

AGENDA ITEM FOR ADMINISTRATIVE MEETING

() Discussion only
(X) Action

FROM (DEPT/ DIVISION): Dan Lonai, Administrative Services

PROGRAM: Administrative Services

SUBJECT: Conversion of Tax Lot maps / GIS base layer

| | |
|---|--|
| <p>The software (Geomedia) that was used to create and support the county’s tax lot maps is not commonly used today. GIS graduates are trained in ArcGIS, not in Geomedia. This severely limits the candidate pool for the open cartographer position. The County is planning to start using ArcGis for new maps, but will need to convert existing maps. Attached is a proposal to convert the tax lot maps from a Geomedia format to an ArcGIS format. ArcGIS is the industrial standard and is currently being used by the county’s Planning and Assessment offices. GIS Equipment Reserve 3030 would be used to pay for the conversion.</p> | <p><u>ACTION REQUESTED:</u></p> <p>Approval to contract with ProWest for \$21,990 to convert tax lot maps to an ArcGIS format.</p> |
|---|--|

ATTACHMENTS: Proposed Contract

Date: 10/1/2021 Submitted By: (Dan Lonai)

*****For Internal Use Only*****

Checkoffs:

() Dept. Head (copy)

() Human Resources (copy)

() Budget (copy)

() Fiscal

() Legal (copy)

() (Other - List:

To be notified of Meeting:

Dan Lonai

Needed at Meeting:

)

Scheduled for meeting on: October 6, 2021

Action taken:

Follow-up:

PROWEST

& Associates



esri

Partner Network
Gold

Umatilla County, OR

Esri Migration with Parcel Fabric
For Single Deployment

Submitted by:

Pro-West & Associates, 8239 State 371 NW, Walker, MN 56484

August 27, 2021

It's important to know



ArcGIS for
Local Government
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ArcGIS Online
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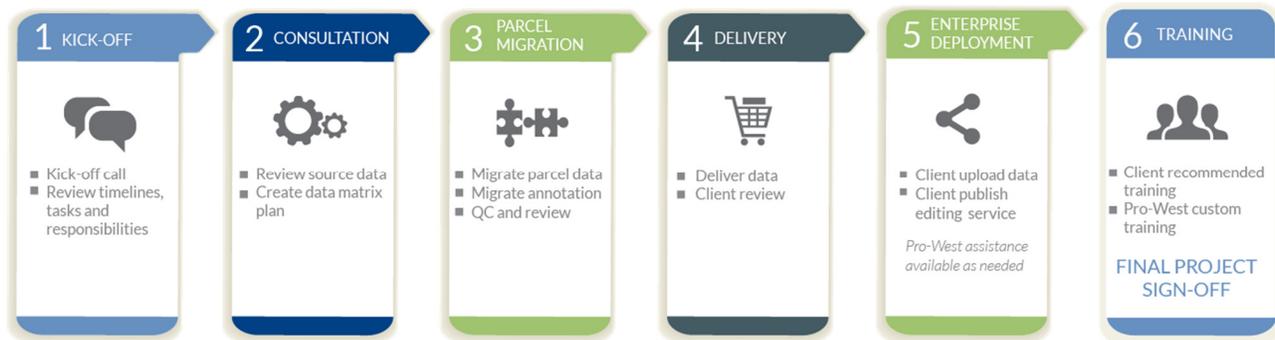
Release Ready
Specialty



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Project Description

Umatilla County wishes to migrate their current GeoMedia data to the latest Esri ArcGIS Pro platform including the parcel fabric to take advantage of the latest technology and benefits such as efficient editing and automated parcel history preservation.



Project Details

Project communication, known project challenges and recommendations are detailed in the following sections.

