DATA PUBLICATION AND UPDATE MANUAL

BEST PRACTICES, REQUIREMENTS & PROCEDURES

LOJIC

LOJIC Data Publication and Update Manual

CONTENTS

SCOPE

This document seeks to clarify terminology, standards, requirements and workflows as it relates to publishing, sharing and maintaining data in LOJIC's Enterprise Geodatabase.

ASSUMPTIONS

It is assumed that data published in LOJIC's enterprise geodatabase represents the de facto and official record of a given dataset for any given data authority since the data is published and carries all relevant caveats and policies as dictated by LOJIC data sharing agreements and policies.

CONTACT INFORMATION

If this guidance does not answer specific questions or does not adequately clarify a given procedure or requirement, contact a representative of the data team.

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DEFINITIONS

The following table provides definitions to various references throughout this document.

Data authority	The agency or division for which a piece of data presents a business solution. As such this agency generally manages data updates, sets data use policies and administers metadata for the given data.
Data resource manager	The individual(s) from a data authority that are involved with the technical handling, creation and maintenance of a given data. Data editors that update versioned data in the enterprise geodatabase for a given data authority fall into this category.
ETL	Extract, Transform, Load. The process of extracting data from source systems and bringing it into the data warehouse is commonly called ETL, which stands for extraction, transformation, and loading. Note that ETL refers to a broad process, and not three well-defined steps.
Enterprise geodatabase (EGDB)	Formerly known as ArcSDE, this is the publication database built on ArcGIS technology that serves as the central repository for consortium data, allows a centralized access point for desktop users, allows for publication of data to services via ArcGIS Server and provides the critical functionality for multi-version editing.
Data publication	Data publication is the standards and processes by which new data is introduced to LOJIC's enterprise geodatabase for consortium use through services, applications, analysis and general use through various ArcGIS clients. Data publication will be treated as a project as it may include consultation by LOJIC data personnel, planning and/or testing, and documentation which often requires information regarding business purpose and similar clarification.
Data updates	Data updates are processes that maintain data by conducting changes to data that impact record number, attribution/field values or geometry to ensure the most current state of a given feature or table. In this, no changes occur to relationships, rulesets or core architecture of the data. Data updates will be treated as routine operations.
Data revision (modification)	Unlike data updates, data revisions include fundamental architectural changes to the data (adding, deleting or modifying fields definitions), fundamental geometry changes such as exploding or creating multipart features or changing geometry type or the addition of more complex database functionality to include addition of networks, relationships, topology, domains, subtypes, etc. Most often data revision results from changes in the data's business purpose. Because this involves a change in the data's scope and utility and because it may impact services that are dependent on the data, these requests are treated as projects.
Data architecture	Data architecture refers to the composite attributes of a given DB object that defines its physical table or geometry properties. How a request impacts this component often distinguishes data updates from data revision.

There are several common issues encountered with data submissions for publication, update or modification. It is always good practice to conduct a final, thorough review of the data and metadata before submitting data for any of these key reasons.

Some Best Practices and Considerations:

- Use feature classes and file geodatabases.

  - Avoid shapefiles.

- Build in a practice of reviewing and maintaining metadata when processing data updates, but especially when first publishing or revising data.

  - Review LOJIC's metadata standard.

  - Include project manager in this process.

  - Keep points of contact up to date during periods of personnel turnover.

  - Ensure field definitions are maintained as data goes through data architecture revision.

- Adopt workflows and procedures to ensure data geometry and architecture consistency.

  - When updating data that is published in LOJIC's enterprise geodatabase, start with an export of the officially published data from LOJIC's enterprise geodatabase.

- Adopt QA/QC practices that ensure data submissions are consistent with defined data architecture.

  - Be sure that the data is not only the proper geometry type, but that it consistent with the published format (e.g. multipoint vs. point)

  - Be sure that unnecessary processing artifacts and fields are removed. (e.g. multiple unique identifiers like FID in a feature class, multiple OBJECTIDs, or fields added by geoprocessing tools)

  - Be sure that fields are not truncated from processing shapefiles.

- Maintain a local copy of your metadata

FEATURE CLASSES ARE THE PREFERRED DATA SHARING DATA TYPE FOR DATA PUBLICATION AND MAINTENANCE.

 Often, shapefiles are submitted for data updates with truncated field names. Most often this is a result of data being exported from a source database (most often LOJIC's production enterprise geodatabase) and converted to shapefile for processing updates. Any field longer than 10 characters will be truncated in shapefile format.

 While shapefile format is a well-known, open and accessible format for creating, maintaining and exchanging geographic data, they are limited to dBase 4 format (DB4) constraints. Feature classes contained in file geodatabases present nearly no limitations and a host of enhancements.   They transition almost seamlessly into an enterprise geodatabase (EGDB) as spatial data is stored in feature class format within the EGDB.   As a best

practice, LOJIC recommends that data be developed, maintained and updated through feature classes contained in file geodatabases as it allows smoother migration of data into   LOJIC's production environment.

 The table below compares select attributes for each data format. It makes evident the differences and discrepancies that can and often result from exporting feature classes from geodatabases to shapefile format and vice versa.

Property	Shapefile	Feature class
Size	2 GB	1 TB
Number of fields	255	65,534
Table/feature name length		160 characters
Field name length	10 characters	64 characters
Topology support	No	Yes
Domain/subtype support	No	Yes
Acknowledgement of NULL values in ArcGIS*	No	Yes
Storage of date and time in same field	No	Yes
Text field length maximum	255	2,147,483,647

 *Particularly, this can adversely impact quantitative analysis as ArcGIS will treat Null numeric values in a shapefile as the value zero.

