

Appendix E: Data Sharing Platforms

Introduction and Examples

The following introduction of data sharing platforms is intended to provide the Regional Data Advisory Committee and staff with an overview of data sharing technologies that have been noted by committee members, identified by HUD technical assistance staff, and others examples that are notable within the local or greater region.

Geoportal

Leading the open source conversation is Geoportal. This is because Geoportal is already being used by agencies within the region and is something that the Regional GIS Partnership is already investigating. Geoportal is a type of web portal used to find and access geographic information (geospatial information) and associated geographic services (display, editing, analysis, etc.) via the Internet. Geoportals are important for effective use of geographic information systems (GIS) and a key element of Spatial Data Infrastructure (SDI).

Geographic information providers, including government agencies and commercial sources, use geoportals to publish descriptions (geospatial metadata) of their geographic information. Geographic information consumers, professional or casual, use geoportals to search and access the information they need. Thus geoportals serve an increasingly important role in the sharing of geographic information and can avoid duplicated efforts, inconsistencies, delays, confusion, and wasted resources

Modern web-based geoportals include direct access to raw data in multiple formats, complete metadata, online visualization tools so users can create maps with data in the portal, automated provenance linkages across users, datasets and created maps, commenting mechanisms to discuss data quality and interpretation, and sharing or exporting created maps in various formats. Open portals allow the possibility for users to contribute datasets as well.

Lane County has been working with Geoportal in recent years. The **Lane County Geoportal** is a web-based application running on an intranet server using LDAP (Lightweight Directory Access Protocol) user authentication (which establishes security protocols) connected to a Microsoft SQL server database.

The Lane County Geoportal has been customized to have a similar look and feel as other standard county web applications and uses a familiar data directory organization scheme as well as a local map service as a geographic reference. There are presently about 110 metadata records in the Lane County Geoportal and the growth of the metadata is an ongoing effort. For

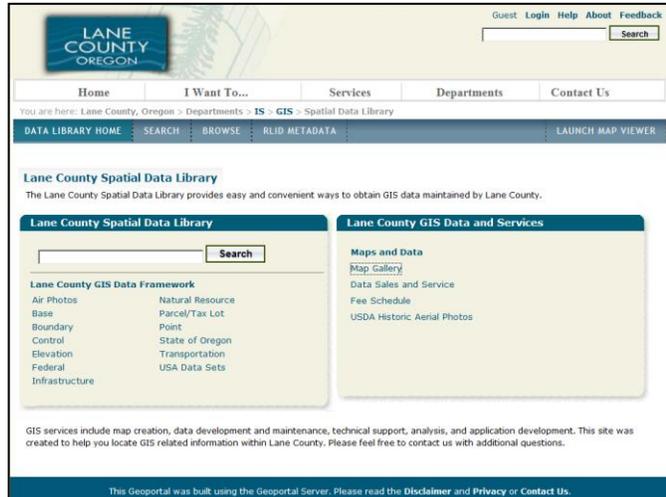


Figure 1: Lane County's Geoportal website

regional staff the Lane County Geoportal application can be viewed at:
<http://lcapp11:8080/geoportal>

Upon display, the user will be presented with the home page that offers the ability to perform metadata record searches or access other County GIS information. Geoportal is also offered as a means to connect to other “published” metadata resources so that users can discover and access external records. There are also features in the Geoportal that can be implemented to provide data downloads using the metadata application as an initial data discovery point. Although Geoportal is designed for spatial data, non-spatial data can also be added and made available for download.

Lane County staff prepared a more in-depth summary of Geoportal, including an evaluation of strengths and weaknesses and potential use in addressing qualitative and non-spatial data. That summary is included as Attachment A.

The **Oregon Spatial Data Library** was built on the ESRI Geoportal Server, a joint effort between the Department of Administrative Services Geospatial Enterprise Office and Oregon State University. Currently, more than 200 spatial datasets are accessible from this online library. These datasets serve as “base data” for a variety of Geographic Information System (GIS) applications that support research, business and public services. The targeted primary users for the Oregon Spatial Data Library are staff of agencies, but secondary users include the general public, consultants, educators, and students. This could be a very useful model for future data sharing efforts using Geoportal.

