VT Center for Geographic Information

VT Open Geodata Portal: Publisher's Guide

Version – 1.2

VERMONT
Vermont Center for Geographic Information
A Division of the Agency of Commerce and Community Development

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Update History

Date	Notes
10/5/2016	Final 1.0 – first release of Guide
11/9/2016	Final 1.1 – Corrections to EPSG code (metadata). Added "Set Extent" step for web "documents" registered with AGO.
8/1/2017	Final 1.2 – Addition of Attachments B and C: Title Naming Conventions

Introduction

A. Purpose

This **Publisher Guide** is designed to help organizations who would like to share their geospatial resources via Vermont's Open Geodata Portal (Portal). This guide provides clear step-by-step procedures. The goal is to support consistent implementation and maintenance of a federated Portal that will connect publishers and consumers in a user-driven portal that facilitates finding, exploring, and using geospatial assets.

B. Requirements

All Publishers (eg: State agencies, external organizations, etc.) wishing to make their geospatial resources available via Portal using their own Esri ArcGIS Online for Organizations (AGO) account must agree[1] to make a best faith effort to comply with the VT Open Geodata Portal policies and standards crafted by the VT Center for Geographic Information and approved by Vermont's Enterprise GIS Consortium (EGC).

C. Terminology

- **AGO** – ArcGIS Online for Organizations
- **AGO OD** – ArcGIS Open Data platform
- **AGS** – ArcGIS Server
- **VCGI** – VT Center for Geographic Information
- **EGC** – VT Enterprise GIS Consortium
- **OGC** – Open Geospatial Consortium
- **Portal** – VT Open Geodata Portal

[1] The Publisher will need to sign an MOA with VCGI, the Portal's Administrator, indicating their willingness to align with Portal standards.

D. Standards

This Guide references (as footnotes) several standards and guidelines approved by the EGC to ensure consistent implementation and maintenance of the federated Portal. Publishers must comply with these standards.

E. Need Help?

VCGI is happy to assist Publishers. Just send your questions to **accd.vcgiinfo@vermont.gov**.

Step-by-Step Procedures

I. What kind of geospatial resources would you like to share?

The Portal supports a wide range of data formats, including vector, raster, and tabular data. Web services, web apps, and tools may also be published through the Portal. The following geospatial resource types are supported by the Portal, and may be shared through a service[2], via a zipped file containing the data, or by pointing to an external resource (e.g. URL).

Table 1. Supported types of geospatial data/resources.

Vector (e.g. shapefile, etc.)	**Tool or Script** (e.g. python, etc.)
Raster (e.g. TIFF, etc.)	**Offline Data** (e.g. USB drive, etc.)
Table (e.g. CSV, etc.)	**Web Service** (e.g. OGC, AGS, etc.)
Web App (e.g. URL, etc.)	**Prepackaged Data** (e.g. Zipped file, etc.)

II. How are you planning to share your geospatial resources?

You can share data directly with the Portal through ArcGIS Online (requires an Esri ArcGIS Online for Organizations[3] account) using one of the methods listed below, or by submit your data to VCGI for publishing.

[2] Requires ArcGIS for Server.
[3] https://doc.arcgis.com/en/arcgis-online/reference/what-is-agol.htm.

Table 2. Methods for sharing data/resources via Portal.

Vector	Raster	Other (bundled service, script, app)
AGS map service	AGS image service	AGS service (bundled service only)
AGO hosted feature service	Prepackaged data	OGC WMS (bundled service only)
Prepackaged data		External URL (all other formats)

III. Preparing your data

Publishers will need to prepare their data and other geospatial resources before they can be shared via the Portal. Here are some tips.

- All vector and raster data shared through the Portal must have a defined **coordinate reference** system, **preferably** VT State Plane Meters NAD83.
- **Metadata**[4] is required for all data (vector, raster, pre-packaged data) shared via the Portal, however it's optional for all other types listed in Table 1.
- Before sharing or uploading a file geodatabase, shapefile, or prepackaged data, make sure to zip (compress) the folder containing the necessary files.

IV. Option 1: Submitting data to VCGI for publishing

Data submissions to VCGI should be attached (less than 10mb) to an email to **accd.vcgiinfo@vermont.gov**. If the submission is greater than 10MB, send us an email and we'll make arrangements.