METADATA MUST BE UPDATED AND COMPLETE WITH EACH DATA SUBMISSION.

 A common and critical problem encountered with data submissions is incomplete metadata. LOJIC has a comprehensive guide for metadata authoring and processing ('LOJIC Metadata Standards and Procedures'). This guide provides the standard and criteria, by which LOJIC will review, accept or decline completed metadata before data publication or revision is completed.

 Most typically, metadata issues stem from cases where data modifications were completed, often addition of fields, and corresponding field definitions and descriptions were not added. Another common metadata discrepancy results from data updates requested by an agency where turn over has changed the proper citation or resource points of contact and the requestor has not amended the metadata to properly reflect the changes. Either of these cases would result in required changes by the data author before publication/update/modification.

For more information as it relates to LOJIC's metadata standard, please refer to the document 'LOJIC Metadata Standards and Procedures.'

Data resource managers are strongly encouraged to maintain their own onsite copies of metadata. Some strategies for this are discussed in the 'Metadata' section discussed later in this document.

DATA GEOMETRY OF THE SUBMISSION MUST BE CONSISTENT WITH DEFINED OR ESTABLISHED GEOMETRY.

When publishing data, submissions must adhere to the defined geometry type described in a project scope and data architecture specifications. When updating data, submissions must match the architecture of existing published data. The most common discrepancy of this type is the case of submission of a multipoint feature class for updates for data that is simply point feature type. This may result from directly pulling from a database where the data is maintained as multipoint or it may result from various processing. The bottom line is that the data must represent the defined or established typology in LOJIC's production environment. This is necessary to maintain continuity of operations to services that may be dependent on the given data or to simply fulfill business requirements that define the data's utility. Ensuring that the data meets specification prevents any third party processing by LOJIC and therefore prevents error and minimized turn around on publication or updates.

If the required modification or revision is to support expanding business requirements, the new or adjusted geometry can be submitted after proper impact study, planning, process adjustments.

DATA SUBMISSIONS MUST BE CONSISTENT WITH DEFINED OR ESTABLISHED ARCHITECTURE.

When publishing data, submissions must adhere to the defined data table architecture described in a project scope or data architecture specifications. When updating data, submissions must match the architecture of existing published data. Common discrepancies include changes to field names resulting from users electing to change names to something deemed more appropriate or from truncation due to utilization of file formats like shapefile. Even more common are the existence of additional fields which are artifacts from various processes.   As data is exposed to end users via applications and services, table architecture becomes much more rigid as fields generally play a part in queries, filtering or symbology. It is necessary to maintain continuity of operations to services that may be dependent on the given data or to simply fulfill business requirements that define the data's utility. Ensuring that the data meets specification prevents any third party processing by LOJIC and therefore prevents error and minimized turn around during publication or updates.

Generally, adding fields will not introduce any conflict with existing applications or services dependent on a given piece of data. However, changes to field properties such as name or field length or removing fields presents conflicts and requires evaluation of impacts before changes can be introduced. Once impacts have been evaluated, changes to coding will be charted and a plan will be devised to accommodate the field changes for the purposes of changing/expanding business requirements.

If the data requires modification or revision to support expanding business requirements, the new or adjusted fields can be submitted after an impact study has been conducted and after clearance has been given to proceed. This is not intended to be a prohibitive measure, but rather to account for potential adverse impacts that may require a strategy for implementation.

DATA IS EXPECTED TO BE TOPOLOGICALLY CORRECT WHEN SUBMITTED.

LOJIC data team assumes that submissions with geometry updates have been thoroughly reviewed and validated. Submissions should be free of sliver polygons, gaps, null geometries and should maintain coincident boundaries to neighboring polygons within ia given feature class or with other features classes that have a topological relationship (ie. Parcels and county boundaries) if needed. Data team does not conduct geometry topology checks or create topology for every submission. In cases where topology relationships are required for versioned editing within the EGDB, LOJIC Data Team will consult, assist and setup topology rules and relationships; however, topology errors discovered through topology validation will be the responsibility of the data resource manager.

DATA IS ASSUMED TO BE COMPLETE.

For data where LOJIC is not the data authority, updates are not and cannot be thoroughly reviewed to identify missing records or data beyond cursory review. Cursory review primarily accounts for data architecture. If data is corrupt or missing and has been submitted, it will be published. It is vital for the data authority to thoroughly check the data before and after publication to ensure data integrity. If not, alert the data team immediately and send a corrected version.

NEW DATA PUBLICATION

Sometimes agencies have new data that must be published to support new or augment existing business needs or requirements. These data are often published to the LOJIC enterprise geodatabase to in turn be made available as a service through ArcGIS Server, which would then be accessible by consortium partners for building out web maps and services. The data would also be available for intra-consortium end users via Citrix or local desktops installations.

Data must have an identified data resource manager in order to be published.

Publication of new data is triggered and preceded by the following requirements:

1. To insure proper prioritization, new data publication should be proposed within the steering committee, especially if it supports proposed services or requires specialized data automation or handling.

2. Since this generally entails a finite project, it is assumed that the given request will be placed on a project list within a given prioritized order by the steering committee.

