Rural BC Open Data: Portal improvement plan

## Esri Canada Education and Research • April 2018

# Introduction

The [Rural Open Data project](https://www.ruralopendata.ca/) at Selkirk College evaluates the use of Open Data in rural communities in British Columbia, with a focus on “best practices, strategic policy directions and delivery options” (project proposal, October 2nd, 2017). Esri Canada has implemented an open-data portal on the ArcGIS Open Data platform (Figure 1a, b), currently located at <https://data-ruralbc.opendata.arcgis.com>, which will be used both as a sandbox for the research goals and as a model for other interested communities.

This document describes future plans for improvements throughout 2018. The four sections below are based on the deadlines from Jonathan Van Dusen and Haydn Lawrence’s 2018 objectives:

# 1. Portal-interface improvements

Preliminary improvements: March 30th; Ongoing thereafter

In order to create a state-of-the-art ArcGIS Open Data portal for the Rural Open Data project, a variety of interface improvements will be needed to customize the portal beyond the default template from Esri. Some improvements completed in 2017 (see Figure 1a) included a customized banner background and menu bar, the addition of a Web map displaying the regional districts in the study area, the inclusion of search links for each of these districts, and the addition of a link to Geothink’s Open Data Standards Directory.

Several resources from Esri were reviewed for interface-improvement ideas, and will continue to be reviewed on an ongoing basis throughout the project. These include a gallery of open-data sites – though many use an older version of the ArcGIS Open Data template, a [Map Journal of ArcGIS Hub sites](https://www.arcgis.com/apps/MapJournal/index.html?appid=107cac32de164b5fb7da99aceb33939c), and an ArcGIS Hub [customization tutorial](https://hub.arcgis.com/pages/site-customization). Welcome text, descriptions of areas of interest or open-data initiatives, icons for category search, information on how to use the portal and its data, notable datasets and applications, a “Contact Us” widget, and logos of participating organizations were identified as common elements frequently included in ArcGIS Hub/Open Data sites. Other specific customizations were noted and are described throughout this plan.

Preliminary improvements completed prior to March 30th (see Figure 1b) include:

* The addition of widgets for the Rural Open Data project Twitter feed and Web site RSS feed. These provide a low-maintenance way to include project news on the portal home page and encourage citizen engagement.
* The creation of new, “flip”-able category cards (similarly to the Esri Canada Resource Finders) to replace the category icons that were provided in the default home page template. These will allow us to provide a description and example datasets for each category, and to search by item titles and descriptions – the default category icons were limited to searching by item tags or ArcGIS Online groups, with the consistency of tags an issue for datasets harvested from other sources (see Section 2 below).
* The creation of a new header banner with a larger search box, as demonstrated in the [Customization tutorial](https://hub.arcgis.com/pages/site-customization).
* A description of the project under the header banner, as found on many ArcGIS Open Data sites.
* The creation of a new floating menu bar, with a “Data Catalogue” link (similar to that of the [Kenya Open Data](http://www.opendata.go.ke/) site shown in the ArcGIS Hub Map Journal). This link allows the user to start browsing the catalogue immediately, without entering a search query or selecting a data category.
  + Work is ongoing to consolidate this menu bar with the default sign-in bar (which disappears when scrolling down on the page), or at least to make the combined height of the two menu bars less apparent.

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| Z:\Rural Open Data\March 28 screenshot.jpg |  |
| Figure 1a: Portal layout as of March 28th, 2018 (before preliminary improvements) | Figure 1b: Portal layout as of April 5th, 2018 (after preliminary improvements) |

Further improvement ideas, to be tested throughout April 2018, include:

* Modifications to the visual theme of the portal, including a higher-resolution background image. We will also consider using a different typeface (as opposed to the default Esri typeface, Avenir) and colour scheme.
* Republishing the [BC Regional and Municipal Data Portals Web map](http://www.sgrc.selkirk.ca/labs/od-map/) to ArcGIS Online with links on the portal home page, or including this in the existing Web map of regional districts.
* Changing the search strings in the Web map of regional districts to search by district name instead of initials, so that the district name is displayed on the search-results page. This will require modifying the tags in the ArcGIS Online items using the ArcGIS API for Python (completed as of April 4th).
* Adding a short description and photo of each regional district inside its popup in the Web map.
* Improving the metadata for existing content (e.g. item descriptions, tags, thumbnails).
* Improved search results for the category cards: along with the previous task, it may be necessary to modify the search strings for each category card, or add and remove category cards, to reflect the variety of data in the Portal more closely.
* Adding a widget listing the latest datasets added to the Portal.
* Modifying the site footer to include contact information.
* Modifying the home-page search box to include drop-down boxes where the user can select the content type (e.g. Web maps, datasets) and the regional district. This is inspired by the options provided above the search box in the City of Maple Ridge, BC’s [ArcGIS Open Data portal](http://opengov.mapleridge.ca/).

