

Pixxures' LineWorksTM Service

Who is Pixxures?

- Pixxures is a leading provider of cost-effective GIS and online mapping services, image web services, digital orthophotography, and customized spatial delivery systems.
- Headquartered in Arvada, Colorado.
- Founded in 1999.
- Pixxures is acknowledged for its innovative mapping, internet, and LineWorks Vector Alignment solutions.

Pixxures Mapping Solutions

- Digital Orthophoto Production
 - Second generation update - PixMap™
 - Use existing DEM & Ortho for control
 - First Generation
 - Create DEM and orthophoto
- Spatial Management Technology – LineWorks™
 - Upgrade and update spatial information
 - Align existing vector sets to a more accurate vector land base or raster image

Pixxures' Web Services

- Data Hosting Services
- Data Brokering
- WebPix Image Web Services
 - Individual packages (by dataset)
 - Packaged services (mix/match data)

The GIS Problem

- "My GIS is a mess." Layers can't be relied upon to give consistent topological, spatial and attribute functionality.
- Typical causes of problems:
 - Data collected from different sources
 - Accuracy varies from project to project
 - Legacy layers have incomplete coverage
 - Control has changed over time
 - Errors made at data capture or GIS input

The Traditional Solution

- Manual correction of data in the GIS.
- Corrections must be individually applied to each layer.
- Correction of deficiencies is labor intensive, time consuming and expensive.
- The manual process does not lend itself to automatic, rapid and economical updates.
- Data configuration management is a huge problem due to the length of time required to effect a solution while data is changing.

Typical Result – Traditional

- Deficiencies are allowed to go uncorrected.
- Full benefits of the GIS are not realized by the widest range of potential users.
- Frustration abounds!

What is LineWorks?

- LineWorks is a continuum of services created and developed by Pixxures to enable the rapid and accurate alignment of vector data to more spatially accurate vectors and/or imagery.
- LineWorks proprietary technology uniquely enables precise and intelligent alignment of multiple data layers, maintaining associated annotation and spatial data accuracy.
- With LineWorks vector alignment technology rapid and economical updates are now possible.

LineWorks Service

- Aligns parcels with features visible in imagery
- Moves all other associated layers
- Enables reshaping of parcels to better fit imagery
- Parcels and layers will be *logically* moved where no feature in imagery is visible
- Attributes and associated Annotation move with layers
- Provides a visual “best fit” with the imagery
- Fast turnaround time

LineWorks

Process Summary

- Input Imagery and Vector sets (LineWorks natively supports Tiffs, ESRI Shapefiles, and E00 files)
- Operator creates links as control between features common to the imagery and vector parcel layer
- Data is conflated (adjusted) on the fly
 - QC/Edit process integrated with creation of solution
 - Final adjustment solution is applied in minutes to either a single Shapefile or multiple E00 files
 - Original topology is maintained after adjustment
- Optional customizable manual intervention steps available to meet any additional customer requirements
- Delivery to Client

Benefits of Lineworks

- Drastically reduces the time required to make corrections to a fraction of what would be required by manual methods. Normally time savings are 90% or greater.
- Significantly reduces the cost of corrections. Typical savings are 70% or greater over manual methods.
- Greatly simplifies configuration management issues with a continuously changing database.

Examples of Parcel Adjustment Using LineWorks



The Problem:

