not sensitive is caught up in the same net as the data that is sensitive. As a result, government organizations have to recreate the data, duplicating effort and expense. This kind of inefficiency amounts to about $200 million of otherwise unnecessary expenditures each year for state and local government combined, according to a study commissioned by the Oregon Geographic Information Council in 2007.

GIS Coordination Challenges

Some of the challenges for GIS coordination in Oregon that must be overcome are:

- Need for increased knowledge about location information and GIS technology
- Need for leaders to understand the importance of location for decision making
- Need for effective model agreements for collaboration and data sharing
- Inadequate statewide communication regarding GIS coordination activities, projects, and programs
- Insufficient funding for local governments to support geospatial data development and maintenance
- Insufficient staffing to support GIS needs at the state and local government levels
- Limited use of GIS to manage location information for socio-economic purposes in Oregon
- Limited use of metadata to document data sets created over the years
- Lack of metrics related to the costs and benefits of GIS use in Oregon
- Outdated statutes related to data privacy, public access to data, and liability for data

Appendix B: Statutory Authority of the Oregon Geographic Information Council

To address the challenges government organizations in Oregon have with sharing location data, ORS 276A.503 authorizes the Oregon Geographic Information Council to provide governance for geospatial data management and sharing for all public bodies. The Council has existed since 1983 under a Governor's Executive Order and has been tasked with coordinating the management of geospatial data. The reauthorization of the Council addresses two weaknesses with the 1983 executive order: (1) an executive order only provides authority related to the executive branch of state government, not local governments, special districts, etc.; and (2) the Council created by the Executive Order was made up primarily of state agencies, with little representation from other levels of government. As mentioned earlier, much of the location data needed to provide government services is, or should be, produced at the local government level.

The new statute provides an equitable seat at the Council table for local governments, including cities, counties, special districts, regional bodies, and public safety answering points. Tribes, federal agencies, non-profits, public utilities, universities and private citizens are also represented on the new Council, as is the Oregon Legislature. The restructured membership provides a much more balanced approach for the collection, management and use of location data. The Council's collaborative governance structure also gives all stakeholders a say in how to fund the collection, management and use of the data. A collaborative funding model will avoid the need for government agencies to charge each other for access to the data, and will support geospatial data sharing between all public bodies.

During the bill drafting process, stakeholders identified the fundamental requirement that for government to government data sharing, there must be a central place for the data to be securely held and accessed. By providing this service, the statute addresses a primary and often stated obstacle to data sharing between and among government organizations: the security of sensitive data.

Appendix C: Evaluation of Framework Status

The Council's Framework Implementation Team has been evaluating the status of the Framework data sets for several months prior to the publication of this strategic plan. The analysis was designed to evaluate data elements and themes (groupings of data elements). Data elements were assessed against inclusion criteria and theme placement. Inclusion criteria assessed if an element should remain part of Framework. These criteria were: statewide geographic extent (as appropriate for the element), broad user base, and whether an element is considered to be a fundamental data set. Theme placement assessed whether a data element should be kept in its current theme or should be moved to a different theme.

Both data elements and themes were assessed for activity status and maturity. Maturity was assessed using a set of survey questions designed to capture the position of each data element in every stage of the data life cycle (Figure 1). The responses to these questions were enumerated and aggregated to form a preliminary, simple maturity index on a scale of 0 to 120. At present, the simple maturity index has been calculated only for a subset (about half) of the Framework data elements (Figure 2). Evaluation of the remaining data elements and theme status is forthcoming.

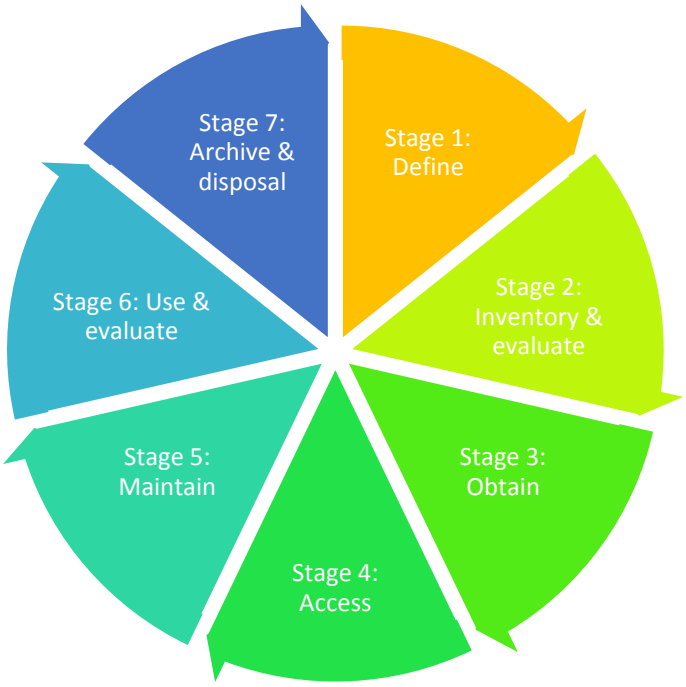

Figure 1. The National Geospatial Data Asset Geospatial Data Lifecycle articulates the stages data passes through during its life time from initial definition to disposal. Data maturity increases from stage 1 to 7. (adapted from NGDA 2017 Lifecycle Maturity Assessment)

