

ArcGIS Online (AGOL) for State of Minnesota Enterprise License Agreement (ELA) Participants

Introduction:

The following document describes high level governance structure for the use of ArcGIS Online for Organizations (AGOL) within the State of Minnesota’s Environmental Systems Research Institute (Esri) Enterprise License Agreement (ELA). Additional background and recommendations for use of the AGOL product and how it might be relevant to agencies is provided. The document was prepared by a workgroup of Enterprise License Agreement (ELA) participants tasked with evaluating AGOL¹.

AGOL is an online mapping platform upon which organizations can create interactive maps and applications-on-demand and share them within their agency, among organizations, or to the public. The report provides information on the following topics:

- A review of AGOL enterprise subscription management tools.
- Recommendations for and governance of the statewide storefront, including AGOL management tools, credit distribution, and purchasing structures.
- Descriptions of AGOL’s security capabilities, strategies, and limitations.
- Current efforts to create a collaborative storefront for all Minnesota ELA agencies and the potential value of individual AGOL subscriptions to individual agencies are described.
- Best practices for administering individual agency subscriptions.

The AGOL workgroup intends to continue testing individual subscriptions and tools. This document will be updated to reflect any new information.

Throughout this report, links to Esri documentation and materials related to ArcGIS Online are provided (indicated by the ➤ bullet). At the time of publication these links are active and relevant.

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¹ For listing of ELA and workgroup participating agencies, see Agency Involvement, section 5.1

- To contact MnGeo, email gisinfo.mngeo@state.mn.us

1 Role of the ArcGIS Online Workgroup

The role of the AGOL work group is to:

- Recommend the governance model for AGOL subscriptions for ELA participants and MnGeo.
- Share best practices for AGOL use and administration.
- Recommend defined standards and guidelines for publishing maps, services, and applications.

1.1 Members

MnGeo administers an Enterprise License Agreement (ELA) with Esri for GIS software for state government in Minnesota, including access to ArcGIS Online. Presently, 17 agencies are participating in the ELA. Several agencies involved in the ELA are also involved in the workgroup to recommend governance best practices for ArcGIS Online. The table below lists the agencies involved in the ELA, identifying those with ArcGIS Online workgroup involvement.

ELA Agency	ArcGIS Online Workgroup
MN.IT @ MN Geospatial Information Office	X
Department of Agriculture	X
Department of Water and Soil Resources	
Department of Health	X
Department of Human Services	
Department of Natural Resources	X
Pollution Control Agency	X
Department of Transportation	X
Department of Corrections	
Department of Education	
Department of Commerce	X
Department of Employment and Economic Development	X
Department of Administration	
Department of Public Safety	
Iron Range Resources & Rehabilitation Board	
Housing Finance Agency (not OET)	X
Metropolitan Council (not OET)	X

2 Overview of ArcGIS Online

2.1 Introduction

ArcGIS Online for Organizations (AGOL) is a cloud-based² product offering from Esri that offers a way to map, view and analyze geographic data using a web browser. It is promoted as a mapping platform upon which organizations can create interactive maps and applications-on-demand and share them with other organizations, groups, and/or the public.

AGOL does not contain all of the functionality that the complete ArcGIS desktop products provide, nor is it a replacement for desktop GIS. In fact, for advanced AGOL use, ArcGIS is often required to develop data and tools for use in AGOL.

AGOL provides a number of advantages not available in ArcGIS desktop. AGOL has the potential to reach and be used by a broad audience and be used by people with a wide range of GIS training and skills.

From Esri: ArcGIS Online (AGOL) is a collaborative, cloud-based platform that allows members of an organization to use, create, and share maps, apps, and data, with authoritative basemaps. It is intended to get maps and information to a wide audience using a variety of methods. Along with this are the tools to control who sees the information, how they see it and if the data can be edited. Think of it as a map-centric content management system.

- [What is ArcGIS? \(Esri Help\)](#)
- [Watch a short introductory video](#) (Esri)

2.2 AGOL, Minnesota and the Enterprise License Agreement

AGOL is unique to the current Esri suite of tools accessible through the ELA. It is a subscription-based, fee-for-service cloud-based set of tools that utilizes a fixed number of credits allocated under the ELA. Additional subscription credits are available at a cost to interested agencies.