The Parcel layer does not align with the imagery

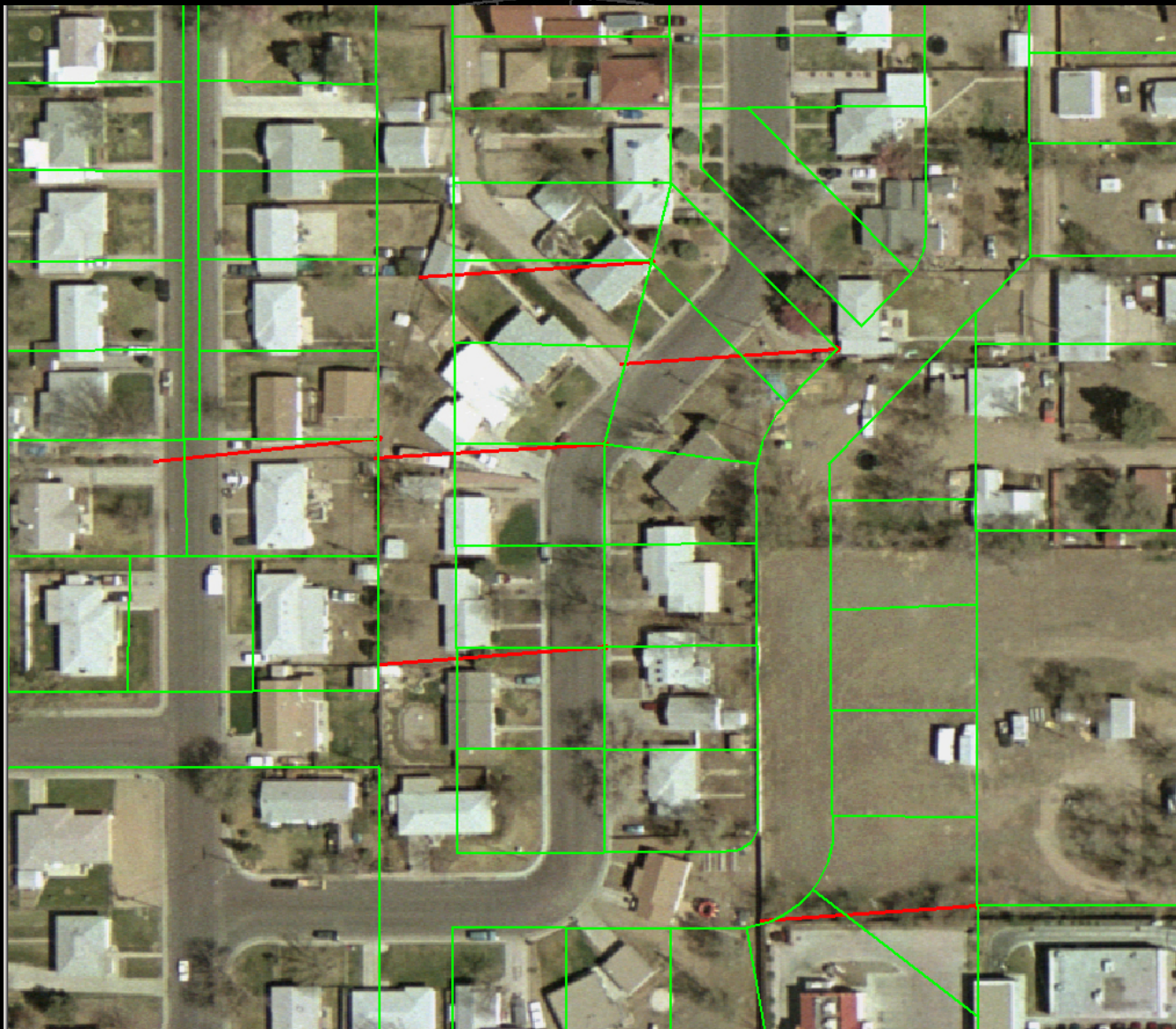
Step One

- Open original parcel layer (green lines) in LineWorks
- Open original imagery as reference layer behind the parcel layer