3. As part of the request, the data authority shall furnish written description of the business purpose, data specifications, access constraints and data authority point of contact (POC). This will further be incorporated into the published data's metadata.

REQUESTS FOR NEW DATA PUBLICATION:

New data can be published upon receipt of a formal request for data publication from the data authority, which will include the following information:

- **Business case**

- **Architectural definitions**

  - Geometry

  - Data schema/architecture (field names, field typology, field lengths/precisions)

  - Data quality controls and attribute constraints:

    - Attribute domains

    - Relevant subtypes

- **Documentation/metadata**

  - This process should begin with the project proposal

- **Relationships or special functionality**

  - Join

  - Relationship

  - Topology

  - Geometric network

  - Linear referencing

- **Update process**

  - Involvement of third party systems (ETL)

  - FTP data retrieval (e.g. LG&E data)

  - Versioned editing within LOJIC's enterprise geodatabase.

DATA UPDATES

Data already published to LOJIC's production enterprise can be updated in a variety of ways, largely based on frequency of update, source of data and available manpower to conduct the operation.

AUTOMATION (ETL)

In this scenario, typically tabular data needs to be converted to point feature class and is either updated on a wholesale scale or updated by continuously appending new rows to an existing table or feature class. Generally, this data would be defined by tables or views that exist within a third party database. This data must have a geolocation component. Common geolocation components include:

- latitude/longitude

- northing/easting

- address/intersection

- linear reference

Another less frequent scenario would include frequent update/regeneration of lookup tables used in a join or relationship with a feature class or geodatabase table.

The following criteria define the nature of automation for data updates.

Frequency	generally monthly, weekly, daily or some variation of these
Type of change	Generally records, attribution and point geometry. (Point geometry as a result of addition or deletion of records from source table.)
Data source	Generally derived from third party RDBMS. Source data table is configured as view or derivative table in host database. This view or derivative table will ideally feature the final desired architecture defined for feature class.
Workflow	Automation software/script written by LOJIC (applications or data team) to populate the data in accordance with defined data architecture specification to the correct database schema.
Metadata	Metadata will be created and maintained by data authority in accordance with the LOJIC specification.

This type of update workflow requires no formal request to LOJIC staff for data updates.

PERIODIC DATA SWAPS

In this scenario, changes typically involve less frequent editing frequency and include addition, deletion or amendment to data records, attribution or geometry. Often, these are feature classes that involve some sort polyline or polygon feature class where changes to geometry are common.

The following criteria define the nature of periodic data swaps for data updates.

Frequency	Generally weekly, monthly, biannually, or ad hoc.
Type of change	Records, attribution and/or geometry
Data source	Generally data extracted from LOJIC's production database under data authority's purview or data locally managed in file geodatabase or shapefile format by data authority. It is best practice to extract the data from LOJIC's published data to maintain the data standard and to avoid multiple 'official' datasets.
Workflow	1. Resource manager/editor exports published data from lojicora1 into file geodatabase. 2. Data edits applied to export by resource manager. 3. Data resubmitted to LOJIC through formal data update request. Authority reports types of edits: records, attribution, geometry or metadata.
Metadata	Metadata will be created and maintained by data authority in accordance with the LOJIC specification.

This type of update workflow requires a formal request to LOJIC Data staff for data updates.

REQUESTS FOR DATA UPDATES

In the case of the update solution to conduct periodic data swaps, a formal request will need to be made through direct contact with the LOJIC Data team via phone or email.

The components of the data update request should adhere to the following guidance. The data will not be processed without this essential information.

PREFERENCES:

Feature classes in file geodatabases are the preferred delivery format as they retain architecture well. Because shape files have different architectural convention, namely DBF4 standards, they can and do alter the data from its published state making this an undesirable delivery format. Often this translates to truncated field names, or other type of truncation making.

Utilization of LOJIC's shared network folder (J:\common) is the optimal method of delivery. Email or submission to help desk can be done, but this is a less desirable option.

REQUIREMENTS:

1. The proper name of the feature class or data table to be updated (e.g. jeflib.blkwstpu (for 'bulk waste pickup'))

2. The location where the data can be retrieved for processing and publication.

   - The preferred delivery method for updated data is in the form of a feature class delivered in a file geodatabase. Ideally this file geodatabase would be placed in the LOJIC shared network location, J:\common.

     Multiple feature class can be updated and submitted via the same file geodatabase. Some specifications follow:

     - Feature class name should be <schema>_<feature class> (e.g. 'jeflib_blkwstpu')

     - File geodatabase should be named with the following prefix

       'LOJICDataUpdate_<YYYYMMDD>_'

     - A shapefile can be submitted, but only if absolutely necessary.   Some general guidelines follow:

       - Prefix 'LOJICDataUpdate_<YYYYMMDD>_'

       - All components of the shapefile (shp, shx, dbf, etc.) must be together in a subdirectory in J:\common. The subdirectory should be named with the convention described above.

   - Less preferred, but if necessary, the updated data can be provided in a file geodatabase which is zipped to a compressed folder and attached to the request for update email or help desk ticket. Some general guidelines follow:

     - Generally, data around 5 MB (+/-) can be submitted via email, although this is not preferred.

     - File geodatabase should be named with the following prefix

       'LOJICDataUpdate_<YYYYMMDD>_'

   - A shapefile can be submitted, but only if absolutely necessary.   Some general guidelines follow:

     - 'LOJICDataUpdate_<YYYYMMDD>_'

     - All components of the shapefile (shp, shx, dbf, etc.) must be zipped together in a compressed file.