Since the credit usage is a new concept under the ELA, it will be re-evaluated with future ELA's as more is learned about how they are used. Esri also continues to evaluate the credit usage policies and will most likely develop new policies in the future. Although users should monitor their credit usage, it should not prevent them from learning to use the full capabilities of AGOL.

The features³ of AGOL provide many benefits to the State of Minnesota Esri ELA participants:

² *Cloud-based* refers to a service model where data (including maps and applications) are maintained and stored across multiple servers online rather than a desktop based or local network environment.

³ See <http://www.esri.com/software/arcgis/arcgisonline/features> for a list of features currently supported.

- **Ease of Use.** Applying ready-to-use content such as base maps and a library of mapping templates, along with an agency’s own services, users can quickly produce maps and applications without a large amount of overhead or extensive programming experience.
- **Collaboration Tools.** The platform offers many mechanisms for collaboration within and between agencies, through the creation of groups and projects, which can be set up to contain private internal work or publicly viewable content. For example, recently the Minnesota Geospatial Office (MnGeo) spearheaded the Minnesota Telephone Exchange Boundary Review project, applying AGOL to create a multi-organizational editing tool that made it possible to dramatically streamline collaboration efforts among the project’s 48 private, non-profit, and state and federal government partners. (see details of this project at right).
- **Ability to Reach a Broad Audience.** Maps and data in AGOL can be embedded within existing web pages, stand-alone applications, or through social media outlets. The collaborative Minnesota Storefront (minnesota.maps.arcgis.com) has been designed to aggregate featured maps among individual organizations, and will, in the future, link to the Minnesota Geospatial Commons (<http://gisdata.mn.gov>).

Example: Minnesota’s Telephone Exchange Boundaries: AGOL Collaboration

The Minnesota Geospatial Information Office (MnGeo) recently completed a project to update the telephone exchange boundaries as requested by the Federal Communications Commission (FCC). A map was created to allow commenting directly by the companies in their own office just using a web browser. The owner and last edit date were tracked for each change. The map was only visible to companies, Minnesota Department of Commerce (COMM) and MnGeo. Once boundary changes were agreed upon, COMM would make the changes in the exchange boundary. MnGeo then reviewed the data and submitted the data to the FCC. By using AGOL it was possible to complete this project in a few months vs. a year using conventional methods. It would be possible for the companies to do field verification by using a smart device.

2.3 Relevant Components of AGOL

At its core, ArcGIS Online is comprised of maps, web mapping applications, and map services, yet also allows for other documents to be stored in this map-centric content management system. Other features within the AGOL system include the ability to embed maps into other websites, in depth geographic analysis, and connections to Microsoft Office.

Maps

An ArcGIS Online map is a basemap and a related set of geospatial data layers that users can interact with to perform a meaningful task. These maps are available to a wide audience and include multi-scale basemaps, operational layers targeted to a specific audience, and information pop-ups that allow users to drill into specific features they are interested in. The mapping tools support visualization, editing, analysis, and the ability to visualize change over time. Maps are the basis of web apps and can be viewed on a wide variety of clients, including mobile devices, desktop applications, and web browsers.

Web Applications

Web applications (apps) combine maps with text, multimedia, and interactive functions to inform, educate, entertain, and inspire people about a wide variety of topics. Apps are created by building and refining maps and groups in ArcGIS Online and incorporating them into templates. Esri templates, such as the story map templates, include builder functions that enable a user to create, modify, edit, and publish apps without needing specialized development skills.

Map Services

With AGOL, maps, data and web layers can be published on ArcGIS Online. By doing this, ArcGIS Online hosts the layers (as services) and scales to meet demand, hence these are often called hosted layers. Web, desktop, and mobile apps can access ArcGIS Online hosted layers from anywhere on the Internet if the layers are made public. Web layers can be published directly from ArcGIS Desktop without the need for ArcGIS Server.

- [About hosted features and tiles \(Esri Help\)](#)

Other Features

Including other documents in AGOL

In addition to map services, AGOL can host a wide variety of documents related to mapping projects, including ArcMap documents (.mxd), Microsoft Office documents, and code samples, to name a few. The variety of documents enables AGOL to act as a robust map-centric content management system.