Be sure to include the following in your email:

- **Data type:** vector, raster, table, link to web app, etc.
- **Data:** zipped file, URL to REST endpoint, or URL to external resource

[4] For more information on preparing metadata refer to Attachment A – Metadata Creation Procedures. Also refer to the VT Metadata Standard: http://vcgi.vermont.gov/sites/vcgi/files/VT_GIS_Metadata_Standard_final4.0a.pdf

- **Metadata:** required for all data (vector, raster, pre-packaged); optional for other types
- **Source:** organization responsible for originating the data

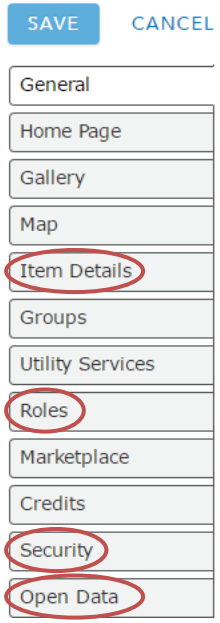
V. Option 2: Publishing data yourself via ArcGIS Online

To publish data via an ArcGIS Online account, certain settings must be enabled, and an "Open Data" enabled AGO group must be created, preferably by the account used to publish and share open data. Refer to the procedures below as well as the standards defined in the VT Open Geodata Portal ArcGIS Online Configuration Standards: http://vcgi.vermont.gov/sites/vcgi/files/standards/VTGeoportal_AGOconfig_Standards_final1.0.pdf

1) Account settings

Sign in to your account, then navigate to **My Organization → Settings**, to set the following:

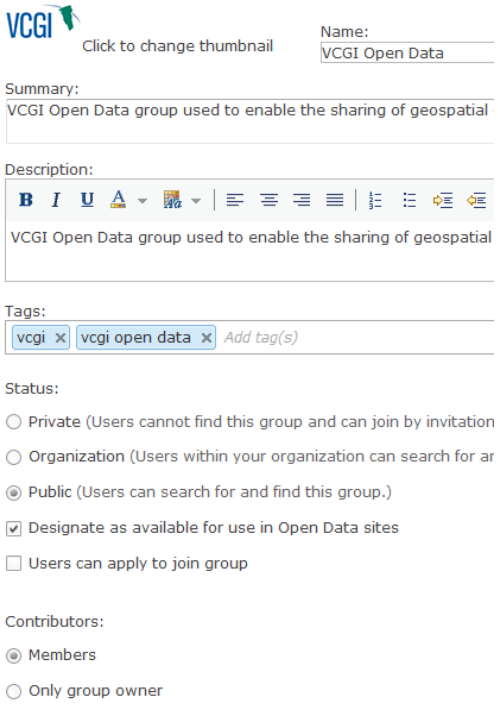
- **Item Details →** enable metadata ("North American Profile of ISO19115 2003")
  - **Roles →** if more than one person will be managing content on your account, create a role using "Publisher" as the starting template, then give it these permissions (if only the administrator will manage or publish content, you do not need to create an additional role):
    - navigate to **general privileges**, then **sharing**, then **select all**, being sure to enable "Make groups available to Open Data"
    - use **defaults** for all other permissions (unless you have a specific reason to change them)
    - assign the new role to one or more ArcGIS Online user accounts that will be used to administer the organization's or agency's Open Data content
  - **Security →** navigate to **sharing and searching**, then enable "members can share data outside organization"
  - **Open Data →** enable Open Data



2) Creating an Open Data Group

Navigate to **Groups** at the top of the screen, then click on **Create a Group**, populating the following fields:

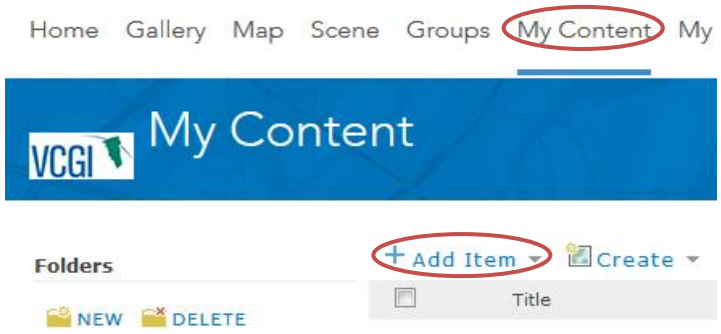
- **Name:** <agency/org> Open Data (e.g. VCGI Open Data)
- **Summary:** brief summary
- **Description:** brief description
- **Tags:** <agency/org> open data, and any others that pertain
- **Thumbnail:** Upload a thumbnail that you've created for this group.
- **Status:** enable the following:
  - **Public** (Users can search for and find this group)
  - **Designate as available for use in Open Data sites**
  - Contributors:
    - enable **Members**
- **NOTE:** you do not need to "invite" VCGI to join this group. This isn't necessary, given that it's an "open data" enabled group, which will allow VCGI to pull the AGO items into the Portal.



3) Adding items

As mentioned previously, data and other geospatial assets may be added in one or several ways according to its format. Navigate to **My Content**, then click on **Add Item**. A drop-down menu will appear. ArcGIS Online allows three adding options:

- **From my computer**
- **From the web**
- **An application**



We will only use the first two options to add content to the Portal[5]. The first option, **From my computer**, will only be used when vector data is added as an ArcGIS Online hosted feature service. In all other cases, data will be added using **From the web**.