1

2

3. Nature of the update (What changed generally?). Any single aspect or combinations of the following should be described in the request.

- Attribution

- Geometry

- Metadata changes

4. Reported number of records for updated feature class or table.*

*Once loaded into the EGDB, this reported number can be used for cursory verification that all data loaded correctly.

DATA ARCHITECTURE MODIFICATIONS:

It is not uncommon for data authorities to require changes to their respective data to address changing business needs. This may include changes to table architecture like addition, modification or deletion of fields or additional functionality like implementation of or modification of subtypes and domains. There are numerable modifications that can be accommodated within the EGDB. Since datasets in the EGDB can be served out to the web or accessed by desktop clients, LOJIC must remain sensitive to the use cases for data and its respective architecture and functionality in applications and services.

Rule of thumb:

A majority of changes have typically involved adjustment to a data's existing architecture, and more particularly its field schema. In this, some conventional wisdom can be applied. Addition of fields can generally be accomplished with little to no impact on services or applications, therefore making this an easy modification to implement. Field deletions, field name changes or field specification alterations (type, length, precision, etc.) require checks and inventorying of services or applications that may be affected if they have a dependency on the existing fields in question.

REQUESTS FOR DATA MODIFICATION:

For requests for data modification, a formal request will need to be made through direct contact with the LOJIC Data team via phone or email.

The components of the data update request must include the following information. The data will not be processed without this essential information.

- **Business case**

- **Architectural modifications/definitions (if relevant)**

  - Geometry

  - Data schema/architecture (field names, field typology, field lengths/precisions)

  - Field mapping old field definition to new field definition if modifying existing fields

  - Data quality controls and attribute constraints:

- Domain modifications

- Subtype modifications

- **Documentation/metadata**

- **Modification description for relationships or special functionality (if relevant)**

    ○ Join

    ○ Relationship

    ○ Topology

    ○ Geometric network

    ○ Linear referencing

- **Update process implications**

VERSIONED EDITING

In this scenario, the data authority requires the realization of data changes within a 24 hour period and usually has an in-house workforce with focused responsibilities for maintaining the data. In this, the data is published and edited within the confines of the enterprise geodatabase through versioned editing workflows.

Since versioned editing introduces greater resource requirements, additional ongoing database access and activity, enhanced data privileges, dedicated editing workflows and multi-agency management (namely, LOJIC Data Team in coordination with a data authority's data resource managers) special consideration should be given to determining if a dataset should or should not be versioned to better manage resources and performance of the EGDB.

Rule of thumb:

The decision to register data as versioned must meet both of the following criteria:

   ○ The data is updated with great frequency whereby the data layer(s) is/are amended daily or at least once a week. If a piece of data requires an instant result in order to accommodate a critical service, the consideration for versioning can continue, but will require discussion and evaluation to weigh any solutions and resource requirements. This latter condition will be scrutinized seriously, as wide performance of the database is the premium.

   ○ The data will be maintained by multiple editors (resource managers) coincidentally or longitudinally. If versioning is deemed necessary to the second condition above, this condition may be waved, given urgency or elevated expectation.

This type of update workflow requires no formal request to LOJIC staff for data updates.

The following criteria generally define the nature of versioned editing for data updates.

Frequency	Generally daily, multiple times per week or once per week.
Type of change	Records, attribution and/or geometry
Data source	The data hosted in LOJIC's production EGDB is a living de facto dataset
Workflow	Data is updated as frequently as daily and infrequently as once per week by devoted resource managers for a given data authority. These changes are posted and reconciled each night by resource managers. Through automation developed by the LOJIC Database Administrator, this data is reconciled and posted to its business table daily. For more information on Versioned Workflow see section below entitled 'Versioned Workflow.'
Metadata	Metadata will be created and maintained by data authority in accordance with the LOJIC specification.

TOPOLOGY

- In the event that a data authority requires topology to be implemented on data versioned for editing within the enterprise geodatabase, the LOJIC Data Team will assist in defining proper topologic rules and setting up topology rulesets in accordance with the data authority's data requirements.

- Data resource authorities will be responsible for defining, validating, amending and rectifying topology when editing versioned data in the Enterprise Geodatabase for regular or periodic data updates. LOJIC will assist in defining appropriate topology rules.

QUALITY ASSURANCE & CONTROL

In any case, quality assurance and control lies primarily in the hands of the data resource manager.

LOJIC maintains a policy that each data update or modification that is pushed through periodic data swaps concludes with a confirmation email to the requesting data resource manager that the data has been published to LOJIC's production EGDB and a request for final review by the data authority. This final step is of great importance as it ensures the newly published data is the authoritative data and passes the data author's quality standard. If the published data is incorrect, inform LOJIC data team immediately and send corrected data.

For data updates, the data will be reviewed at a cursory level by LOJIC staff for data architecture compliance and then placed in the production database.

For data modifications, particularly architecture (field names, field length, additional fields), the data will undergo cursory review by LOJIC staff and be placed in the test environment for initial review by the data resource manager

before moving data to production. Once in production, a confirmation email will be dispatched to the requesting data resource manager to indicate that the data has been published to LOJIC's production EGDB and to request final review by the data authority.