- [What can you add to AGOL? \(Esri Help\)](#)

Embedding maps in websites

One way to share maps or group of maps and web apps is to include them in a web page such as a blog or an organization's website. ArcGIS Online provides the code needed and gives options for the layout and display.

- [Embed Map in Website \(Esri Help\)](#)

Esri Maps for MS Office

Making a dynamic map from Excel data is as easy as creating a graph or chart. The Esri Maps for Office tool allows for mapping locations and other geographic data. Add demographics and lifestyle data within Office for more context.

- [Esri Maps for Office \(Esri Help\)](#)

Perform Analysis

AGOL offers many tools to conduct analysis and measure geographic relationships. Within AGOL, summarize data, find locations, enrichment data, analyze patterns, use proximity tools, and manage data.

- [Perform Analysis \(Esri Help\)](#)

Governance Recommendations:

- 1) Agencies should not store data, content, or services in the Esri cloud for use in AGOL as Esri has not identified they can meet federal security requirements for their cloud hosting services. This requirement will be reviewed once Esri has achieved FISMA/FedRamp compliance.**
- 2) Agencies should not view or use AGOL as a primary content management system at this time or until security compliance has been met and the system has been reviewed and accepted as a desirable and viable content management solution for state use.**
- 3) All geospatial web maps, services, data, require that metadata be included and should be available via the Minnesota Geospatial Commons.**

3 State of Minnesota Deployment

The initial intent in the deployment of ArcGIS Online in the executive branch was to rely on a single site as a storefront for all maps. However, due to the current limits of the platform, particularly in allocating and managing credits, the workgroup has determined that there is a need for two levels of deployment for ArcGIS Online (AGOL) services: the Minnesota Storefront and individual agency subscriptions.

The following describes the two levels of deployment for ArcGIS Online (AGOL) services: the Minnesota Storefront and individual agency subscriptions.

3.1 The Minnesota Storefront

Minnesota.maps.arcgis.com is the primary means of publishing maps to the general public. From a communications perspective, it will be developed as part of the branding of the executive branch as the one place where residents of the state can discover mapped content published for their consumption. It serves as a front page for featured maps, including collaborative maps featuring data from different agencies (e.g., MPCA and MDA “What’s in My Neighborhood?”), as a home page to agencies without an individual subscription, and as the landing point for links from the Geospatial Commons.

As a front page for featured maps, agencies with new and interesting maps may post them to the Featured Maps group. These maps will be displayed on the front page scroll with good visibility to anyone who visits the Storefront. Thematic groups will be created for maps featuring data from multiple agencies such as “Groundwater” or “Invasive Species”. **Minnesota.maps.arcgis.com** will serve as a front page for featured maps, including collaborative maps featuring data from different agencies (e.g., MPCA and MDA “What’s in My Neighborhood?”), as a home page to agencies without an individual subscription, and as the landing point for links from the Geospatial Commons.

As a collaborative site for multiple agencies, AGOL requires a good deal of oversight and effort. MnGeo will manage the collaborative site and keep content fresh. Tools for managing credits are limited; it is

recommended a policy be developed specifying that publishers not use credits on the collaborative site. Agencies participating in AGOL that do not have their own AGOL site can maintain a group within the collaborative site and be responsible for posting and maintaining their own content. Consult your agency site administrator if credit usage is required for a project.

3.2 Individual agency sites

Agency subscriptions were made necessary by the impossibility of assigning credit limits to specific groups in the storefront. By allowing an agency to have its own site, MN.IT Central can perform the yearly assignment of credits and each site administrator can control and budget for their own credit consumption. Agencies will have the ability to manage their own subscription and credit usage, and will be responsible for group and user management within their site. MN.IT Central will be responsible for assigning each agency their portion of the 42,000 credits the state receives each year. Agencies may purchase additional credits through MN.IT Central (gisinfo.mngeo@state.mn.us).