Communication

1. Kick-off call
 - a. Introductions
 - b. Review project contract and scope of work
 - c. Review source data
2. Data matrix consultations
 - a. Discuss data matrix and ask clarifying questions
 - b. County expected to participate in discussions and review Pro-West documentation and recommendations
3. Migration Logistics
 - a. Ensure final sign-off on matrix
 - b. Discuss schedule for data migration
4. Deployment assistance, if needed
5. Training
 - a. Discuss training schedule
 - b. Discuss training environment



Upon final agreement of the schema for the final parcel fabric, Pro-West will then develop an Esri geodatabase in which the County's current data will be migrated.

Recommended Enhancements

It is common that small changes to the existing data are requested, recommended or are necessary to ensure the new ArcGIS Pro geodatabase and Parcel Fabric fulfill all the needs of the County's editors and end users. Enhancements to the standard structure would serve the purpose of accommodating the County's business processes and maximizing editing efficiency.

These enhancements may include:

- Attribute field changes – the most common enhancement during a data migration is the deletion of excess fields in the current data and the addition of new fields the County requires.
- Domain additions – all currently used domains will migrate with the rest of the parcel data. However, there are opportunities for the addition of new domains in the ArcGIS Pro schema.
- Annotation changes – often reorganization of annotation takes place with a migration to make editing as efficient as possible including grouping annotation with subclasses or eliminating annotation that can be replaced with feature labels.

Plan for Incorporating Boundary Changes

The County will stop parcel editing from the time the data is sent to Pro-West until the time the data is returned to the County. Any updates that come in during that time will need to be held until the training, during which they can be used for both training and real-time updates.

Project Methodology

Esri Geodatabase Migration

The Esri geodatabase migration is a multi-step process to migrate all current parcel-related (land record) features that are being maintained by the County in GeoMedia to the Esri geodatabase platform in ArcGIS Pro. Those features that will participate in the parcel fabric will follow the migration as described below in the Parcel Fabric Migration section.

Point, line, polygon and annotation features will be organized during the Data Matrix portion of the project and the geodatabase schema will be created to reflect the agreed upon design. Any data changes, calculations, attribute field modifications, and the like will be discussed prior to implementation.

Annotation

Any annotation that is being migrated as a part of the ArcGIS Pro process will have to be converted to ArcGIS Pro Annotation. Any map services that use annotation must be converted to use Pro.

Point, Line, & Polygon

Most of the time, the migration of point, lines, and polygons do not require any additional modifications other than reorganization. However, if COGO fields exist in the line data, those attributes may need field type changes to go from a text field to a number field. If those are found, they will be documented in the Data Matrix.

Parcel Fabric Migration

The Parcel Fabric migration is a multi-step process including data review, loading the data into the Parcel Fabric schema developed in previous steps, and post-processing steps to ensure the final geodatabase is optimized for editing and production.

Parcel Fabric Features to Migrate

Pro-West plans to migrate the following feature types to the parcel fabric in the ArcGIS Pro platform.

- **PLSS features** such as the Corner Monuments and Sections_GCDB. If additional features such as Townships or Quarters exist, those may be included as well.
- **Subdivision features** such as Subdivision_Dbl_Line (as line features only). If additional features such as platted block or lot features exist, those may be included as well.
- **Encumbrance features** such as Road_Area, Railroad_Area, and BPA_Easement. Additional linework could also be included as line-only where polygons do not currently exist. If other easement features such as other road rights of way, platted utility easements, or other similar features exist, they may be included.
- **Tax Parcel features** as the Parcel_Boundary features. Typically, this is the only item considered to be in this category.

Loading Data to the ArcGIS Pro Platform

Parcel Fabric Data

Parcel data to be migrated into the parcel fabric will be used to assist in the creation of the schema for the new geodatabase. The attribute fields with their details will all be migrated to the schema to assure all the incoming data will recognize the attribute fields immediately. Additionally, the same thing will be done with the County created domains so that they are applied immediately upon data migration.

The migration will use geoprocessing steps to append the data from the County’s data to the new ArcGIS Pro parcel fabric platform. Several steps ensure that the data is migrated, the topology is enabled, Editor Tracking is enabled and that fabric topology is engaged.