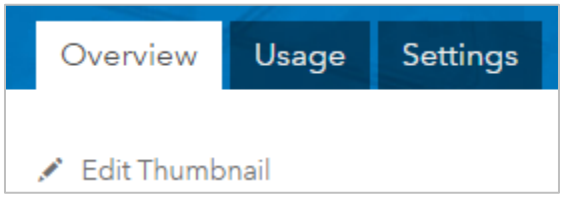
Populating Item Details

When adding content to ArcGIS Online, certain fields are required to be populated, including Title, Description, and Tags. Metadata is required for all data (raster, vector, or pre-packaged zips), but optional for all other formats. Title, Tags, Description, and Metadata are all editable through the **Item Details** page, which is accessed by navigating to **Content**, then clicking on the target content (or by mousing over the arrow adjacent to title and clicking on "View item details". Each field may be edited by clicking on: 

- **Title:** Short title describing the item (it's recommended to include "VT" in the title, as this data will be discoverable by the public at large; if data is limited in extent, other information such as county or town name should also be included).
- **Description:** Detailed description explaining data content, source, and any special considerations.

[5] The third option "Application" is not currently supported by AGO Open Data Platform. Apps will be added using the second method "From the web".

- **Tags:** All items must be tagged in accordance with the *VT Open Geodata Portal: Tagging Standard*[6]. All AGO items must be tagged with "required" tags as defined in the standard. These include isotheme<{ISO_THEMES}>, subtheme<{SUB_THEMES}>, node<{NODES}>, and keyword tags specified in the standard. The itemtype<{ITEM_TYPES}> tag is also required in some cases.
- **Thumbnail:** Add a standardized thumbnail. Thumbnails must be created from a standardized set of "thumbnail templates" available from VCGI.



- **Set Extent:** If the item was registered as a feature service or web service, the extent should be automatically defined. If item was registered as a web "document" (document link), you will need to set the extent using the "Settings" tab (visible in the image above), clicking on "Set Extent", and drawing a bounding box or inputting coordinates. Use the coordinates at right fo

- **Metadata:** Metadata is required for all data (vector, raster, pre-packaged); is optional[7] for all other entries.
  - Metadata may be edited by clicking on the 

after which it may be populated directly through the ArcGIS Online metadata editor or imported (must be ArcGIS format .xml) using the **Open** button.

[6] More information on tagging requirements available within the VT Open Geodata Portal Tagging Standard: http://vcgi.vermont.gov/sites/vcgi/files/standards/VTGeoportal_Tagging_Standard_final1.0.pdf
[7] More information on metadata requirements available within the VT GIS Metadata Standards and Guidelines: http://vcgi.vermont.gov/sites/vcgi/files/VT_GIS_Metadata_Standard_final4.0a.pdf

Adding Datasets: ArcGIS Open Data (AGO OD) supports vector, raster, and tabular datasets. However, it supports a subset of ArcGIS Online's "items types". There are several ways of registering these items with AGO to make them available via AGO OD. A*ll options for "datasets require a complete Title, Tags, and Metadata as defined below.*

Vector Datasets: There are three primary ways of sharing your vector layers, outlined as Vector Option #1, Vector Option #2, and Vector Option #3 below.

a. **Vector Option #1 – ArcGIS for Server Map Service:** Publishers with access to ArcGIS for Server can load their vector layers into a map or feature service and then register them as individual items in AGO. These ArcGIS map services should follow the best practices defined in the "VT Open Geodata Portal: ArcGIS Server Web Services Configuration Guidelines".

   - **AGO → Add Item → From the Web**
     - **TYPE:** ArcGIS Server Web Service
     - **URL:** URL path to ArcGIS REST endpoint for the specific layer (https is preferred – otherwise users who try to connect via API could encounter errors)
     - **TITLE, TAGS, THUMBNAIL, and METADATA:** As defined above under POPULATING ITEM DETAILS.

b. **Vector Option #2 – AGO Hosted Feature Service:** Publishers can zip their shapefiles and upload them into AGO as "feature layers".

   - **AGO → Add Item → From My Computer**
     - **FILE:** Zipped shapefile (all components including .prj)
     - **CONTENTS:** Shapefile
     - **OPTION:** Publish this file as hosted layer

- **TITLE, TAGS, THUMBNAIL, and METADATA:** As defined above under POPULATING ITEM DETAILS.

c. **Vector Option #3 – Prepackaged Data Posted to HTTP/FTP Site:** Publishers can zip their vector files (eg: zipped shapefile) and register them in AGO as a "document link" with a URL. If the dataset includes more than one file, Publishers can just point users to a http/ftp folder where the files have been posted. Links to Dropbox or other sites are also an option with the "document link" method. It's important to note that ArcGIS Open Data will open "document links" in a new browser tab. *NOTE: Prepackaged vector datasets should be provided in Shapefile format. If the Publishers also wants to make the data available in other formats such as File Geodatabase or CAD, then the alternate formats should be bundled into the same zip file.*

- **AGO → Add Item → From the Web**
  - **TYPE:** Document
  - **URL:** URL path to prepackaged zip or folder containing downloadable files.
  - **TITLE, TAGS, THUMBNAIL, and METADATA:** As defined above under POPULATING ITEM DETAILS.