Versioned editing lies solely on the data resource manager. This requires the data authority to devise an editing workflow that promotes quality assurance. LOJIC data team can consult and advise on best practices in versioned editing workflows as well as consult on quality control devices like topology, domains, etc., but the data resource manager will carry out the tasks of editing and quality control. LOJIC Data staff is responsible for introducing and administering topology rulesets and domains in the EGDB.

VERSIONED EDITING WEEKLY WORKFLOW

The overall versioned editing workflow cycles weekly.

The diagram below illustrates the versioning tree hierarchy. LOJIC policy prevents direct editing of base business tables within the enterprise geodatabase. As a result a tier of public versions are available from which editors can begin to build out a versioning lineage suitable to their needs. Versions in this tier are denoted by the '_E' suffix applied to the respective name. This tier provides a couple of functions:

1. It provides a fall back function whereby invalid edits detected by editors after post and reconcile can be removed before posting to the business table.

2. It provides a tier where conflicts can be resolved between editors who may introduce varying edits to a given feature or record before posting to the business table.

Essentially, data resource managers will introduce edits to data by building private (or public) versions from this primary tier (pictured in orange) of versions pictured below. Default and primary tier versions are managed solely by the LOJIC Database Administrator. An optional secondary tier and essential tertiary tier are shown at the User level below. These represent the version tiers under control of resource managers, where the actual editing occurs

Important Note: All '_E' versions are reconciled/posted to DEFAULT and then compressed nightly at 6:30pm. Every Friday at 6:00pm all private versions are deleted. Be sure you have reconciled/posted your changes by COB Friday!

MANAGING VERSIONS:

1. Create private version from appropriate '_E' primary tier version.

   a. For shops that have a single dedicated editor for a given feature class, a private editing version can be built directly from the '_E' version.

   b. For shops that wish to a have a hierarchy of versions, a tier of public ADMIN versions can be created from which private editor versions can be created. This would be a more suitable model for shops that may have multiple editors that funnel data through a primary editor or supervisor who then conducts quality control, review or conflict resolution before posting the agency's work.

   Note: In some cases a data authority may choose to implement a hierarchy where multiple editors branch private version of from a public admin version for the purposes of replicating organizational flow or enabling a tier of QA/QC before moving data into the DB Admin controlled primary tier. The 'SEWER_ADMIN' and 'DRAINAGE_ADMIN' below are examples of this model.

   Important: The use of an ADMIN layer, as pictured below and discussed above, can potentially create overhead on DB performance, particularly in cases where ADMIN tier versions are maintained in the system for periods of time while holding large quantities of edits . For this reason, this model would require prior discussion, a substantial business reason for its use and a well-planned editing workflow.

2. For a given editing workday, an editor will create a version for editing:

   a. The version will be 'private.'

   b. The version must be a child of the appropriate '_E' version. For example, If the data to be edited is organized under the JEFLIB schema, the private version will be a child of JEFLIB_E. This will be dictated by the LOJIC Database Administrator.

3. Private versions will be posted, reconciled and deleted daily to their parent version.
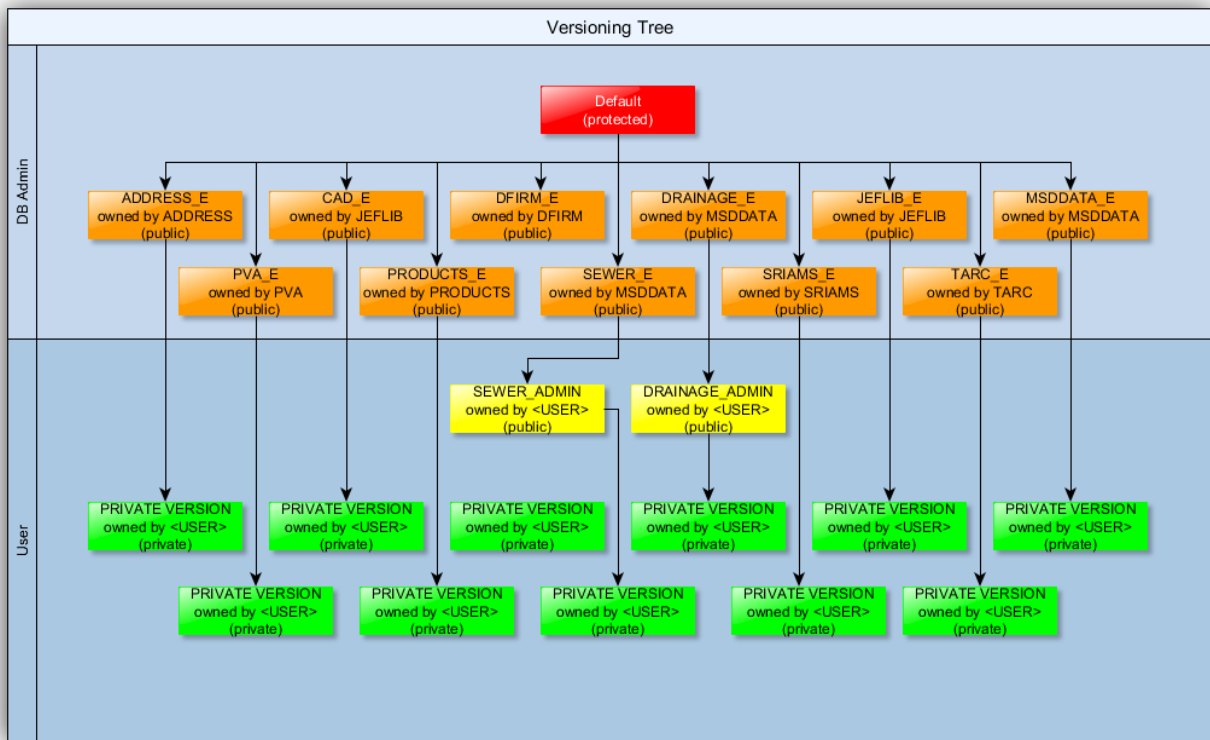
VERSIONED EDITING PROCEDURES

What is versioning?