Once the data completes the initial geoprocessing steps, Pro-West will then apply any additional steps that have been discussed with the County, such as attribute field deletion, applying new domains, or any other options. Several post-processing and quality control tools are also used to evaluate and report the success of the migration.

Data Review

There are no additional data requirements needed prior to the migration. To be clear, this means data will be migrated exactly as it is – thus, any misalignments or errors will be migrated into the geodatabase and included parcel fabric. There are tools in ArcGIS Pro to assist with data cleanup once migrated and maintenance is in ArcGIS Pro.

Post-Migration Geodatabase Data Review

Pro-West will review each of the feature classes created in the new Esri geodatabase for migration compliance according to the Data Matrix and ensure that any modifications were completed. This may include the verification of COGO field migration from text to number and ensuring all annotation complied with ArcGIS Pro platform.

Post-Migration Parcel Fabric Data Review

Pro-West proposes conducting the following tasks **after** the data has been migrated to the ArcGIS Pro Parcel Fabric. The following tasks will be discussed in detail with the County.

| Task | Notes |
|-----------------|--|
| Topology checks | <p>Utilizing the default topology rules set forth by Esri for an ArcGIS Pro parcel fabric, Pro-West will run the Validate Topology tool on the countywide set of data and report the findings to the County.</p> <p>Based on experience, Pro-West expects to find the following error types as the majority of the error count:</p> <ul style="list-style-type: none"> • Must Have A Record • Boundary Must Be Covered By • Lines Must Be Covered By Boundary Of <p>Pro-West will work with the County during training to highlight . . .</p> <ul style="list-style-type: none"> • why these errors were found • what can be done to resolve them |

| | |
|------------------|---|
| | <ul style="list-style-type: none"> • how to handle those that do not apply to your situation <p>NOTE: Pro-West will not be responsible for resolving topology errors found.</p> |
| Attribute review | <p>ArcGIS Pro Parcel Fabric can accept missing attribute information, but mis-formatted information may not migrate properly. Pro-West will advise the County regarding features that would be affected so County staff can work to correct those items before and after the migration.</p> <ul style="list-style-type: none"> • For example, the “&” does not come across properly which then is not labeled as expected. County staff should look for those especially in Subdivision names. <p>NOTE: Pro-West will not be responsible for resolving mis-formatted data.</p> |

Quality Control

Quality control is essential to Pro-West’s procedures to ensure data integrity and to limit data entry errors. Some of the procedures to be utilized include the following:

- Geodatabase features such as domains are used to control how data entry may occur utilizing “drop-down” lists that create a controlled environment for data entry, thus eliminating typographical errors and inconsistency. The Parcel Fabric also utilizes domains in its features to add additional options and clarity to the data therein.
- Geodatabase topology will also be utilized as a quality assessment tool in the Parcel Fabric since it validates spatial rules set forth between and among certain classes of features.
- Pro-West incorporates additional assessment measures to ensure a quality final product. These tools involve automated and manual analysis, both tabular and visual.
- Finally, the ArcGIS Pro involves newer quality assurance standards and technology such as Attribute and Parcel Rules.

The final geodatabase will be subject to review by County staff to verify that the data was migrated successfully. The geodatabase will be supplied to the County via a file geodatabase for review.

Deployment

Once the data has been migrated and initially reviewed by County staff as a file geodatabase, the County can deploy the data into their environment. Pro-West will be available for assistance, if needed.