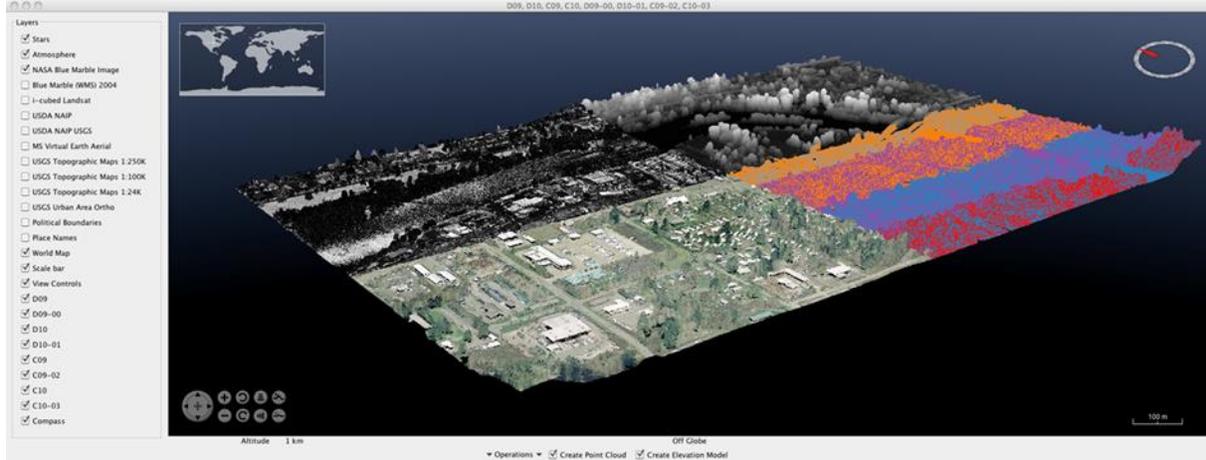
Figure 2: Cropped screenshot from the Oregon Spatial Data Library



World Wind

World Wind is a free, open source application programming interface (API) for a virtual globe. The application was written so as to be cross-platform, intuitive, precise and flexible in supporting many needs. World Wind is used worldwide for a number of purposes including visualizing cities and terrain, analyzing spatial data and simply helping people understand earth systems. Unlike Google Earth, World Wind is a software development kit (SDK) with a powerful geographic rendering engine well suited for large remote sensing data sets, complex 3D renderings and large area regional networks (e.g. hydrography across the Pacific Northwest, transportation systems across the state and global imagery).

Figure 3: Image below displays hi resolution imagery and over 16 million points LiDAR (Light Detection and Ranging), two forms of remote sensing data, in World Wind on a standard laptop



If the region develops modern web-based portals, World Wind presents an opportunity to support raw data and metadata into a single on-line visual virtual globe. Web browser balloons could display HTML, JavaScript, and flash content from metadata repositories. Viewers and layer managers can support loading, displaying and interacting with various mapping formats such as KML, SHP, GML, GeoJSON, GeoTIFF, MrSID, etc. as well as live streaming information (such as WMS) from servers across the region. Collaborative development with World Wind could be a natural next step to investigate if initial efforts with Geoportal succeed.

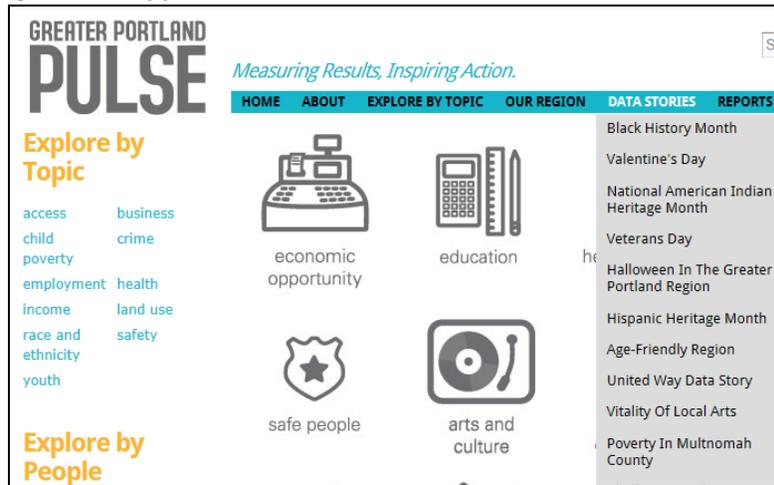
OpenColorado (Colorado) <http://data.opencolorado.org/group/drcoq>

OpenColorado is hosted by the Denver Regional Council of Governments. The vision of Open Colorado is to support a transformation that will lead to a “simple, beautiful, and easy-to-use government.” The primary resource is the OpenColorado data catalog. The data catalog allows any municipality, county, government agency, nonprofit, or individual to share open data with the public. The Catalog allows governments and community organizations to provide open access to data on their own websites through a centralized online data catalog (clearinghouse). One can search for data based on groups, data formats or “tags” (subjects). OpenColorado is powered by CKAN an Open Source provider <http://ckan.org/>.

