

ASBUILT DATA COLLECTION AT LACLEDE GAS COMPANY

Matthew Voelker – GIS Coordinator II

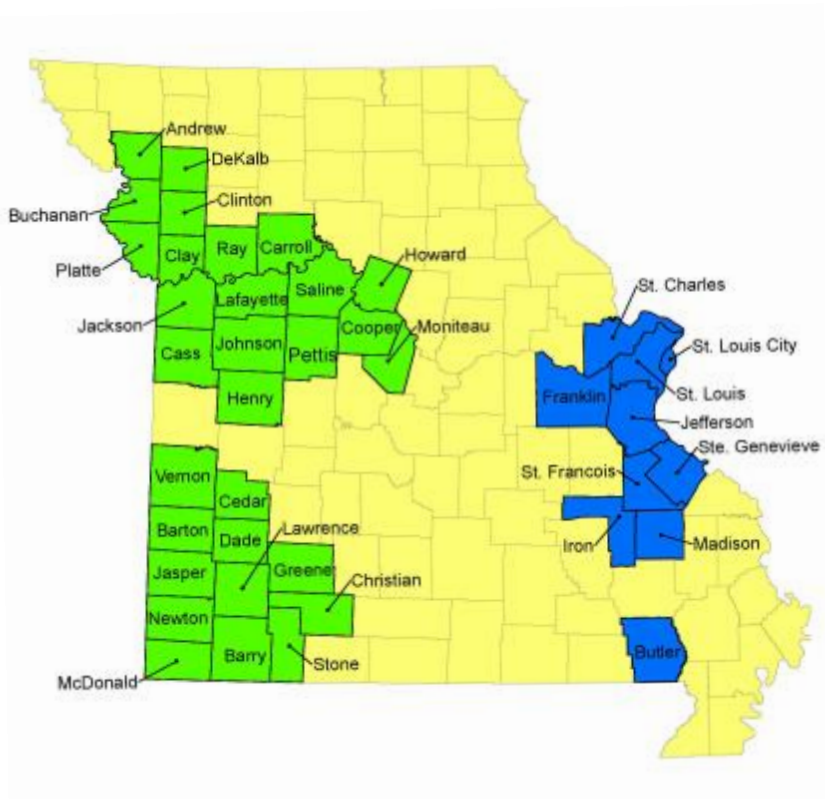
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10/29/2014



THE LACLEDE GROUP

Largest Missouri natural gas local distribution company



- **Laclede Gas Company**

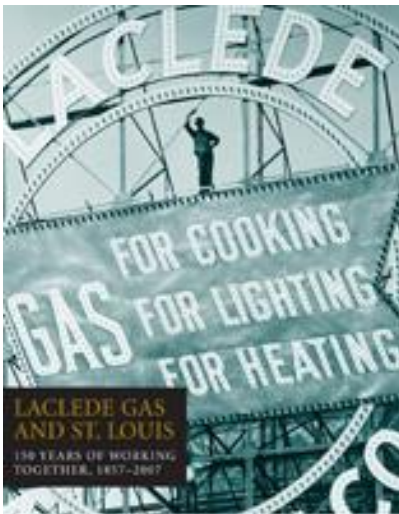
- St. Louis
- 640,000 customers
- 11 counties

- **Missouri Gas Energy**

- Kansas City & Joplin
- 510,000 customers
- 30 counties

LACLEDE ASBUILT HISTORY

1857 – The Laclede Gas Light Company was founded



- Earliest examples of Laclede field books date back to the 1860s (A&B Books)
- Later migrating to the ledger style books from the 1890s-2005
- Drafting department collected measurements of field installation, recorded into field books (by job), and updated 100' plats for reference by grid.

Wright Street
Between 13 And 14 Sts.

A hand-drawn sketch of a building layout, possibly a floor plan or site map. The sketch is drawn on a piece of paper with a grid pattern. It features several rectangular areas representing buildings or sections. Key labels and handwritten notes include:

- Top Left:** A rectangular area labeled "140" below it.
- Top Right:** A rectangular area labeled "OLD" below it.
- Center:** A vertical rectangular area labeled "Wing" written vertically along its right side.
- Bottom Left:** A rectangular area labeled "130" below it.
- Bottom Center:** A rectangular area labeled "51 ABAN 197" above it and "FB. 441A P.Y." below it.
- Bottom Right:** A rectangular area labeled "OLD" above it.
- Handwritten Notes:** There are several handwritten notes in the margins and between the rectangles, including "140", "130", "Wing", "51 ABAN 197", "FB. 441A P.Y.", and "OLD".

C.R. PLIND

A Inch Gas Main laid on the south side of Franklin Ave. between 6 and 7 Sts and connected to Main on the West side of 6 St then West to a connected to Main on the East side of 7 St.