Examples of Minnesota Public AGOL Sites:

[Minnesota Department of Transportation Maps](#)

[Minnesota Pollution Control Agency Maps](#)

Governance Recommendations (Continued):

- 4) Agencies should share all public maps on the shared AGOL site (minnesota.maps.arcgis.com).**
- 5) Agencies have the option of sharing maps solely within private groups for intra-agency use either on their agency site or the public site.**
- 6) Each agency subscription should have at least one administrator and one back-up administrator and assign publishing rights as necessary. The details management and use of individual agency site are left to each agency's discretion.**

4 Administration and Management of an AGOL Presence

ArcGIS Online is a cloud-based platform for sharing GIS content on the Internet. It is important for participating agencies to understand its security capabilities and appropriate strategies for sharing GIS data and information with the intended users.

4.1 Options for user and group management

AGOL User Permissions Levels

Rights management in AGOL is controlled by three permissions levels, or roles: ADMINISTRATOR, PUBLISHER and USER. AGOL subscription members can be assigned one of these three roles, allowing them to login and view non-public maps, applications and services. A fourth access level, ANONYMOUS, provides access to view any map, application or service that has been shared to the public.

- **Administrator.** An AGOL subscriber with Administrator rights can invite users, set permission levels, create, edit, and delete groups, users, maps, and applications. Administrators are responsible for managing the subscription's storefront and reviewing maps and applications that have been shared with the public.
- **Publisher.** Publishers have rights to create, edit and share maps, applications, and services. They can publish data to Esri's cloud and consume credits. Publishers are responsible for the publication and maintenance of content, the appropriate use of credits, the monitoring of cloud storage and adhering to AGOL guidelines and rules set forth by their organization. Publishers should be assigned to one or more groups within the organization.
- **User.** Users have the ability to login and view non-public and public maps, apps, and services.

Users can access the ArcGIS Online resource under three scenarios:

- They can establish an Esri account, then request access to any instance. Under this scenario, and with multiple instances at the state level, the user has a single Esri account, but needs to log into each site individually.
- An account can be created for them on each instance, which they are invited to join. In this scenario, the user has an account for each instance used.
- An instance can be linked to any Active Directory via ADFS –Active Directory Federated Security. This would allow the given instance to rely on the credentials in the AD to authenticate users and remove the need to manage them in AGOL. However, this option is not currently available to state agencies.
- **Custom Roles.** [Custom roles](#) provide administrators the ability to create unique roles for organizational members. To create a custom role, choose a role template, provide a name and description, and (optionally) check on or off specific privileges, such as creating groups, publishing features, and more. Custom roles add greater control and flexibility in assigning

privileges to members of your organization, and enable tailoring new roles that specifically fit your organization dynamics, workflows, and needs.

Limitations of the ArcGIS Online platform management

Using Active Directory is ideal, but beyond the scope of the workgroup. It should be investigated once the various state agencies AD have been consolidated by MNIT. This may still not be an acceptable option for certain participants and should not be considered a long term mandate.

Note that under the first two scenarios, service accounts do not appear to be feasible; all accounts require nominal logins and End User License Agreement (EULA) consent that appears to preclude the concept of an account created for an application. Whether that limitation also exists with ADFS is unknown. Service accounts should be possible; the workgroup recommends that a feature request be made to Esri allowing the administrator of an AGOL instance to create service accounts with no need for further EULA consent.

- **Anonymous.** This access of In the Security setting, there is a check box for 'Allow anonymous access to your organization'. This allows public access to AGOL.
- [Configure Roles \(Esri Help\)](#)

Group Management

A group is a collection of maps and apps usually related to a specific area of interest. Groups can be thematically organized or organized by business units within an organization. At a minimum, groups for featured maps and the map gallery should be created for each site. Only Administrators create groups and invite users.

- [What is a Group \(Esri Help\)](#)
- [Configure Groups \(Esri Help\)](#)
- [Invite Users \(Esri Help\)](#)

4.2 Roles and responsibilities

	MnGeo Administrator	Agency Administrator	Agency Publisher	User
Create Administrator	x	x		
Create Publishers and Users	x	x		
Create Groups	x	x		
Manage administrators	x			
Manage publishers and users		x		
Create maps and applications	x	x	X	
Monitor Credit Usage	x	x		
Manage featured maps and gallery		x		
Manage an agency group		x		
Publish to an agency group		x	x	
View non-public maps and applications	x	x	x	x

Governance Recommendations (Continued):

- 7) Each agency subscription should have at least one administrator and one back-up administrator.
- 8) Each agency can have multiple publishers. The agency administrator(s) will be responsible for setting up and managing publishers for their agency.
- 9) Under the current ELA (this may change in future ELA) each agency can have unlimited named users. Users are managed by the agency administrator.
- 10) Agency Administrators will be given publisher rights to shared State AGOL public site (all public maps, apps should be published there (minnesota.maps.arcgis.com)).
- 11) All content should be reviewed and approved by publisher and administrator or some other means prior to publishing. Agencies may set up work groups or committees to meet this need as well.