As has been discussed with the County in previous communication:

1. The County will be using a single deployment option which means . . .
 - The data will reside in as a file geodatabase
2. The following minimum hardware & software requirements must be in place prior to project delivery:
 - ArcGIS Pro software must be installed
 - Standard or Advanced licensing
 - Version 2.6.x or higher (the latest version is always recommended to take full advantage of the enhancements included)

NOTE: ArcGIS Pro and the Parcel Fabric versions should stay in sync. Please keep these versions in mind. Disregard the Enterprise release as Umatilla County will be using a single deployment.

| Parcel fabric version | ArcGIS Pro release | ArcGIS Enterprise release |
|-----------------------|--------------------|---------------------------|
| 1 | 2.4 | 10.7.1 |
| 2 | 2.5 | 10.8 |
| 3 | 2.6 | 10.8.1 |
| 4 | 2.7, 2.8 | 10.9 |

ArcGIS Pro release versions and their corresponding parcel fabric release numbers

Note:
The parcel fabric version is not backward compatible. For example, a version 2 parcel fabric is not compatible with ArcGIS Enterprise 10.7.1. The minimum required ArcGIS Pro release, the parcel fabric version, and the minimum ArcGIS Enterprise release numbers must match the numbers in the table above.

Parcel Fabric Version 3 or 4 is recommended thus in sync with ArcGIS Pro 2.6 or higher.

Nightly Publishing Script

To enable data in the parcel fabric to be used in other applications or environments, the parcel features need to be published from the parcel fabric into simple feature classes.

Pro-West has developed an ETL tool that is a Python publication script and defines which features to publish from the parcel fabric and where to put them. This script automates the publishing of the most current data from the parcel fabric to other feature classes that can then be accessed by desktop and web applications without accessing the same data that is being edited.

The automated export will be performed nightly, exporting parcel data from the Parcel Fabric. The nightly process will be triggered from the Windows Scheduled Tasks control panel and will provide basic logging and email notification of the script's actions and ultimate success or failure status.

What is needed

- Supply list of all feature classes to be published and provide location to be published to (including names of feature classes)
- Provide Pro-West the SMTP Address used at the County (used for the automated email notification portion).
- Provide Pro-West a list of users that need to receive the email regarding whether the task succeeded or failed.
- Provide Pro-West access to a machine that has either ArcGIS Server or ArcGIS Pro.
- Supply Pro-West a time that the task should run at on a nightly basis.

Deliverables

Pro-West will setup and Install the Parcel Fabric Publishing script on the server.
Pro-West will host a call to walk through the configuration and troubleshooting.

Editing and Maintenance Training

Pro-West uses a two-step approach to training to give editors custom training from the ground up.

Esri Training

First, Pro-West recommends introductory Esri training. This includes the **Parcels and Land Records Management Learning Plan** including the Esri online, 3-day, instructor-led course “*Working with Parcel Data in ArcGIS Pro*” which uses the latest software version to introduce the parcel fabric to the editors. Here, students learn the basics about the concept of the fabric, the structure of the fabric, and perform some basic edits.

- Parcels and Land Records Management learning plan:
<https://www.esri.com/training/catalog/5f4e6d60de1e8d4c9244692f/parcels-and-land-records-management-essential-skills/>
- Specific Course link: <https://www.esri.com/training/catalog/5e5f25188cb2d966e64e3d5d/working-with-parcel-data-in-arcgis-pro/>
- The cost for this Esri training is **NOT included in the price below.**

If County staff require skills for introductory courses regarding ArcGIS Pro itself, please refer to these additional Esri learning plans. The cost for most of these courses is free. Where there is cost, be aware that **the cost for any Esri training is NOT included in the price below.**

- Pro Fundamentals:
<https://www.esri.com/training/catalog/5b733d0c8659c25ea7013df9/arcgis-pro-fundamentals/>
- Migrate to ArcGIS Pro:
<https://www.esri.com/training/catalog/5b296eb4e620ca23e65420dc/migrate-to-arcgis-pro/>

Pro-West Custom Training

Secondly, Pro-West provides custom training. During this hands-on training, Pro-West works with the County staff to perform actual edits with the County’s newly migrated data. The custom course is to ensure that business needs are met and that the editing staff understand the details and nuances to match these needs. Pro-West runs sessions that include topic discussion, demonstration, and exercises for the editors.