Raster Datasets: There are two primary ways of sharing your raster layers, outlined as Raster Option #1 and Raster Option #2 below.

a. **Raster Option #1 – ArcGIS for Server Image Service:** Publishers with access to ArcGIS for Server's Image Services Extension can load their raster data into individual image services and then register them as individual "imagery layer" items in AGO.

- **AGO → Add Item → From the Web**
  - **TYPE:** ArcGIS Server Web Service

- **URL:** URL path to ArcGIS REST endpoint for the specific raster image service. (https is preferred – otherwise users who try to connect via API could encounter errors)
- **TITLE, TAGS, THUMBNAIL, and METADATA:** As defined above under POPULATING ITEM DETAILS.

b. **Raster Option #2 – Prepackaged Data Posted to HTTP/FTP Site:** Publishers can zip their raster files (eg: zipped TIFF) and register them in AGO as a "document link" with a URL. If the dataset includes more than one file, Publishers can just point users to a http/ftp folder where the files have been posted. Links to Dropbox or other sites are also an option with the "document link" method. It's important to note that ArcGIS Open Data will open "document links" in a new browser tab. *NOTE: Prepackaged raster datasets should be provided in non-proprietary formats such as TIFF or raster formats that are readily readable by most GIS software.*

- **AGO → Add Item → From the Web**
  - **TYPE:** Document
  - **URL:** URL path to prepackaged zip or folder containing downloadable files.
  - **TITLE, TAGS, THUMBNAIL, and METADATA:** As defined above under POPULATING ITEM DETAILS.

Adding Bundled Web Map Services: The term "bundled web map services" refers to web map services which typically contain multiple GIS layers, in some cases both vector and raster, and are designed to be used as a contiguous unit (eg: VCGI basemap service). AGO allows Publishers to register ArcGIS Server map services (defined as "map image layer" in AGO) and makes them available to AGO OD. Unfortunately, AGO OD "itemizes" individual layers within a map service. This behavior does not align with the design requirements of the VT Open Geodata Portal. As a result, this section defines two options for registering bundled web map services within AGO to support the requirements of the Portal.

a. **Web Services Option #1 – ArcGIS for Server Service:** Publishers with access to ArcGIS for Server can create map, feature, image, geocoding, or geoprocessing services and then register them as "document type" items in AGO.

   - **AGO → Add Item → From the Web**
     - **TYPE:** Document
     - **URL:** URL path to ArcGIS REST endpoint for the specific service (https is preferred – otherwise users who try to connect via API could encounter errors).
     - **TITLE and TAGS:** As defined above under POPULATING ITEM DETAILS. *Metadata is optional.*

b. **Web Services Option #2 – OGC WMS Service:** Publishers who have the ability to publish OGC Web Map Services (OGC) can create map services and then register them as "document type" items in AGO.

   - **AGO → Add Item → From the Web**
     - **TYPE:** Document
     - **URL:** URL path to OGC WMS's "getcapabilities" request.
     - **TITLE and TAGS:** As defined above under POPULATING ITEM DETAILS. *Metadata is optional.*

Adding Web Apps: The term "web apps" refers to web and mobile applications. AGO allows Publishers to register "applications" including web and mobile. However, AGO OD doesn't support this option. Publishers can make their web and mobile apps discoverable via the Portal by register them as "document type" items in AGO.

- AGO → Add Item → From the Web

- **TYPE:** Document
- **URL:** URL path pointing to web/mobile app site.
- **TITLE and TAGS:** As defined above under POPULATING ITEM DETAILS. *Metadata is optional.*

Adding Tools & Scripts: AGO allows Publishers to register desktop tools and scripts as "applications". However, AGO OD doesn't support this option. Publishers can make their tools and scripts discoverable via the Portal by register them as "document type" items in AGO.

- AGO → Add Item → From the Web
  - **TYPE:** Document
  - **URL:** URL path pointing to downloadable tool/script or web page listing tool/script.
  - **TITLE and TAGS:** As defined above under POPULATING ITEM DETAILS. *Metadata is optional.*

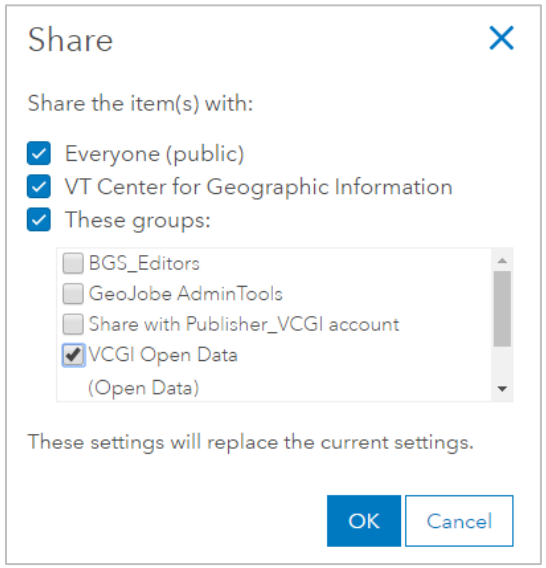
Adding Offline Data Products: Some Publishers such as VCGI allow users to order certain datasets (eg: imagery and lidar) on offline media (eg: USB drives). Publishers can make such "products" discoverable via the Portal by register them as "document type" items in AGO.