Versioning allows multiple users in a multiuser geodatabase to edit the same data without applying feature locks or duplicating data. As you edit in the Enterprise geodatabase, you work within your own view or geodatabase state; no one else sees your edits until you save them. In other words, two editors who edit simultaneously see only their own edits.

When you start editing, you are working with your own representation of the version. Other users who are connected to the same version cannot see any of your changes until you save the edits. When you are ready to apply your edits to a different version of the geodatabase, you will merge your changes through a process of reconciling edits, resolving conflicts, and posting your changes to the parent version of the geodatabase.

LOJIC employs Esri prescribed best practices, methods and procedures for multi-editor editing in the Enterprise Geodatabase. The following guidance will demonstrate how to edit data using the versioned method in the LOJIC database.

For more information regarding versioned editing review this <u>link</u>.

PREPARATION

Important: Ensure that your username had been granted edit privileges on the given data. If the data cannot be edited, contact LOJIC to verify and/or request proper privileges.

Two tool bars that will be essential to these procedures include:

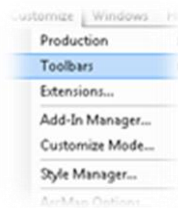1. The Editing toolbar

2. The Versioning toolbar
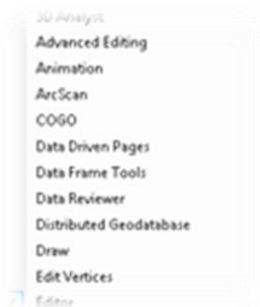

LOADING THE NECESSARY TOOLBARS

1. These can be loaded into your ArcMap session by going to Customize in the ArcMap main toolbar.

2. Navigate to Toolbars

3. Check the Editing and Versioning toolbars

...

ESTABLISHING AN EDIT SESSION:

In ArcGIS an editor begins editing by starting an edit session.

1. To begin editing, simply load the data that requires editing.

SETTING UP THE APPROPRIATE VERSION

Notice when data is first loaded into the Table of Contents, it will point to "SDE.DEFAULT (sde)." * "DEFAULT" is the public version of the data. Whatever data exists in this version is accessed by published applications, services and therefor is the 'public's view to the data.' DO NOT TRY TO EDIT THIS VERSION. Users other than the SDE administrator should not have edit privileges sufficient to edit this data.

To effectively edit, the editor must change the transactional version from SDE.DEFAULT to the appropriate '_E' version from which their ultimate version will be created for editing. Editors will want to select the appropriate '_E' version based on the schema of the data that is being edited. For example, if the data to be edited is Edit_AddressSite which belongs to the ADDRESS schema (ADDRESS.Edit_AddressSite), then the editor would choose the ADDRESS_E transactional version from which to begin.

*Note: Depending on the configuration of the database connection, "(sde)" may be substituted by "(lojicora1)."

Warning: If "(lojictst)" or "(lojicdev)"are present, then reconnection to the database is required as these indicate that the connection is to the test or development instances of the database, which are incorrect instances for production editing.
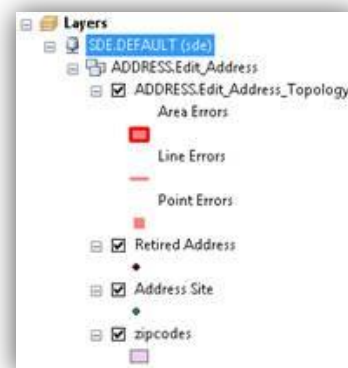

2. Right click on "SDE.DEFAULT(sde)" to select "Change Version."   At this point the editor will want to change to the proper '_E' version.
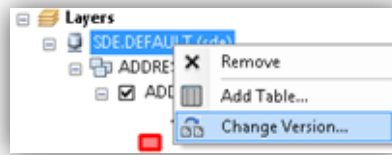
The Change Version window will display.

3. Select the appropriate '_E' version from which the user will create a private editing version in order to conduct editing. For this example, the ADDRESS_E version is selected as the data to be edited is ADDRESS.Edit_AddressSite.
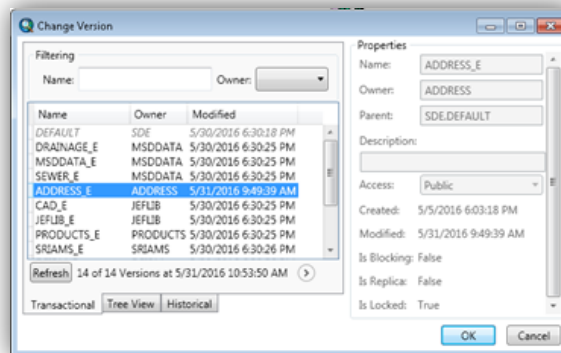

Click OK to confirm the change.