4.3 Access Control

ArcGIS Online offers three independent mechanisms for securing content and limiting access. Participating agencies should consider some combination of these three mechanisms to secure their ArcGIS Online instance in the manner most appropriate for their business needs.

- **Corporate Firewall.** GIS services hosted locally and within a corporate firewall can be published through ArcGIS Online. ArcGIS Online web maps using these services could be found and used by users outside the firewall; however, the dataset used to create the web map would not be accessible outside the firewall. This option should be considered when using ArcGIS Online for internal only business needs. However, web maps using internal data sources are limited to certain clients including SharePoint and Office.
- **User and group access controls.** User and group management, see section 4.1, should be included as part of the toolkit for controlling access and securing information published through ArcGIS Online. The product roadmap for ArcGIS Online includes enterprise identity management integration through Security Assertion Markup Language (SAML), an open standard data format for exchanging authentication and authorization data between parties. This can enable single-on with users' existing enterprise logins.
- **Encryption.** User authentication when required always uses HTTPS. In addition, administrators have the option of enabling SSL for Services, Web Maps and Web Applications. However, if SSL is turned on, all services that feed the maps/apps need SSL. For Esri hosted ArcGIS services, this may not always be available. If available this presents opportunities for fully using ArcGIS Online in a secure, multi-agency environment.

➤ [Configure Security Settings \(Esri Help\)](#)

4.4 Subscription Support

Each agency in the ELA can obtain an individual agency subscription (by contacting gisinfo.mngeo@state.mn.us).

The workgroup recommends that the individual subscriptions should not be mandatory and that agencies would be able to opt out and stay a part of the state-wide site.

The amount of staff time needed for supporting and administering an AGOL subscription will vary depending on the number of publishers in the organization and the specific AGOL use policies adopted by the agency. Multiple administrators may be needed to cover larger agencies. This strategy is in use by the Minnesota Pollution Control Agency (MPCA). Each agency administrator will be responsible for determining that all AGOL publishers are adequately proficient in the use of ArcGIS tools.

4.5 Cloud Storage vs. Internal Storage

Cloud Storage refers to storage of data, services, or content on remote ArcGIS Online servers. Web Maps and Web Mapping Applications are stored in the Esri cloud. Internal Storage refers to data stored on servers owned by the State of Minnesota, irrespective of the agency where that data is actively maintained. Cloud Storage incurs two different costs: first in the form of a periodic charge for space used, and second in the form of a bandwidth charge, as previously described.

Currently, standard practice is to store data internally and to make it available to ArcGIS Online via ArcGIS for Server software. A GIS system administrator may be needed to help serve the information as image or feature services.

In very general terms an ArcMap map document (.mxd) is developed to symbolize the data, set scale dependences, etc. Maps and data are then moved to a web server and used to create services. Services can be added to a Web Map in AGOL by using the Add button and choosing 'Add Layer from Web'. Esri Cloud storage does provide similar options as the internal services of which AGOL publishers and administrators can take advantage. Shapefiles can be uploaded and services created in AGOL.

In its current form, cloud storage is strongly discouraged due to cost and information security issues. Until Esri has achieved FISMA certification (see details below), cloud storage should be avoided unless programmatic requirements make it necessary. In that event, compliance with agency data practices is still expected, and approval of the site administrator may be required prior to deployment.

About FISMA: [FISMA](#) is the **Federal Information Security Management Act of 2002**. It was passed as Title III of the E-Government Act (Public Law 107-347) in December 2002. FISMA requires each federal agency to develop, document, and implement an agency-wide program to provide information security for the information and information systems that support the operations and assets of the agency, including those provided or managed by another agency, contractor, or other source.