Pro-West will provide a variety of editing procedures and exercises to follow such as:

- What to do when the data isn’t perfect
- How to complete edits that don’t fit a typical workflow model
- Pitfalls to avoid when editing

A manual is provided to each student during the Pro-West training. Exercises and training topics include:

- Overall understanding of the County’s geodatabase structure and schema
- New Parcel Creation
- Parcel Splits and Combines
- Boundary Line Adjustments
- New Subdivision (including Condominiums)

- Creation and Maintenance of Encumbrances
- Parcel Fabric quality maintenance and checks to perform
- Consistency checks and Least Square Adjustments

All trainees will also be provided with Pro-West’s own series of “How-To” videos including short videos for some of the common tasks editors face.

All training comes with **8 hours of technical support**, which can be used any time within a year of completing the Pro-West training.

Training Platform Options

Training can be administered in one of two options:

- **in-person on-site**
 - Due to COVID, Pro-West will not be providing on-site trainings unless there is a special circumstance.
- **remotely via web meetings** – Pro-West works to ensure remote/online sessions are very interactive and include “seeing” each other via screen-sharing to ensure a productive experience.

For those who choose the online training option, the trainees will also be provided with session recordings for future reference.

Typical Training Schedule

| Day | Topics Covered |
|-------|---|
| Day 1 | <ul style="list-style-type: none"> • Parcel Fabric Structure & Schema • Review Data Matrix • Editing Environment Settings |
| Day 2 | <ul style="list-style-type: none"> • Con’t Hands-On Exercises <ul style="list-style-type: none"> ○ Split and Merge Parcels ○ New Subdivision ○ Importing CAD or other linework ○ Many more! |
| Day 3 | <ul style="list-style-type: none"> • Continued Exercises • Quality Control |
| Day 4 | <ul style="list-style-type: none"> • QC continued • Consistency check & Least Square Adjustments • Recommendations moving forward |

The project is considered complete after training.

Project Assumptions

Overall Project

1. The County will provide Pro-West with source data, documentation, and remote access to database systems (if deemed necessary). This includes:
 - a. All related GIS data
 - b. Server access with permission to edit, store and create scheduled tasks (if necessary)
2. Pro-West will conduct all data migration tasks at Pro-West offices and will deliver the data to the County as a file geodatabase.
3. County is responsible for updating any and all applications, templates, or solutions with the migrated data sources as needed.
 - a. Pro-West will not update any existing Data Driven Pages map creation process, map templates, online solutions or other application mxd files or projects.

Migration & Deployment Assumptions

1. Pro-West will receive from the County all necessary data.
 - a. All data will be in one coordinate system. Pro-West will not be conducting any coordinate system or datum projections.
2. Topology resolution is NOT a Pro-West task in ArcGIS Pro.
3. The County will be using a single (file geodatabase) deployment option.
4. County will have all software installed & prepared prior to project delivery.

NOTE: IF the County wishes to utilize Least Square Adjustment (LSA) processes, the ability to do so is available at the ArcGIS Pro 2.6 release.

Training Assumptions

1. Training will be provided for County employees who have the skills to use ArcGIS Pro for general editing purposes such as creating a project, database navigation, connecting a database, and setting map options for labels and symbology.
2. County recognizes that Pro-West recommends the Esri introductory training course for working with parcel fabric in ArcGIS Pro and that the trainees have the basic knowledge of what a parcel fabric is prior to the custom training course.
3. The County will provide:
 - a. Computers/laptops and peripherals for each student
 - b. Internet access to connect with the Pro-West trainer
 - i. A test invitation will be set up prior to the first day of training to ensure everyone is able to connect via Microsoft Teams
 - c. Software (installed and tested by the County prior to training)
 - i. ArcGIS Pro Standard or Advanced licensing
 - ii. Version should be 2.4.2x or most current – See Deployment for further details
 - iii. Tested on each computer to ensure capabilities to open and edit
 1. With a single deployment, a copy of the file geodatabase should be given to each trainee
 - iv. Each student should test accessing the database prior to training to ensure editing capabilities exist

Project Management

Project Team

Pro-West Project Manager: Jennifer Ward
 Phone: 320-207-6860
 Email: jward@prowestgis.com

Client Project Manager: TBD

Project Schedule: Specific timeline will be discussed upon contract signing.