Currently, the Rural Open Data portal only includes one Web page – the site home page – but additional pages could be created relatively quickly and then configured further throughout the course of the project. Links for these pages would appear in the menu bar of the Open Data site:

* **“Help” page:** This page would include a brief description of how to use the Open Data site, as well as links to documentation from Esri for topics such as ArcGIS Open Data, the ArcGIS Online Map Viewer, and app creation. The Help page could also include a walkthrough video specifically demonstrating the use of the Rural BC Open Data portal, targeted to first-time and beginner users. Resources for advanced users (e.g., researchers, app developers in civic hackathons) could include links to the ArcGIS for Developers site or [ArcGIS Hub Python API tutorial](https://github.com/esridc/Hub-Tutorials/blob/master/tutorial1_hub-pythonAPI/General%20Python%20tutorial.ipynb)s.
* **“About” page:** This page would include information about the Rural Open Data project, as well as information and logos for each of the participating organizations, including the regional districts, the Selkirk College Geospatial Research Centre, Esri Canada Education and Research, Geothink, and Open North. Depending on available space, these logos may also be added to the portal home page.
* **Water Hub page:** This page would support the needs of a Columbia Basin Water Hub, as suggested by Ian Parfitt (see Section 2).

# 2. Increased Portal content

Deadline: May 18th

As of March 2018, the content inside the Rural BC Open Data portal consists mostly of individual datasets that were added to the portal from regional open-data sites by Esri Canada staff, either through republishing files such as shapefiles or registering ArcGIS Server map services.

Four main methods will be used to increase the amount and quality of content in the portal:

1. **Contribution from project members:** Researchers and municipal staff participating in the Rural Open Data project will be encouraged to contribute data via their membership in the ArcGIS Online organization. This will be achieved through:
   * Periodic emails to members of the project steering committee after major updates to portal content and functionality, reminding them of the ongoing work on the portal and inviting them to submit their data and to request an account if needed. Additional emails will be sent to technical staff associated with the project - Justin Robinson of Selkirk College and Tom Dool of the Regional District of Central Kootenay.
   * Webinars to the project steering committee, as well as other interested project collaborators, describing
     1. the basic functionality of the open-data portal (e.g., searching, data access, mapping),
     2. how to add content to the Portal via ArcGIS Online,
     3. how to create Web mapping applications in ArcGIS Online, and
     4. how to create surveys for public engagement using Survey123 for ArcGIS.

It is suggested that topics (a) and (b) could be addressed in one webinar, to be delivered by **April 27th**, with topics (c) and (d) addressed in a second webinar, to be delivered by **May 9th**.

1. **Automated harvesting from existing open-data sites:** Where possible, data will be added to the Rural Open Data portal via harvesting from other open-data sites (such as those seen in the [Web map](http://www.sgrc.selkirk.ca/labs/od-map/) of open-data sites mentioned above) instead of downloading and re-publishing datasets manually. This will allow us to increase the amount of content available within the Rural Open Data portal quickly, while also minimizing the amount of data duplication across portals while ensuring that the latest versions of datasets are available through the portal.  
     