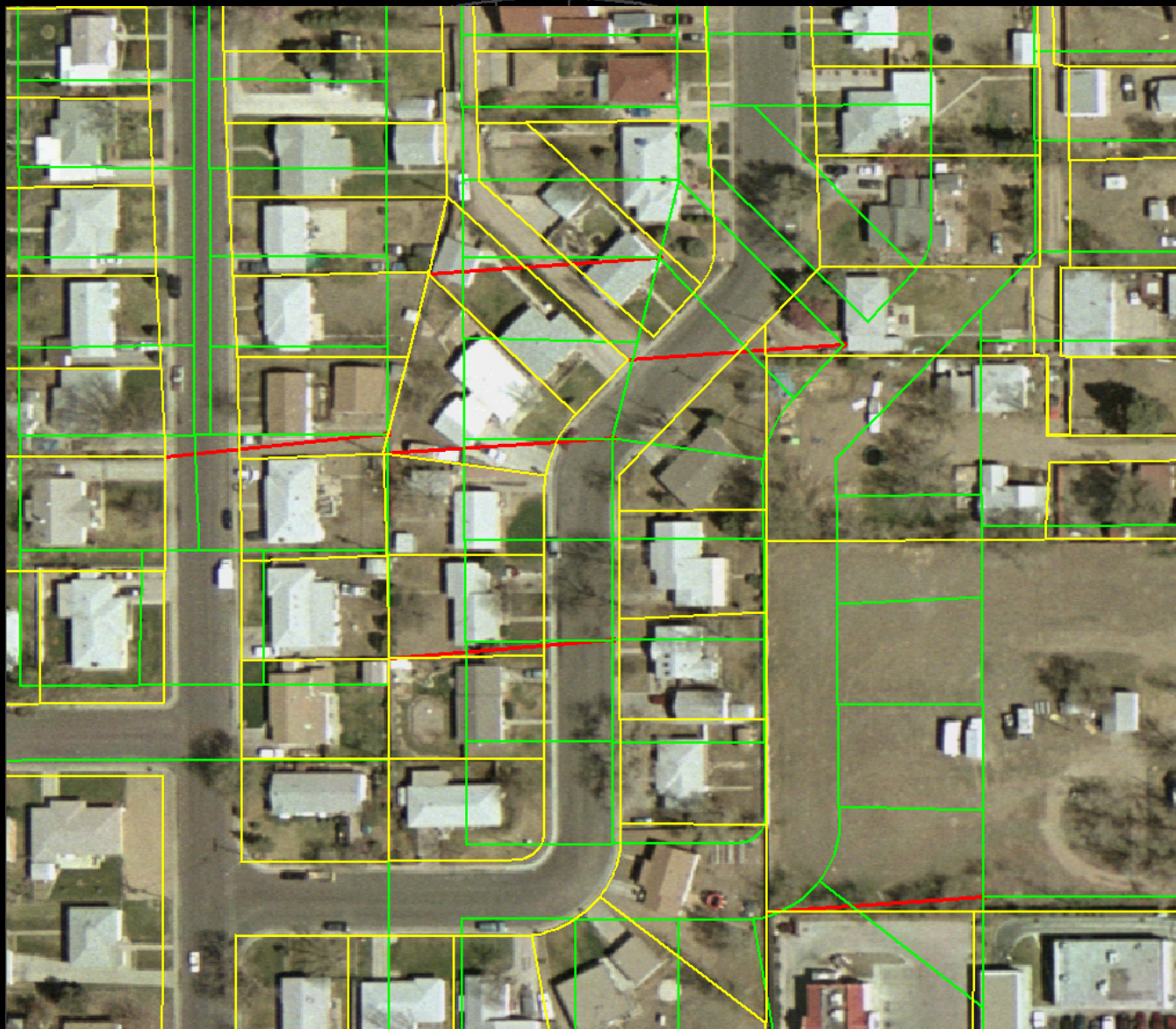
Step Two

- Operator begins to add links (red lines) between features identified as common between the imagery and the parcel layer