4. Once the version is changed to a '_E', click the new version button on the versioning toolbar to create a new private editing version where the work will be conducted.
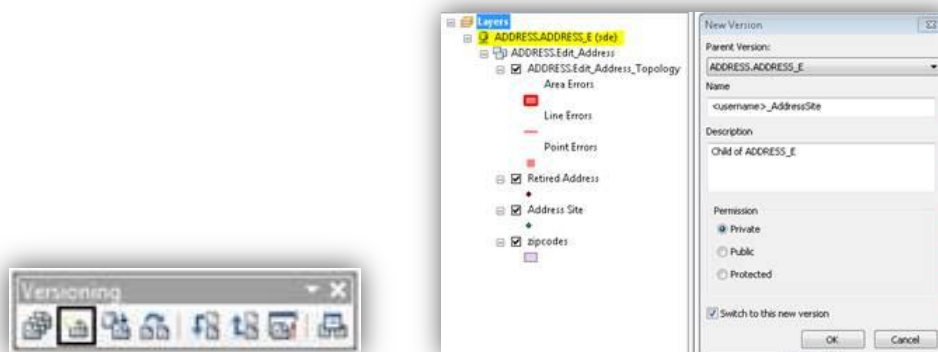
From there, create a private version as a child of the appropriate '_E' version. A typical name for the version would be <username>_<feature class being edited>. Include all the info illustrated below. It is good practice to describe the parent-child relationship in the Description field. This will be the version where editing, posting and reconciling will occur.

By checking the 'Switch to this new version' box, the newly created private version will be populated in the table of contents as the transactional version for conducting edits.
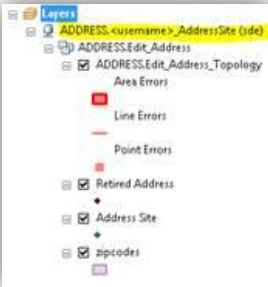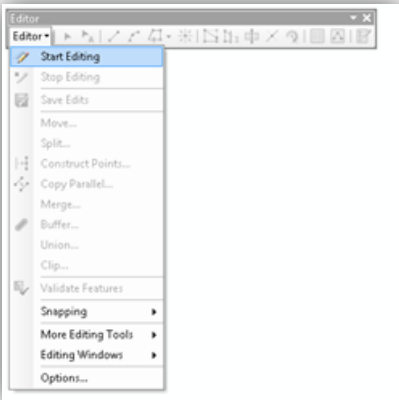

The proper transactional version should now be reflected in the table of contents of ArcMap.

EDITING

5. Start Edit session.

With proper setup, the features that can be edited by the given user during an edit session should be populated in the Create Features window on the right of the program, along with a select list of spatial editing functions that can be conducted to the data based on datatype.**
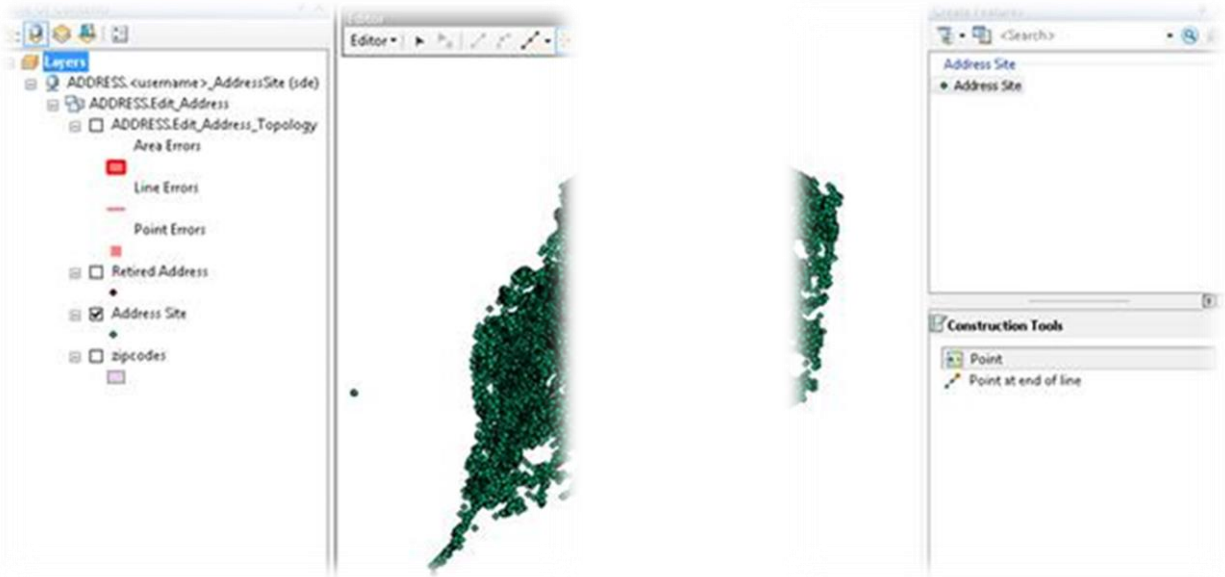
**Note: The end user may receive a prompt that indicates which layers within ArcMap can and cannot be edited by the end user. If this prompt is issued, the editor must verify that the layers in question for editing appear correctly in the list. Usually, this will end with the editor simply pressing OK through the prompts(s).

Edits can now be applied by the editor. If more help is needed for editing procedures and methods in ArcGIS, consult the following guidance:

- Editing tutorial (ArcGIS 10)

- Esri Resource: Editing in ArcGIS 10.3

Once edits have been completed, either for the day or week, edits should be reconciled to the '_E' version and then posted.