   For example, the [City of Prince George](http://data-cityofpg.opendata.arcgis.com/) and the [City of Kamloops](http://mydata-kamloops.opendata.arcgis.com/?agree=0) already have ArcGIS Open Data sites, which means that their open data are currently shared with a public ArcGIS Online group that can be added as one of the data sources in our portal. Other organizations may use platforms such as CKAN for their open-data sites (for example, the [City of Surrey](https://data.surrey.ca/) uses CKAN), in which case it may be possible to use the open-source [Esri Geoportal Server Harvester](https://github.com/Esri/geoportal-server-harvester) to harvest the catalogue records from formats such as DCAT (Data Catalog Vocabulary) or OGC CSW (Catalog Services for the Web) into ArcGIS Online items. The Geoportal Server harvesters can also be customized for greater control of the output metadata (e.g. adding standardized tags and the name of the data source).
2. **Manual contribution by Esri Canada staff:** Where automated harvesting is not possible, Jonathan Van Dusen and Haydn Lawrence will download datasets manually from the open-data sites shown in the Web map mentioned above, or find the associated ArcGIS Server or OGC service URLs, and upload or link these to the ArcGIS Online organization as needed.
3. **Inclusion of Columbia Water Hub:** It was suggested by Ian Parfitt of Selkirk College that the Rural BC Open Data portal could also serve as a “hub” for data and research on water-quality monitoring in the Columbia Basin. This idea was discussed at a symposium in November 2017 (see [proceedings](http://www.livinglakescanada.ca/wp-content/uploads/2018/02/Columbia-Water-Data-Hub-2017-Conference-Summary-FINAL.pdf)). In the context of the Rural BC Open Data portal, the Water Hub could exist as a separate page linked to in the menu bar at the top of the portal.

The Water Hub would include its own search tools, links to other data catalogues, and information about standards and data collection protocols. It could also include other features such as [charts and infographics](https://blogs.esri.com/esri/arcgis/2017/04/10/configuring-charts-and-stats-in-arcgis-open-data-pages/) (e.g. for the reporting features and “water quality report card” mentioned in the proceedings), or potentially searching multiple catalogues and data sources via Esri Geoportal Server. Members of the public would be able to add the data to their own maps or Story Maps, and view charts from within the dataset description page. The hub would also show the latest updates from a forum or blog, via RSS feed widgets on the hub home page or by embedding an externally hosted forum or blog within the site.

Further discussion will be needed with Ian Parfitt, Justin Robinson, and other project members to discuss user needs and how best to integrate the Water Hub with the Rural Open Data portal.

# 3. Metadata-search improvements

Deadline: August 31st

While the ArcGIS Open Data interface includes an interactive search tool, it is currently somewhat limited in terms of the data categories and facets that can be used as search filters, and does not allow for advanced search techniques such as typing filters into a query string or using Boolean operations.

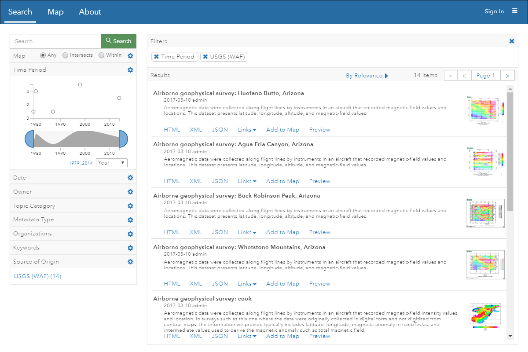
For this purpose, the open-source [Esri Geoportal Server Catalog](https://github.com/Esri/geoportal-server-catalog) will be implemented and tested (Figure 2). This provides a search interface with more facets (e.g. date of upload, the time period displayed in the data), and more control over query strings as noted above. It is also possible to customize which search facets are displayed in the interface and create new ones.

Figure 2: Esri Geoportal Server sandbox site (<http://geoss.esri.com/geoportal2/>)

The Geoportal Server Catalog could be integrated with the Rural Open Data portal by adding an “Advanced Search” link to the menu bar or beside the search box, which would open a new page with the Catalog interface embedded in an iframe. The Catalog’s appearance would also be customized to match the rest of the portal.

One challenge that may need to be addressed is for the search facets in the Catalog interface to work consistently against metadata records harvested from external catalogues (as described in Section 2 above), as these may include different metadata fields or keywords depending on the source.

# 4. Inclusion of community apps

Deadline: October 26th

The Rural BC Open Data portal will also allow citizens to create and discover applications that use the portal’s open data. These could be applications created by staff from each regional district, or by citizens (e.g., during civic hackathons) and researchers.

The open-data sites from the Web map mentioned above will be reviewed for examples of existing apps built using open data. It is anticipated that more applications will be created by project partners before the October 26th deadline, and that the webinar proposed in Section 2 above will encourage this.

For the Rural BC Open Data portal, community apps will be exposed by displaying recent or notable apps as “cards” on the portal home page (similar to the “carousel” of featured apps and maps on an ArcGIS Online organizational home page), or by creating a separate “Apps” page with a link in the portal menu bar. The apps will also be registered as items within the ArcGIS Online organization, which will allow them to be searched within the Rural Open Data portal.