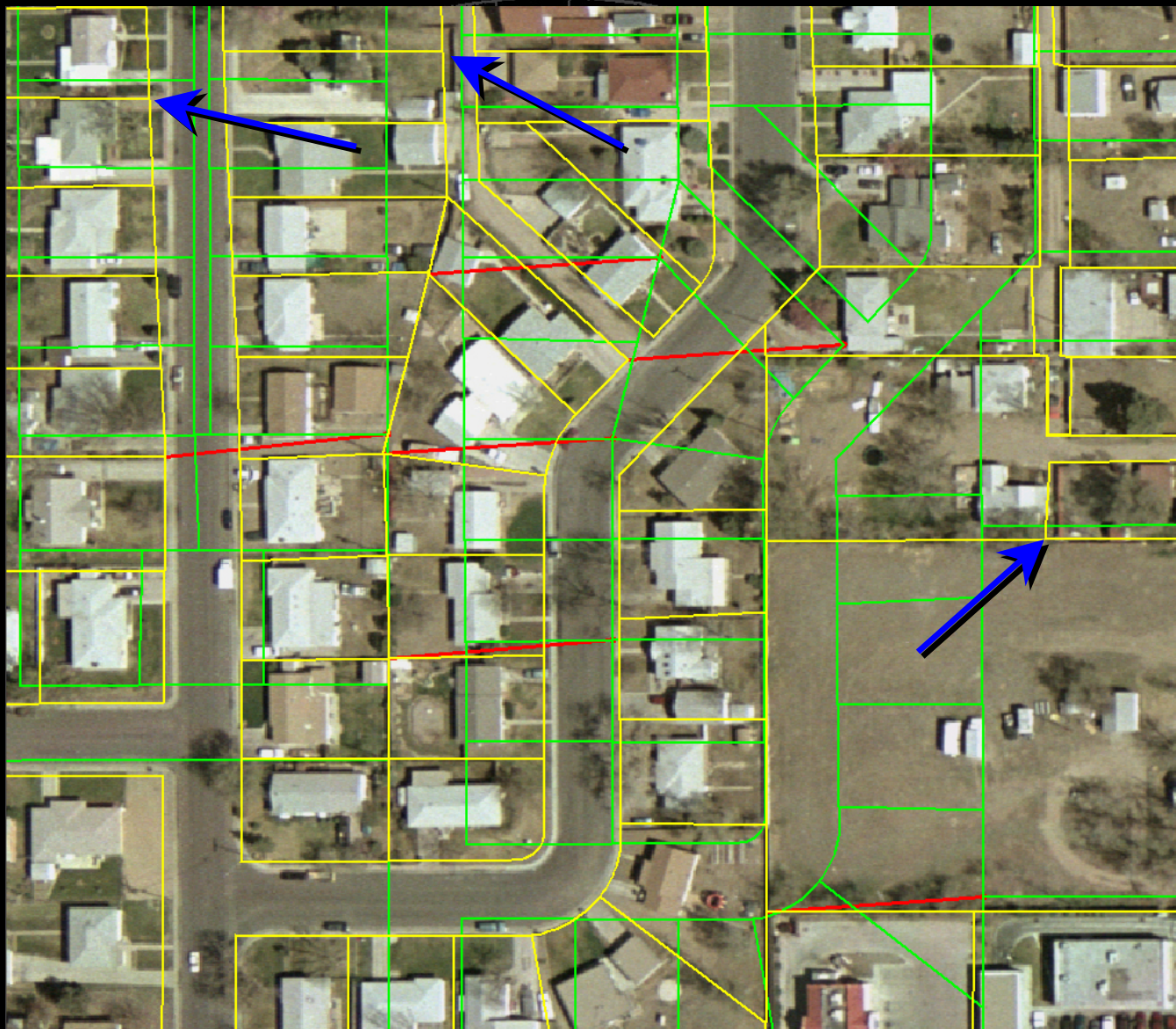
Step Two (continued)