- AGO → Add Item → From the Web
  - **TYPE:** Document
  - **URL:** URL path pointing to web page describing how the product can be ordered.

  TITLE and TAGS: As defined above under POPULATING ITEM DETAILS. *Metadata is optional.*

4) Sharing ArcGIS items with the VT Open Geodata Portal

After one or more items have been added to ArcGIS Online using one of the methods described, the Publisher must share the added AGO item(s) with the AGO group created as describe in the **Creating an Open Data Group** section of this Guide. Go to **My Content**, click on the item, click on the **Share** button on the right-side menu options. Check Everyone (Public) and **<org/agency> Open Data** (the AGO group you created for sharing).



Congratulations, your data has been added to the Portal!

NOTE: Test a subset of data

If this is your 1st time setting up your AGO account for sharing with the Portal, it's advisable to catalog a small subset of data/items in order to check that the correct settings and permissions are enabled, and to practice using these procedures. It's a good idea to have VCGI review your test before you proceed with loading all of your data/items to avoid having to good back and fix a bunch of entries.

VI. Verify that data is accessible through the Portal

To confirm that your data is shared correctly and publicly accessible, use one of the following methods:

- **If your data was shared via emailing with VCGI:** Once VCGI has uploaded and shared your data, an email will be sent to notify you that it is available.

- **If your data was shared through your ArcGIS Online for Organizations account:** The first time you share data with VCGI through your organizational account, VCGI will have to approve your group. Start by notifying VCGI that you're AGO group and content are configured and ready for sharing by sending an email to **accd.vcgiinfo@vermont.gov.** VCGI will review your entries to ensure compliance with Portal standards. Assuming all is well, VCGI will link our AGO entries to the Portal. VCGI will then notify you that your entries are available through the Portal.

  After this initial "linking up" of your AGO entries with Portal all future add/deletes to your AGO Open Data Group will automatically appear in the Portal, so you can check that it is available right away.

VII. Disabling or Removing Portal items

Should you need to temporarily disable or permanently remove an item from the Portal for any reason, follow the procedures described below:

- **Temporarily Disable Item**
  - **If your item was shared via emailing with VCGI:** Send an email to **accd.vcgiinfo@vermont.gov** requesting that the item be temporarily disabled.
  - **If your item was shared through your own ArcGIS Online account:** After logging into your organizational account, go to **My Content**, click on the item, click on the **Share** button on the right-side menu options. Un-check **Everyone (Public)** and **<org/agency> Open Data** (the AGO group you created for sharing).

- **Permanently Remove Item**
  - **If your item was shared via emailing with VCGI:** Send an email to **accd.vcgiinfo@vermont.gov** requesting that the item be permanently removed.
  - **If your item was shared through your own ArcGIS Online account:** After logging into your organizational account go to My Content click on the item, navigate to the **Settings** tab, and under **General Settings**, click **Delete Item** button.
    - **NOTE:** if the item to be removed is an ArcGIS Online hosted feature service, you will need to remove the hosted layer (type: Feature Layer) **as well as** the zip file (e.g. Shapefile, File Geodatabase)

ATTACHMENT A – Metadata Creation/Update Procedures

The instructions below are to be used when creating "ISO core" metadata[8] to fulfill the requirement of the Portal, which may be accomplished either through ArcGIS Online or ArcGIS Desktop:

I. ArcGIS Online Metadata Tool

- Navigate to item within ArcGIS Online. From the Overview tab, click on **Metadata** button.
- Within the dialogue that pops up, populate the following fields:
    - **Resource**
        - **Citation**
            - **Titles & Dates**
                - A **Title** should already exist for the item, but is editable if desired
                - Populate **Creation Date**, **Publication Date**, and **Revision Date** (if applicable)
        - **Details**
            - **Description**
                - Populate **Description (Abstract)** with short description of data
            - **Language**
                - Set **Resource Language** (ex. English)
                - Confirm **Character Set** is populated with "utf8"
        - **Keywords**
            - **Topic**
                - Select one or more appropriate categories listed under **Topic Category**
        - **Extent**
            - Turn on **Resource Extent**

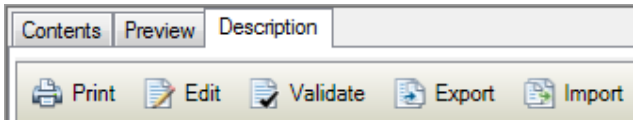
[8] Refer to the VT Metadata Standards and Guidelines: http://vcgi.vermont.gov/sites/vcgi/files/standards/VTGeoportal_AGOconfig_Standards_final1.0.pdf for a detailed definition of "ISO Core" metadata.