Delivery

Documentation to be delivered to the County:

1. Data Matrix document
2. List of Project enhancements

The data will be delivered to the County in the following manner:

1. File geodatabase containing a dataset in which is the migrated data including the parcel fabric
2. Enhancements as documented in the Data Matrix

Services to be delivered to the County;

1. Parcel Fabric publishing set up.
2. Technical Support: 8 hours of technical support is included with the project to be used within a year of the completed training.

Estimated Schedule

Pro-West and the County will work out the specific dates of the schedule during the kick-off meeting to ensure both parties have ample time to complete the work required. Below is an estimated schedule of the parcel fabric migration milestones to be used during that kick-off call for planning purposes.

| Milestone | Tasks | Timeframe |
|--------------------------|---|-----------|
| Project Kick-Off | Identify all team staff involved Identify data sources needed County to send data for review | 1 day |
| Data Consultation | Pro-West identify potential issues Pro-West identify enhancement recommendations Pro-West review data and Create Data Matrix document | 4 weeks |
| Data Migration | Create ArcGIS Pro data schema Migrate data to the Parcel Fabric Migrate Non-Parcel Fabric data | 4-6 weeks |
| Quality Control & Review | Topology review Attribute review Quality control | 2 weeks |
| Delivery & Deployment | Pro-West delivers final data to County Pro-West sets up parcel fabric publishing | 1 week |

| | | |
|----------|--|---------|
| Training | County take recommended Esri training – 3-day course Custom training with Pro-West – 3-4-day course | 2 weeks |
|----------|--|---------|

The estimated total time from final data delivered to Pro-West until the time the data is returned in its migrated format is 6-9 weeks for the Data Migration, Quality Control & Review, and Delivery & Deployment tasks.

Risks

The primary risk to the budget and timeline is any unknown details that are revealed at a later time in the project.

- Pro-West and the County will work closely during this process.
- It is possible that the County may need to perform some clean up tasks.
- The project timeline may need to be adjusted.

Cost

Given the unknown impact on travel due to the COVID-19 / Delta variant pandemic, Pro-West is providing online training only at this time. However, the option of onsite training is shown in the event this project is approved after travel is reinstated.

Option 1: Custom Training Conducted Onsite – currently not available

| Task | Cost |
|--|----------|
| Parcel Fabric Migration | \$9800 |
| Data Migration of Additional GIS Layers | \$6610 |
| Pro-West Onsite Custom Parcel Fabric Training in ArcGIS Pro (4 days) | \$10,180 |
| Total | \$26,590 |

Option 2: Custom Training Conducted Online

| Task | Cost |
|--|----------|
| Parcel Fabric Migration | \$9800 |
| Data Migration of Additional GIS Layers | \$6610 |
| Pro-West Virtual Online Custom Parcel Fabric Training in ArcGIS Pro (4 days) | \$5580 |
| Total | \$21,990 |

**The above pricing DOES NOT include costs for Esri training courses, these are additional costs to Esri.*

If the scope, objectives, or timeline change significantly before the project is completed, we will discuss any necessary modifications to our agreed-upon fee or to the scope, objectives, or timeline of the project.

Please note:

- Client will be invoiced monthly based on % complete.

- Payment is due within 45 days of an invoice date. If payments are not received within 45 days of the invoice date, a late fee of 1.5% of the invoice amount will be charged for each 45-day cycle that the payment is late.
- 3% convenience fee will be added for payment by credit card

Project Signatures

To proceed with the described services in this estimate, please sign and date below and return to the Pro-West Project Manager listed above.

Umatilla County, OR
Acceptance Signature:

Pro-West & Associates
Signature:

_____ Date: _____ _____ Date: _____

Estimate valid for 90 days