- Operator continues to add links between common features



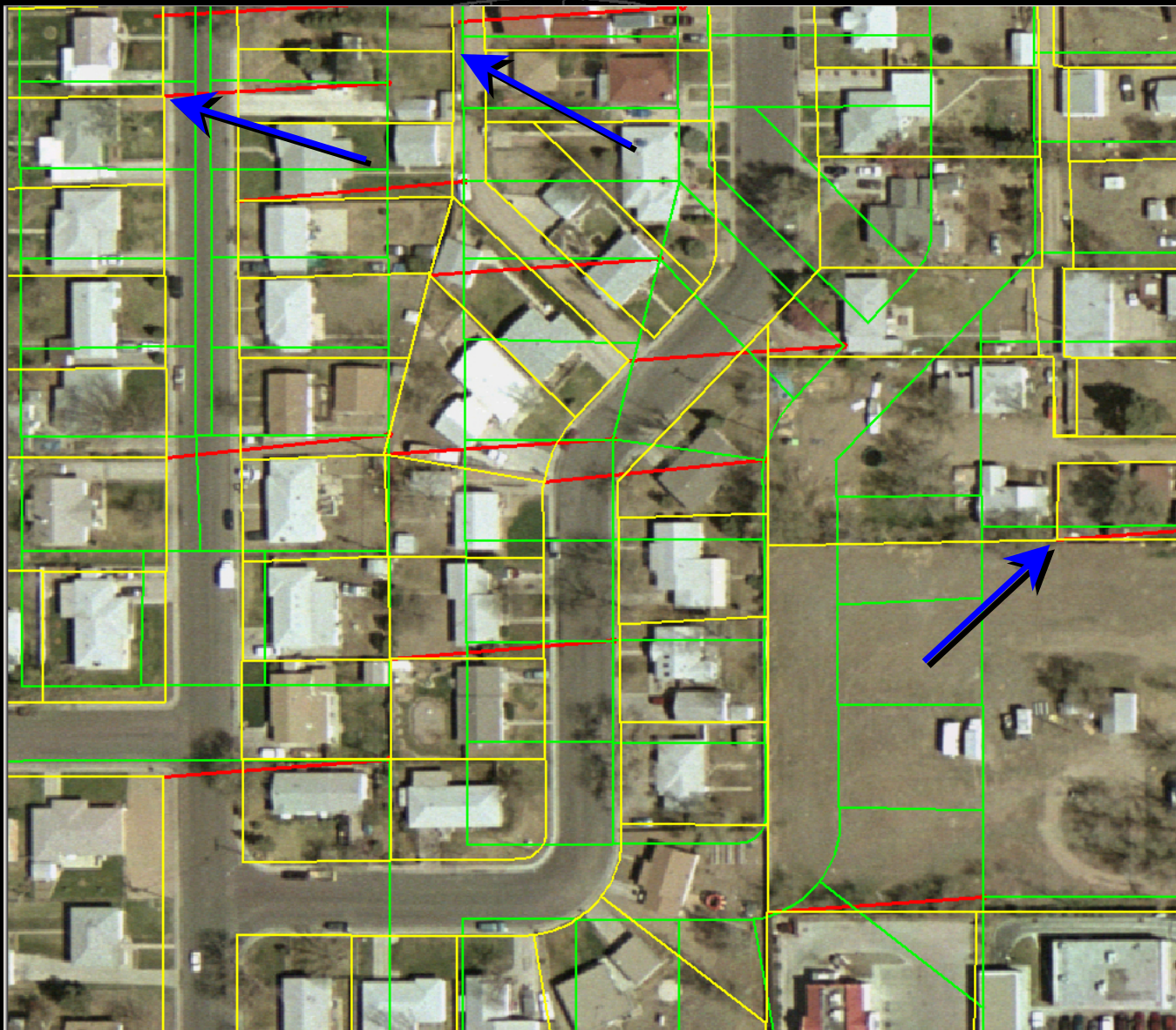
Step Three

- “Adjust on the fly” is turned on while continuing to add new links
- This enables the operator to QC the adjustment solution (yellow lines) while it is being created



Step Four

- The operator reviews the solution for errors before continuing to another area
- The blue arrows indicate places where the alignment is not correct and should be improved