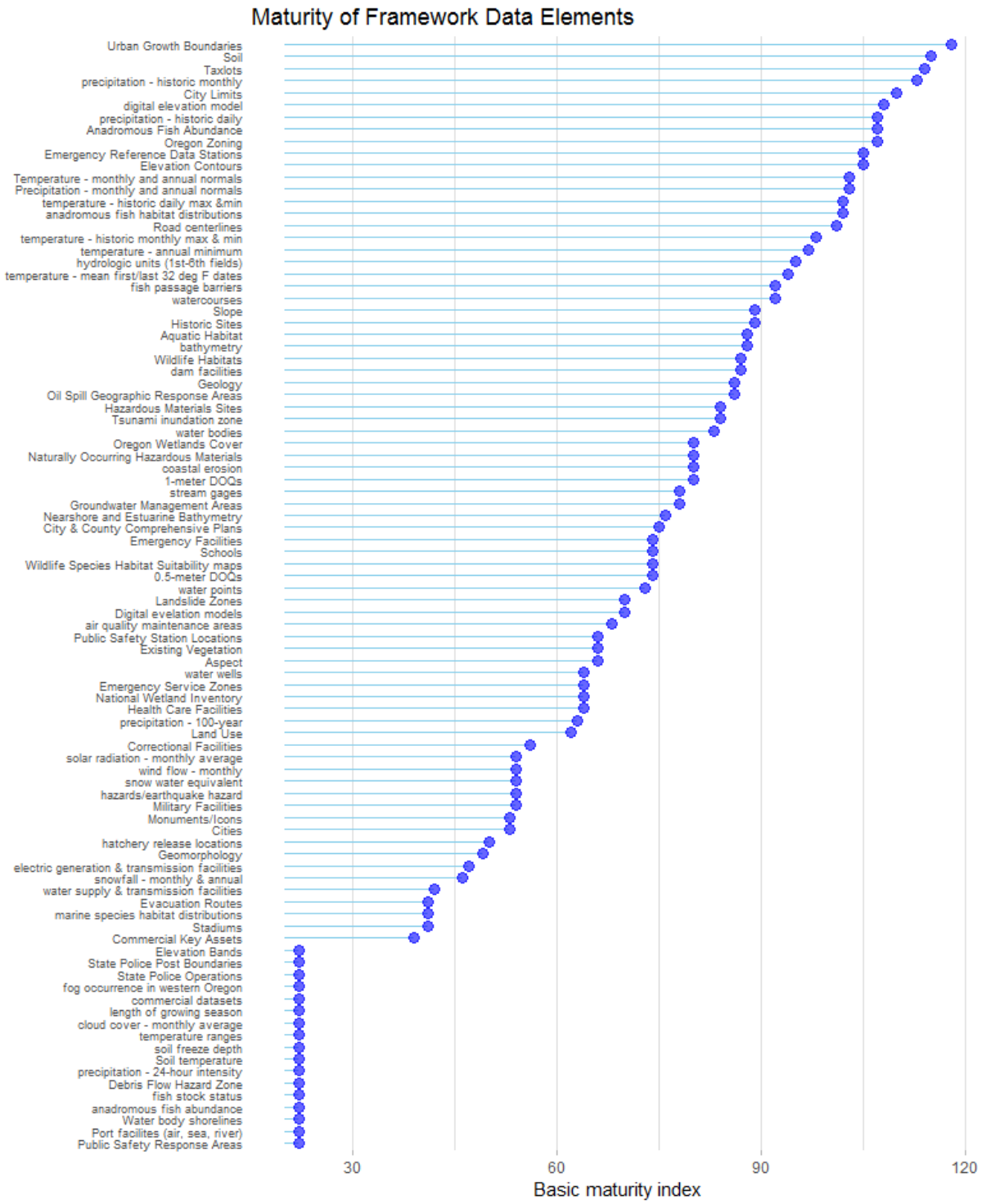

Figure 2. The basic maturity index for each data element represents progress within the data life cycle. The index aggregates enumerated responses to survey questions focused on each and every stage of the life cycle. These values are preliminary and represent a subset of the Framework data elements.