Greater Portland Pulse <http://portlandpulse.org/>

Greater Portland Pulse uses data and dialogue to encourage coordinated action for better outcomes across the region. With Weave as the main analytical platform, the site uses indicator data to show where the region is successful and where it's lagging behind in the areas of economy, education, health, safety, the arts, civic engagement, environment, housing and transportation. The indicators often reflect who's being left behind and how communities and the region are impacted as a result. Greater Portland Pulse makes a significant effort to tell data stories and even has a theme based drop-down menu specifically dedicated to “Data Stories.”

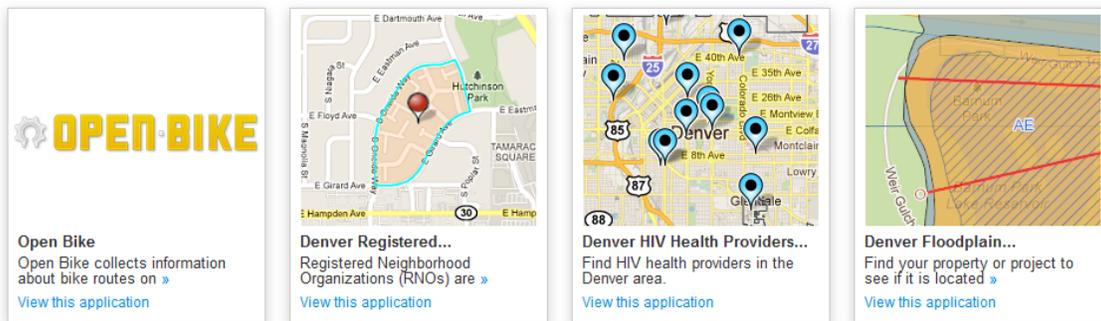
Figure 4: Cropped screenshot from Greater Portland Pulse Website



Open Application Programming Interfaces (APIs)

There is a rich background of application development within our region. RLID.org provides a good example of such applications. However, providing data to support openly developed APIs can be an effective way to utilize untapped social and commercial value in developing applications. When access to data is provided openly to the masses (in bulk or otherwise), an obstacle to data delivery innovation is arguably removed. More individuals and entities working to identify and address data issues can only result in increased innovation. The standard “Open Data” model suggests that data must be free, but open data services (such as an API) can be charged for. This provides one of the most immediate opportunities around open data by incentivizing innovation. Figure 27 presents examples of applications developed as a result of the Open Data approach taken by governments in the Denver Area through OpenColorado.

Figure 5: Examples of applications (APIs) developed through OpenColorado



Data Dashboard Approaches

One data sharing concept which was well received by the Regional Data Advisory Committee was that of “Data Dashboards.” Generally speaking, the idea of Data Dashboards is to provide at-a-glance views of key performance indicators relevant to a particular objective. This approach is becoming increasingly commonplace in numerous arenas, including business, education, public health, and other public administration. The term “dashboard” originates from the automobile dashboard, where drivers monitor the major functions at a glance via the

dashboard. Just as in a car, dashboards allow users to quickly know if something is wrong or if something is right. Following are a few examples of the dashboard concept in application.

Kansas City, KCStat <https://kcstat.kcmo.org/>

KCStat focuses on the City's six strategic priority areas: Public Infrastructure, Economic Development, Public Safety, Healthy Communities, Neighborhood Livability, and Governance. One additional priority cuts across all outcome areas and concentrates on Customer Service and Communication. The KCStat Dashboard provides an "at-a-glance" view of each priority's current status. KCStat is powered by Socrata, and Open Source provider <http://www.socrata.com/>

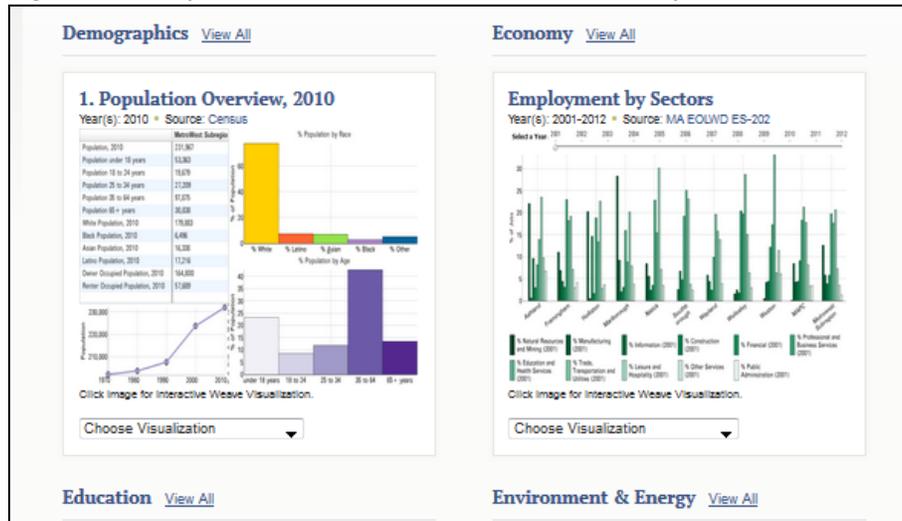
Figure 6: Example Dashboard figures for Priority Areas on KCStat