        - Turn on **Geographic Extent**, and within the **Bounding Box** tab, enter appropriate bounding box coordinates in decimal degrees (or draw a rectangle using the interactive tool)
- **Reference**
    - **Spatial Reference**
        - Turn on **Spatial Reference**, and select **Horizontal** dimension
        - Populate **Code** and **Code Space** according to the spatial reference of your data (code and code space for two commonly used systems are presented below[9]):
            - Vermont State Plane NAD 83
                - Code: **32145**
                - Codespace: **EPSG**
            - Web Mercator
                - Code: **3857**
                - Codespace: **EPSG**
- **Metadata**
    - **Scope**
        - Populate **Metadata Date** with the date of metadata creation
    - **Language**
        - Set **Metadata Language** (ex. English)
        - Confirm **Character Set** is populated with "utf8"
    - **Contact**
        - Populate all fields within **Contact Name** tab under **Metadata Contact**
        - Save your edits and close the metadata window
        - Congrats, your metadata is now available!

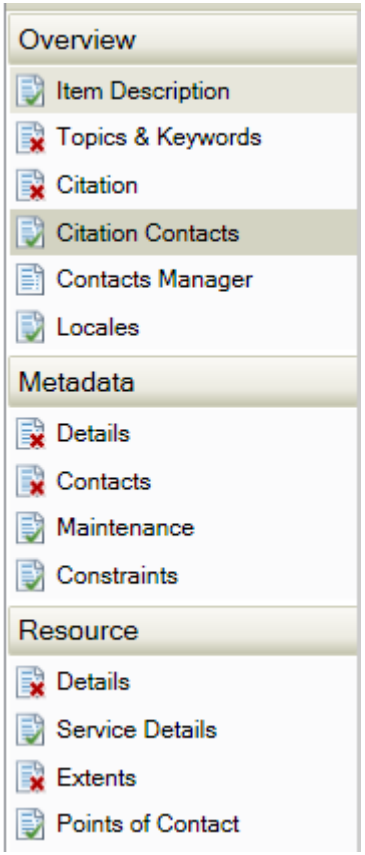
[9] Other codes may be obtained from http://spatialreference.org.

II. ArcGIS Desktop Metadata Tool

- Open ArcCatalog. From the **Customize** menu, select **ArcCatalog Options**, navigate to **Metadata** tab, and select **North American Profile of ISO19115 2003**. Press **OK**.
- Select item within the Catalog Tree. Within the main window, click on the **Description** tab.



- Click on **Edit**.
- The navigation sidebar should pop up, with **Item Description** displayed.
- Now we can populate the twelve core metadata items:
    - **Overview**
        - **Item Description**
            - Populate **Title** with the title of the data
            - Populate **Description (Abstract)** with a, relevant description
        - **Topics & Keywords**
            - Select one or more **Topic Categories** that applies to the data
        - **Citation**
            - Populate **Dates** with creation date, publication date, and revision date applicable)
    - **Metadata**
        - **Details**
            - Populate metadata **Language** (ex. English)
            - Confirm that **Character Set** is autopopulated with "utf8"
            - Populate **Date Stamp** with date of metadata creation
        - **Contacts**
            - Create and load a **Contact** representing metadata steward



- **Resource**
  - **Details**
    - Populate resource **Language** (ex. English)
    - Confirm that **Character Set** is autopopulated with "utf8"
  - **Extents**
    - Define the data extent by creating a **New Bounding Box** that contains the resource, with units in decimal degrees (this may be determined within ArcMap, by displaying the resource, changing display units to degrees through **Customize** menu, **ArcMap Options**, **Data View** tab)
  - **Spatial Reference**
    - Click **New Reference System**, select **Horizontal** dimension, and populate **Code** and **Codespace** (codes for two commonly used systems are presented below[10])
      - Vermont State Plane NAD 83
        - Code: **32145**
        - Codespace: **EPSG**
      - Web Mercator
        - Code: **3857**
        - Codespace: **EPSG**

- If not in shapefile format, export to shapefile before uploading .xml file to ArcGIS Online or sending to VCGI
- Navigate to target item within ArcGIS Online[11] and click on **Metadata** button within the Overview tab.
- Click **Open**
  - If you would like the current ArcGIS Online abstract and tags within the item to remain (replacing any abstract and tags within the metadata), check the box **Populate metadata with item details**; otherwise, ignore
  - Browse to your .xml file (one file within the collection of files comprising your shapefile), select, and upload
  - You may notice the abstract now displays some basic html formatting code within the metadata editor; this is not otherwise visible
  - Congrats, your metadata is now available!

[10] Other codes may be obtained from http://spatialreference.org.
[11] Ignore this step if submitting data directly to VCGI; instead, simply include .xml within your submission.

ATTACHMENT B – Portal Item Naming Convention

Please note that **Attachment C** addresses Portal item naming conventions for imagery and Lidar items. This general Portal item naming convention can be used for all other items. Examples can be found at the end of this section.