The National Institute of Standards and Technology (NIST) develops IT security standards and guidelines for FISMA. FISMA compliance is mandatory for all federal agencies and any contractors or other organizations supporting a federal agency IT system.

Minnesota is also asking for FISMA compliance for vendors providing cloud services. As mentioned above, until Esri can ensure FISMA compliance all agencies are asked to refrain from storing data in the ArcGIS Online environment. According to Esri's ArcGIS Online Security Overview, "Compliance with government FISMA security certification is expected in 2014".

Governance Recommendations (Continued):

- 12) Until Esri can meet security requirements (FISMA/FedRamp) agencies will not publish data in the cloud, rather they should publish data via services from behind agency firewalls. All data should be reviewed prior to publishing**

4.6 Data Publishing

There is a significant amount of data offered publically by many organizations through the AGOL platform. ArcGIS Online services and applications can be created with data published locally by the organization via a web map services, data publically hosted by a third-party, or public data published to Esri and hosted remotely.

For agencies with access to ArcGIS Server or other GIS Server infrastructure, it is recommended that data be hosted locally and published as a web map service. Locally hosted data allows more direct control over the security of the data than the remotely hosted model.

If obtaining or using public data (not state of MN data) published by a third party hosting environment, agencies should consult with the third party for information on their data hosting practices and use of their data in state rendered maps.

While Esri does offer hosting of data. Using the Esri hosting services is not allowed at this time. Data hosted by Esri exists within a distributed multi-tenant environment. The publishing agency retains ownership of published data. Published data can be downloaded in either its original published form or with changes made while in service. Data can also be deleted leaving nothing in the hosting environment.

- [About Hosted Features and Tiles \(Esri Help\)](#)

Governance Recommendations (Continued):

- 13) Until Esri can meet security requirements (FISMA/FedRamp) agencies should not publish data in the cloud, rather they should publish data via services from behind agency firewalls via web map services. There may be exceptions to this that need to be considered. All data should be reviewed prior to publishing**

4.7 Credit Management

In its current form, ArcGIS Online provides limited tools for management of users and credits that have far reaching consequences described below. It is the hope of the workgroup that these limitations will gradually disappear as the tool matures.

“Service credits are the currency for ArcGIS Online and are used in exchange for any of the hosted services an ArcGIS Online subscriber uses.” - Esri

Certain functions consume credits, for example spatial analysis or geocoding. Hosting data and services also consume credits.

➤ [Service Credit Overview \(Esri Help\)](#).

An annual allocation of credits is assigned to each AGOL subscription under the state’s current ELA. The current Esri ELA includes 42,000 credits as part of a negotiated package, and are part of the agency cost to the ELA. Credit assignments cannot be further divided into separate pools within a subscription. Therefore, if a user is granted rights by the administrator of the site that allow credit consuming operations, all such credits are drawn from the single pool – the user’s agency subscription.

This situation presents a risk, dubbed here “the rogue user”. It is possible for a single user, out of ignorance or malice, to consume the entire balance of credits. In so doing, he/she would block all subsequent credit consuming operations. What’s more, a user could potentially consume an amount exceeding the budget allotted to his line of business. This could lead to accidental budget overruns.

To control that risk, each agency has been granted its own subscription. This removes the risk that a user at one agency exceeds that agency’s allotment and consumes credits from another. However, the problem persists at the agency level insofar as no compartments exist to separate credits allotted to independent divisions or programs.

The workgroup recommends that improved credit management tools be requested from Esri. Such tools should enable allotment of credits to specific groups or users (setting hard limits on single operation credit usage or daily usage) and transfer of credits.

MnGeo will oversee overall credit management and provide an agencies allocation of credits to their individual subscription. All other credits will be shared on the collaborative site (minnesota.maps.arcgis.com). Additional credits can be purchased through MnGeo (gisinfo.mngeo@state.mn.us) at a rate of 9.7 cents per credit.

It is up to each agency to manage credits allotted to their agency subscription.

- Most agencies intend to not use credits unless alternative solutions are not available. (A balance of 0 credits would disable functionality that consumes credits.)
- Additional credit can be purchased through MnGeo at a cost of 9.7 cents per credit. Credits must be purchased in bundles of 1000.