MetroBoston Data Common www.metrobostondatacommon.org/snapshots/

The MetroBoston DataCommon provides accessible information about the Boston Metropolitan Region's people and communities through a variety of topics including arts, education, environment and transportation. It is a resource for residents, stakeholders, planners, city and town officials, educators and journalists to explore data and make informed decisions. The site is very sophisticated and multi-faceted, but a "snapshots" component of the site provides information in a "dashboard" format. Users can isolate data for specific geographies within the region and can view user friendly and current summary statistics (and maps) for a number of topics. DataCommon does not go so far as to explicitly suggest whether key indicators are "on task" or "need improvement" as KCStat does (see Figure X for an example).

Figure 7: Examples of MetroBoston DataCommon “Snapshot” functionality



The MetroBoston DataCommon supports a much larger region (in size and population). It does, however, provide some good examples for potential dashboard elements and approaches for a future data sharing strategy.

Data Mapping Approaches (GIS Portals)

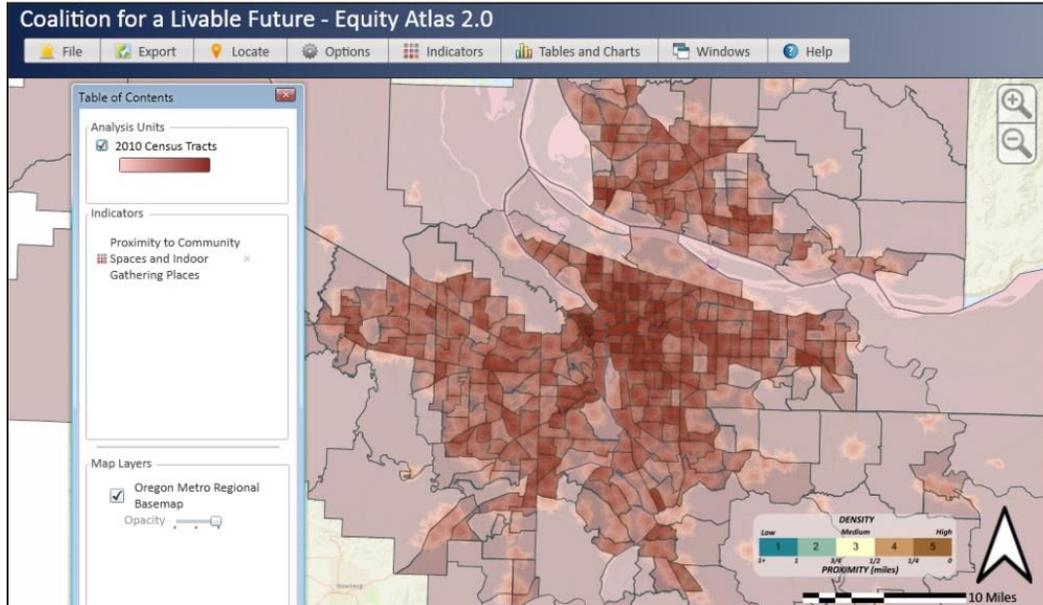
There is significant local interest in providing more interactive mapping resources. This addresses a frequently noted concern that data can be difficult to weave into a poignant “story.” Maps can be an effective to convey or discover such data “stories.” There is significant existing web mapping capacity within GIS divisions in the region, as well as existing tools (e.g. RLID Maps, LaneCountyMaps, MapSpring). And there are a number of innovative and relatively accessible tools and examples to expand data mapping in the region. Mapping-only platforms are interactive, though they tend not to have a user-friendly interface. GIS Portals typically do not provide space for collaborative analysis or interpretation of data. Following are a few examples.