Goal: Data item titles that are consistent, discoverable, and descriptive.
Who should use this convention: All VT Open Geodata Portal data publishers. Mandatory for VCGI, voluntary for others.
Convention syntax:

1. Components that are delineated with angle brackets (< >) are populated from one option of an array of values.

2. Components that are delineated with square brackets ([ ]) have variable content.

3. Single spaces are represented by "_".

General naming convention:

VT_ <Type>_-_[Title]_[Date],_<Cached Status>_-_<Coordinate System>_[Geographic Area]

Element	Required/ Optional	Values	Description	Examples
VT	Required	• VT	Always included at the beginning of each item.	
<Type>	Required	• Data • Service • Offline • App	Indicates the type of portal item.	
[Title]	Required		The title should attempt to be concise but include one or more descriptive words that users are likely to search on. Titles should be consistent across similar items. Only use	

			acronyms when necessary (e.g. DEM). **See section below for recommendations for [Title] that are specific to imagery and lidar derivatives.**	
[Date]	Optional		Date should only be used when necessary to distinguish an item from other similar items or when it is relevant to the type of data (Census data fits both of those descriptions). Generally, one of the following formats will be used; YYYY represents a four-digit year, and MM represents a two-digit month: • YYYY • YYYY-YYYY • YYYYMM	2016 2016-2020 201605
<Cache Status>	Required if a service	• Cached • Not Cached		
<Coordinate System>	Required if a service or otherwise only if NOT State Plane	• WM • SP • UTM	Coordinate System represents the item's coordinate system and should only be used if item is a service or if a data item is in a coordinate system other than VT State Plane (i.e. imagery that is UTM). If the item is in a coordinate system other than VT State Plane, <Coordinate System> should be populated with the same pattern as above (_-_Coordinate System Name). Additional coordinate system and datum options will be added as needed.	
[Geographic Area]	Optional		Geographic Area should only be used if the item's overall extent is less than statewide. Use County or Municipal area, not cardinal directions (like northwest or southern). Name the county(ies) (e.g. Washington County), town(s), or city(ies) (largest geography that applies), named according	Chittenden and Franklin Counties

			to the Geographic Area Codes Standard, even if a complete county or town is not included in the extent. **The goal is not a precise description of the extent; the goal is inclusion of descriptors with which searches will likely be made.** Avoid combining county and town (e.g. Windham County and Rockingham). If only a small portion of one county is included, all towns involved should be listed instead, perhaps with a limit of no more than three or four towns. For areas that cannot be described by town or county extents (e.g. linear data), provide a description that is as concise as possible, unless the extent is referred to in the title (e.g. Mad River Byway).	Waterbury, Duxbury, and Bolton Burlington to White River Jct.

Examples:

- VT Data - E911 Town Boundaries
- VT Data - USGS NED DEM (30m)
- VT Data - Census Tract Boundaries and Statistics 2010
- VT Data - GMNF Management Areas 2006, Addison, Windsor, Rutland, Windham, and Bennington Counties
- VT Service - Statewide Parcel Boundaries, Not Cached - SP
- VT App - Vermont Heat Vulnerability Index

ATTACHMENT C – Imagery and Lidar Portal Item Naming Conventions

Please note that this convention addresses Portal item naming conventions for imagery and Lidar items. Since VCGI is currently the only publisher of these items within the Portal, it likely only applies to items published by VCGI. Examples can be found at the end of this section.

Goal: Data item titles that are consistent, discoverable, and descriptive.
Who should use this convention: All VT Open Geodata Portal data publishers. Mandatory for VCGI, voluntary for others.
Convention syntax:

4. Components that are delineated with angle brackets (< >) are populated from one option of an array of values.

5. Components that are delineated with square brackets ([ ]) have variable content.

6. Single spaces are represented by "_".

VT Imagery Program naming convention:

VT_ <Type>_-_<PROGRAM>_<Imagery Type>_[Resolution]_[Date],_<Cached Status>_-_<Coordinate System>_[Geographic Area]

Element	Required/ Optional	Values	Description	Example
VT	Required	• VT	Always included at the beginning of each item.	
<Type>	Required	• Data • Service • Offline • App	Indicates the type of portal item.	
<PROGRAM>	Required	• VTORTHO • NAIP • MISC	Indicates whether imagery originates from a program (like VT Orthos or NAIP), or does not, in which case MISC can be used.	

<Imagery Type>	Required	• Color Imagery • Color Infrared Imagery • Black & White Imagery • Best of Color Imagery • Best of Color Infrared Imagery • Best of Black & White Imagery	Indicates type of imagery.	
[Resolution]	Required	• (XXm) • (XX.Xm) • (mixed resolution)	When the item has a single resolution, should be populated with the resolution in an (XXm) or (XX.Xm) pattern, where XX represents a whole number resolution, XX.X represents a resolution that is not a whole number, and "m" represents "meters". When the item has a mixed resolution, [Resolution] should be populated with "(mixed resolution)".	(10m) (1.6m) (mixed resolution)
[Date]	Optional		Date should only be used when necessary to distinguish an item from other similar items or when it is relevant to the type of data (Census data fits both of those descriptions). Generally, one of the following	2016 2016-2020 201605