5 Content Management

5.1 Guidelines for maps and applications published to AGOL

Maps and applications that do not meet these guidelines should not be shared with the public.

Representation on Site: Title and Thumbnails

- Titles are short, easily distinguished, and accurately described.
 - Topic, geography, date, E.g., “Lake Water Quality Assessments, Minnesota, 2010”
 - Possibly originator or other information (if needed to distinguish datasets).
 - As plain English as possible (e.g., “air photo” instead of “digital orthophotography quadrangles”).
 - Enough information to distinguish between similar datasets (that exist or are anticipated).
- A representative photo or screenshot is inserted as a replacement for the default thumbnail. Images should be 200px by 133px, PNG, GIF, or JPEG.

Metadata Guidelines

- Summary, Description and Access and Use Constraints information should be filled out effectively.
 - The first sentence within Description should contain the main point.
 - Spell out acronyms the first time used.
- Add any other important points, primarily from “Abstract” and “Purpose”. What is most important for a user to know?
- Provide contact of person who posted the data (e.g., NormMnGeo09)
- Check with your agency to find out the policy on disclaimers.
- If using MnGeo data, include the [Distribution Liability Statement](#).
- Tags should be used:
 - ISO 19115 category as first one (as ISO spells it)
- Keywords should be used when appropriate, theme and place.
- See: [MetadataQuickGuide.pdf](#) (pp. 8-9)
- Other key metadata items should be included:
 - originator(s),
 - currentness of the data, and
 - accuracy.
- Link to full (or additional) metadata or webpage if available.

Map and Application Content

- When using ESRI base maps, data should be presented in a Web Mercator Projection (WGS_1984_Web_Mercator_Auxiliary_Sphere). This will prevent on-the-fly re-projection of data, slowing down the map display.
- Set scale dependency for all layers, symbology and labeling.
- Data are preprocessed for publishing to improve performance. This includes generalizing polygons and line work as appropriate and creating feature classes for targeted purposes (e.g. Small, medium and large scale lake files).
- If there are many unused fields in the feature class, they should be removed.
- Feature class and field names are defined appropriately based on expected use.
 - Use descriptive names when names will be displayed in an application.

- Names should only contain the letters A-Z and numerals 0-9 as they are exposed through REST services.

Final Review Prior to Publishing

- Conduct a review of map properties and permissions:
 - Shared With – Who sees the map by permission level or group?
 - Tags – How do you find this map with a search?
 - Credits – Source of the information.
 - Deletion Protection – Enable or disable.
 - Save As – Enable to disable others to save a copy of this map.

Version Control/Change Management

- New versions of existing AGOL maps or applications are published with a “_V#” suffix. Maps should be versioned when changes are likely to break applications using the map. (e.g. field names changed, feature classes removed, service functionality altered (ArcGIS for Server)). Old versions can be maintained for backwards compatibility. Set scale dependency for all layers, symbology and labeling.

6 Enterprise Management

As with the Esri ELA, MnGeo will administer the overall ArcGIS Online subscription. The ELA maintains the state level ArcGIS Online subscription (Minnesota.maps.arcgis.com), and is the facilitator for agencies with individual subscriptions. As part of the overall administration, MnGeo will also manage credit distribution and purchasing.

7 Unresolved Issues

Note: This is an immature product and is under constant development so each revision has a significant number of updates.

7.1 Active Directory (AD)

Using Active Directory is ideal, but beyond the scope of the workgroup. It should be investigated once the various state agencies AD have been consolidated by MNIT. This may still not be an acceptable option for certain participants and should not be considered a long term mandate. AGOL supports active directory but it is not recommended for use it at this time by Mn.IT Central.

8 Connection to Geospatial Commons

The Minnesota Geospatial Commons, currently under development, will be a site where one can search for, evaluate and access data, maps, services and applications, share resources and collaborate with peers.

The current vision for the Commons is a federated approach to data storage; most data would reside on servers maintained by the creator, but the Commons will provide options to serve agencies that do not have the ability to serve the data.

There is an opportunity to integrate the functionality of AGOL into the Commons. For a given dataset, in addition to links to downloadable data and map services, there should be links to AGOL maps. Further work will be needed to evaluate how AGOL can fill these roles, especially the mapping and application components.