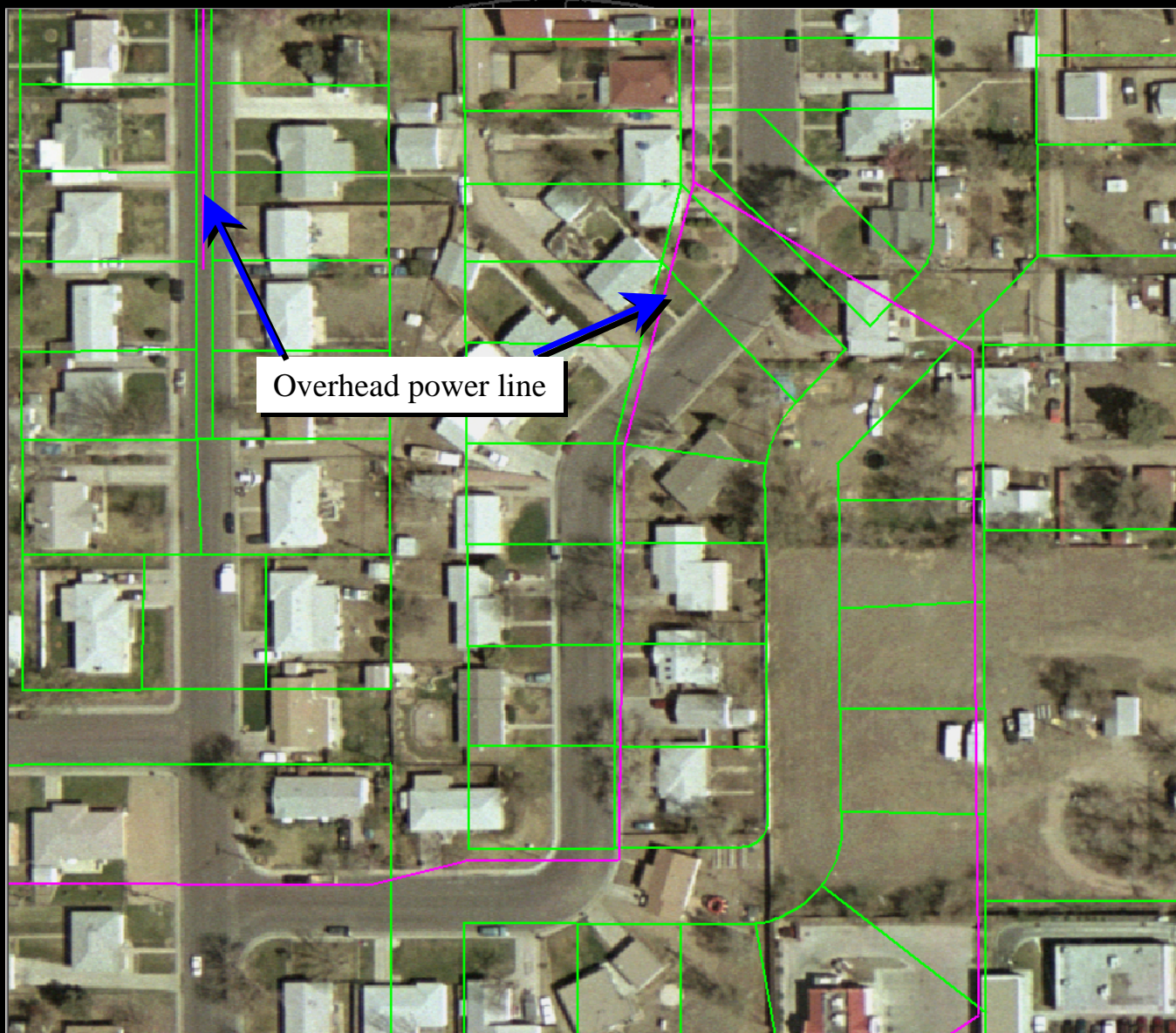
Step Five

- The operator adds, deletes and edits links in the problem areas to create a better solution.
- This "QC-Edit-Fix loop" is integrated into the alignment process, resulting in instant feedback and complete interactivity.