			formats will be used; YYYY represents a four-digit year, and MM represents a two-digit month: • YYYY • YYYY-YYYY • YYYYMM	
<Cache Status>	Required if a service	• Cached • Not Cached	Indicates whether the service is cached or not.	
<Coordinate System>	Required if a service or otherwise only if NOT State Plane	• WM • SP • UTM	Coordinate System represents the item's coordinate system and should only be used if item is a service or if a data item is in a coordinate system other than VT State Plane (i.e. imagery that is UTM). If the item is in a coordinate system other than VT State Plane, <Coordinate System> should be populated with the same pattern as above (_-_Coordinate System Name). Additional coordinate system and datum options will be added as needed.	
[Geographic Area]	Optional		Geographic Area should only be used if the item's overall extent is less than statewide. Use County or Municipal area, not cardinal directions. Name the county(ies) (e.g. Washington County), town(s), or city(ies) (largest geography that applies), named according to the Geographic Area Codes Standard, even if a complete county or town is not included in the extent. **The goal is not a precise description of the extent; the goal is inclusion of descriptors with which searches will likely be made.** Avoid combining county and town (e.g. Windham County and Rockingham). If only a small portion of one	Chittenden and Franklin Counties Waterbury, Duxbury, and Bolton Burlington to White River Jct.

			county is included, all towns involved should be listed instead, perhaps with a limit of no more than three or four towns. For areas that cannot be described by town or county extents (e.g. linear data), provide a description that is as concise as possible, unless the extent is referred to in the title(e.g. Mad River Byway).	

VT Lidar Program naming convention:

VT_ <Type>_-_Lidar_<Derivative>_[Resolution]_[Date], <Cached Status>_-_<Coordinate System>_[Geographic Area]

Element	Required/ Optional	Values	Description	Example
VT	Required	• VT	Always included at the beginning of each item.	
<Type>_-_	Required	• Data • Service • Offline • App	Indicates the type of portal item.	
Lidar	Required	• Lidar	Lidar will be included in all Lidar derivative titles.	
<Derivative>	Required	• DEM • DSM • nDSM • Hillshade • Aspect • Slope • xft Contours (where "x" represents the interval value) • Contours – multiple levels	Indicates the type of derivative.	
[Resolution]	Required	• (XXm) • (XX.Xm)	When the item has a single resolution, should be populated with the resolution in an (XXm) or	(10m) (1.6m)

		• (mixed resolution)	(XX.Xm) pattern, where XX represents a whole number resolution, XX.X represents a resolution that is not a whole number, and "m" represents "meters". When the item has a mixed resolution, [Resolution] should be populated with "(mixed resolution)".	(mixed resolution)
[Date],	Optional		Date should only be used when necessary to distinguish an item from other similar items or when it is relevant to the type of data (Census data fits both of those descriptions). Generally, one of the following formats will be used; YYYY represents a four-digit year, and MM represents a two-digit month: • YYYY • YYYY-YYYY • YYYYMM	2016 2016-2020 201605
<Cache Status>_ -_	Required if a service	• Cached • Not Cached	Indicates whether the service is cached or not.	
<Coordinate System>	Required if a service or otherwise only if NOT State Plane	• WM • SP • UTM	This represents the item's coordinate system and should only be used if item is a service or if a data item is in a coordinate system other than VT State Plane (i.e. imagery that is UTM). If the item is in a coordinate system other than VT State Plane, <Coordinate System> should be populated with the same pattern as above (_-_Coordinate System Name). Additional coordinate system and datum options will be added as needed.	
[Geographic Area]	Optional		Geographic Area should only be used if the item's overall extent is less than statewide. Use County or Municipal area, not cardinal directions. Name the county(ies) (e.g. Washington County), town(s), or	Chittenden and Franklin Counties

			city(ies) (largest geography that applies), named according to the Geographic Area Codes Standard, even if a complete county or town is not included in the extent. **The goal is not a precise description of the extent; the goal is inclusion of descriptors with which searches will likely be made.** Avoid combining county and town (e.g. Windham County and Rockingham). If only a small portion of one county is included, all towns involved should be listed instead, with a suggested limit of no more than three or four towns. For areas that cannot be described by town or county extents (e.g. linear data), provide a description that is as concise as possible, unless the extent is referred to in the title (e.g. Mad River Byway).	Waterbury, Duxbury, and Bolton Burlington to White River Jct.

Examples:

- VT Service - Lidar Hillshade (mixed resolution), Cached - WM
- VT Data - Lidar Hillshade (1.6m) 2012, Addison County
- VT Data - Lidar nDSM (1.6m) 2010, Orleans, Franklin, & Lamoille Counties
- VT Data - VTORTHO Black & White Imagery (0.5m) 1995, Addison, Franklin, Grand Isle, Lamoille, & Washington Counties
- VT Data - NAIP Color Infrared Imagery (1.0m) 2014
- VT Data - MISC Color Imagery (0.3m) 2008, UTM
- VT Service - VTORTHO Color Infrared Imagery (0.3m) 2016-2020, Not Cached - SP
- VT Service - MISC Best of Color Infrared Imagery (mixed resolution), Not Cached - SP