RECONCILING AND POSTING YOUR EDITS

Once edits have been completed, editors must move the changes up to the appropriate '_E' version and reconcile with other changes that have been introduced by other editors. Because these edits are then moved to the Default version, this is how editors and end users realize the recent updates when interacting through applications, services, queries or further editing.

To reconcile and post an edit session must be active.

With LOJIC data, the user will reconcile to the Target version as illustrated in the image below after hitting the reconcile button on the versioning toolbar.

These are essentially the defaults for reconciling data. When reconciling you might encounter conflicts from another user in another private version when two or more pieces of the same data have been edited. When this happens, you will want to have a conversation with the other editor about which changes should be kept.

1. Reconcile

Reconcile merges all modifications between the current edit version and a target version. Any differences between the features in the target version and the features in the edit version are applied to the edit version. Differences can consist of newly inserted, deleted, or updated features. The reconcile process detects these differences and discovers any conflicts. Reconciling happens before posting a version to a target version. A target version is any version in the direct ancestry of the version, such as the parent version or the default version. For more detail consult the link posted at the opening of this paragraph.

Conflict resolution - For further information on resolving conflicts, please read this link.

This link will provide a full description and walk through of how to resolve conflicts during the Reconciling method.

2. Post

Post finally moves all the current editor's changes from their private version up to their ancestral version. While reconcile provides a mechanism for de-conflicting one's edits with those of other

editors, post is the point at which changes are finally moved up the versioning lineage. For more detail consult the link posted at the opening of this paragraph.

If there are no conflicts to resolve then you can post the edits to the Target '_E' version. Once you have posted, they cannot be unchanged like in reconcile.

3. Reconcile again.

METADATA:

LOJIC places a premium on the maintenance of metadata. It is 50% of the equation and as such requires an equivalent level of investment as that which is expended to maintain the core data itself. In this, LOJIC has a rigorous content standard for metadata. The credence in metadata is driven by multiple factors:

- Consortium-wide outcry for more well documented metadata.

- The need for richer metadata to support data analytics and measuring data appropriateness.

- The requirement for metadata as it relates to LOJIC's adoption of Open Data sharing and standards as part of Louisville's open data and transparency initiatives.

- The proliferation of data and data services to a wide base of users and application builders across various agencies and platforms, to include ArcGIS Online.

- Establishing a line of data governance.

 This standard and guidance are defined in the document entitled 'LOJIC Metadata Standards and Procedures.'

While LOJIC places a premium on metadata, there have been isolated occasions where metadata was overwritten or lost. LOJIC recommends that each data authority maintains their own local copy of their respective metadata. The following model is a recommended solution based on current, effective practices.

 If the metadata simply requires updates:

1. Export the entire feature class from LOJIC's EGDB with a selection that ensures an empty record set. (Since the records are not necessary. Plus this minimizes the size of the file on a local file system.) The resultant empty feature class will maintain its metadata and data architecture, allowing effective metadata editing, to include existing fields.

The Feature Class To Feature Class (Conversion) geoprocessing tool , located in the Conversion toolbox, works well for this.

Simply point the tool to the source feature class in the EGDB (Input Features) and point it to a local destination FGDB (Output Location) and give it a name. A recommendation for feature class name would be the following template:

<schema>_<feature class/table name>

e.g. jeflib_zoning, msddata_ssa, address_addresssite, etc.

An expression can be inserted to limit the output record/feature rows to zero. Here "OBJECTID = 0" would eliminate data rows since by Esri rule no OBJECTID of 0 will be assigned by the EGDB or FGDB to a feature class.
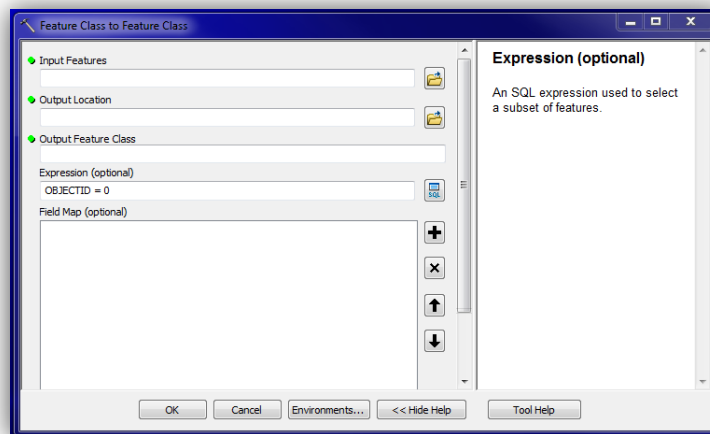
> 2.   Open the metadata in the FGDB and begin editing.

If aspects to the data and data architecture are being changed, the following could provide a solution for managing the metadata.

> 1.   Export the entire feature class from LOJIC's EGDB using the previous methods without an Expression.   The resultant feature class will contain all features so that values, geometry and architecture can be changed.
>
> 2.   Once changes have been completed, the metadata can be amended as necessary and will account for new or deleted fields for field metadata updates that might be necessary.
>
> 3.   After the data has been updated and verified in the EGDB, the features can be dropped from the feature class, leaving only the architecture and metadata intact.

The Delete Features (Data Maintenance) geoprocessing tool , located in the Data Maintenance toolbox, works well for this.

Simply point this tool to the feature class located in the locally stored file geodatabase and execute. It will remove all records and minimize the size of the file while keeping the metadata and data structure intact.