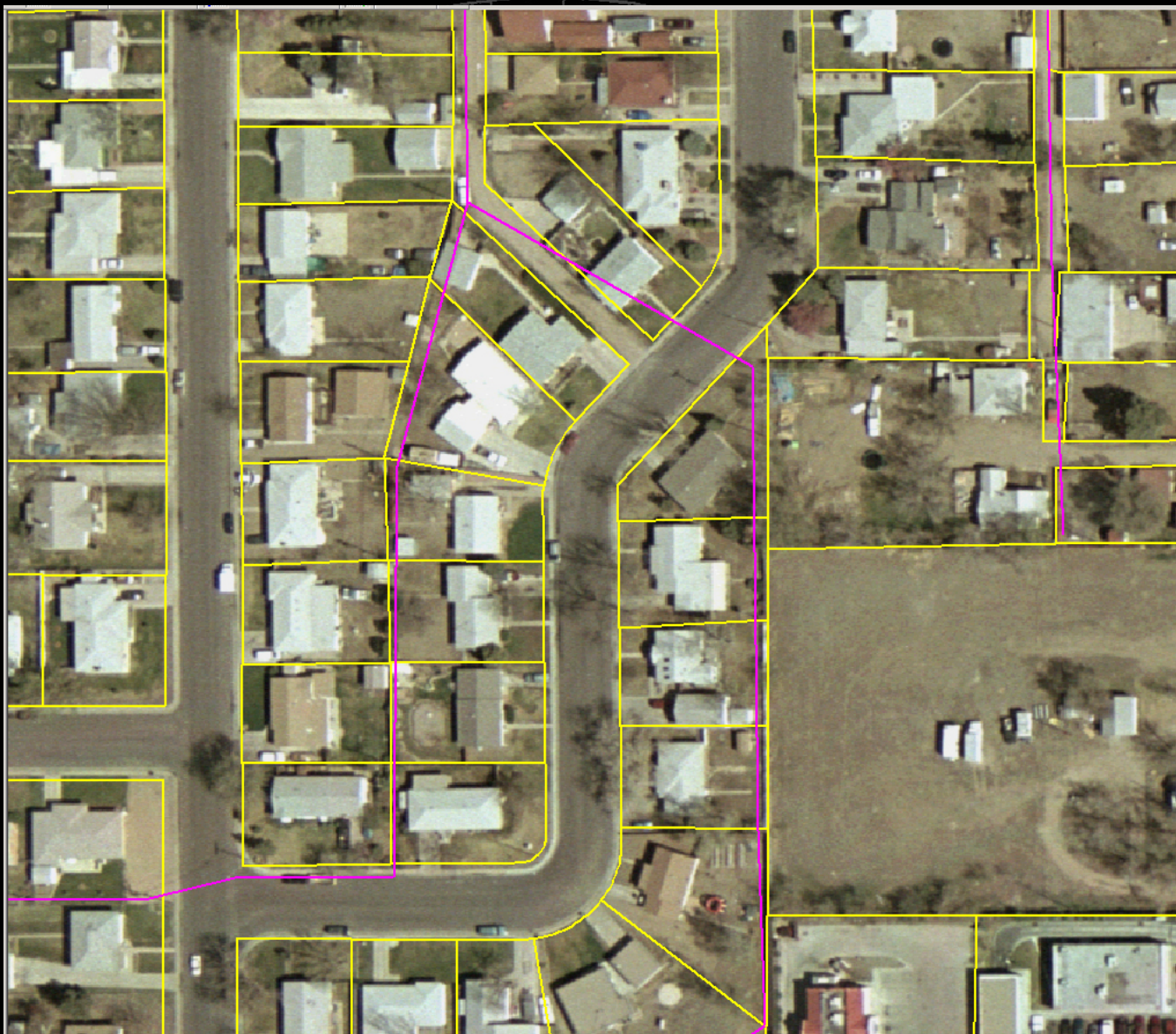
Step Six

- The parcels in their final adjustment solution. The solution is ready to apply to any additional layers.



Additional Layers can be adjusted with the same solution at the click of a button.

Example:
Overhead power line layer (purple) with parcel layer before adjustment



**Overhead
power line
layer and
parcel layer
after
adjustment.**

- Topological relationships are maintained between layers after adjustment.
- Many additional layers and/or annotation can be moved with the same solution.

Customizable Solutions: Other Options for Data Alignment

- Other LineWorks services are available at an additional charge to increase accuracy
 - LineWorks can hold the shape of a parcel while spatially improving the dataset
- Increased manual intervention to meet optional customer requirements
 - Parcel reconstruction
 - Fixing errors in original data

Horror Story with Good Result

- One customer elected manual correction.
- After two years' effort less than 10% of the total parcels had been corrected.
- The corrected parcels were not accurate due to constantly changing data layers.
- The project seemed never-ending and hopeless.
- In 6 months and at drastically reduced cost Lineworks delivered 100% of the parcels, accurate and up-to-date.

LineWorks

Through LineWorks services, Pixxures offers the customer a unique set of opportunities to create economical, fast and useful solutions to traditionally expensive vector alignment problems.

Contact Pixxures today

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