Regional Equity Atlas 2.0, Portland (Coalition for a Livable Future)

<https://gis.oregonmetro.gov/equityAtlas/>

The Regional Equity Atlas is a tool that was designed to enable understanding of how well different neighborhoods and populations across the Portland region are able to access resources and opportunities to meet their basic needs. Through the use of maps and data, the Atlas provides a visual depiction of disparities and illuminates how the benefits and burdens of growth and change are distributed across the region. One advance utility of the Regional Equity Atlas 2.0 is that the web-based Mapping Tool enables users to make and edit their own maps (in addition to providing finished thematic maps and preliminary analysis of many key issues.)

Figure 8: Screen shot of “Proximity to Community Spaces” within Regional Equity Atlas 2.0



InstantAtlas (E.S.R.I.)

InstantAtlas™ enables information analysts and researchers to create highly-interactive dynamic and profile reports that combine statistics and map data to improve data visualization, enhance communication, and engage people in more informed decision making. InstantAtlas enables numerous dynamic reports with built in templates, including time series alternatives. The service is available under license (desktop or server).

Figure 9: Example of the InstantAtlas Dynamic Reports

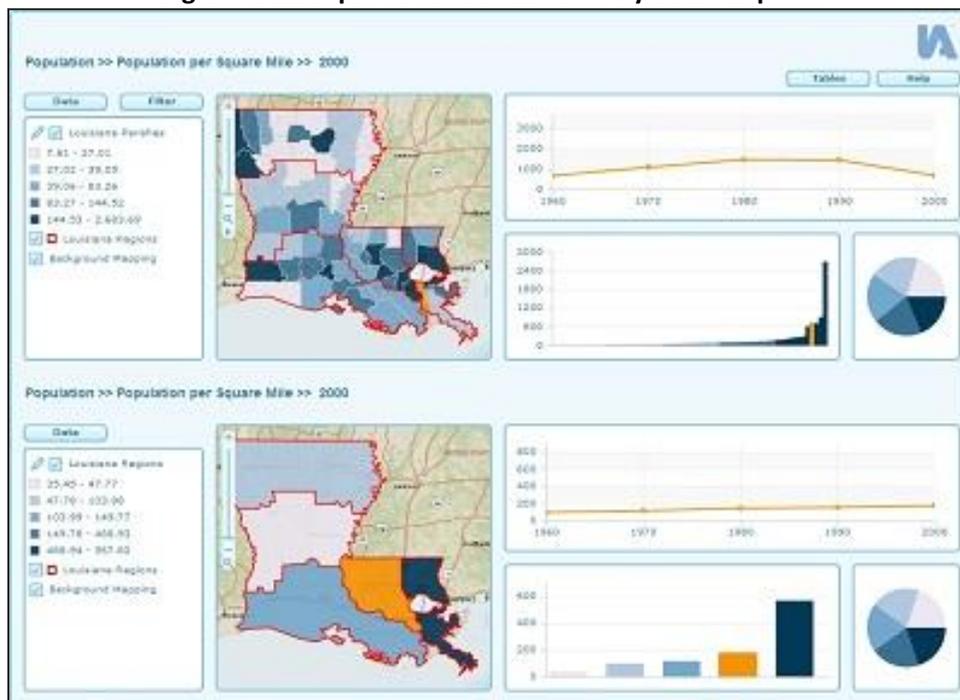


Table 1: Summary of Sharing Frameworks outlined in Section 4.2

Samples	Framework Type	Open vs Vendor	Powered By
Technologies			
<u>Geoportal Server</u>	Inventory/Catalog or Warehouse	Open (Built on ESRI software)	<u>ESRI</u>
<u>World Wind</u>	Data Commons	Open	<u>World Wind (NASA)</u>
<u>InstantAtlas</u>	Data Commons(Mapping focus)	Vendor	<u>ESRI</u>
Applications			
<u>OpenColorado</u>	Inventory/Catalog or Warehouse	Open	<u>CKAN</u>
<u>Greater Portland Pulse</u>	Data Commons	Open	<u>Weave</u> (in part)
<u>KCStat</u>	Data Commons (Dashboard)	Open	<u>Socrata</u>
<u>MetroBoston DataCommon</u>	Data Commons	Open	<u>Weave</u> (in part)
<u>Regional Equity Atlas 2.0</u>	Data Common (Mapping)	Unknown	<u>Portland Metro</u>
Key Existing Local Examples (Mapping)			
<u>RLID Maps</u>	Data Commons	Vendor	ESRI (<u>Geocortex Essentials</u>)
<u>MapSpring</u>	Data Commons	Vendor	<u>MetroPlanning Inc.</u>
<u>LaneCountyMaps</u>	Data Commons	Unknown	Unknown