Length of Main laid 385 feet

I. Page 2

PROJECT CODE 31-51
LOCATION CHOUTEAU AVE.
COMPTON TO THERESA
MUNICIPALITY ST. LOUIS CITY
NATURE OF WORK
INSTALL 2" 40" S. (SPEC.) I.P.
ABANDON 12" S. (SPEC.) I.P.
PIPE CODE SEE BELOW
COATING —
W.O. NO. 6616 / 5994-04-229
START 4-15-5 MAR 04-04-228
FINISH 4-14-05
FOREMAN JONES
CREW NUMBER 29
NOTES BY GIBB / RKF / JAL / WJS/PMS
100 PLATS 125 G 62
PIPE FOOTAGE SEE OPPOSITE
PRG CODE 8/B X.203 18.28 API
SLX 402 ERW MAN CFS 3M
0295360 9/20/04

[illegible][illegible]

LACLEDE ASBUILT HISTORY

- 2004 – Laclede migrated from paper maps to an ESRI Enterprise GIS System
- 2006 – Laclede began AsBuilt GPS Collection of main installation

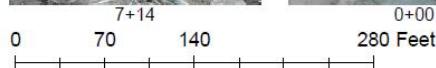
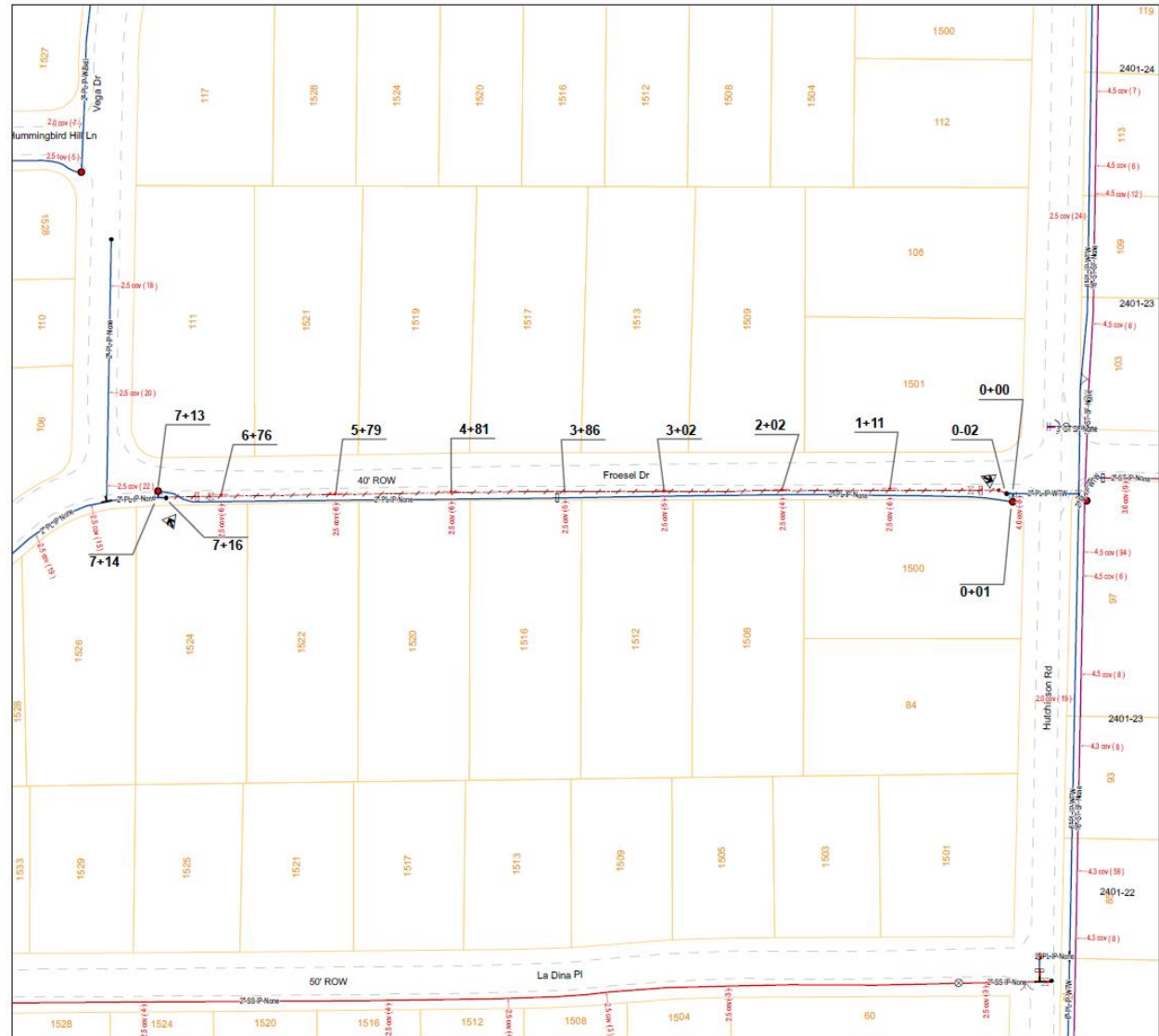


- Initially collected new features in an empty PGDB and Loaded to SDE
- Later began using replication through the distributed geodatabase toolbar - (check-out/check-in)
 - Improved GIS accuracy of data
 - Average days to post a job was reduced to 7 days from field completion
 - Introduced GIS AsBuilt PDF Tool

MODERNIZED FIELD BOOK THROUGH GIS

WORK REQUEST ID: 13143970 (OBJECTID: 305777) PAGE#: 1 PROJECT CODE: 34
 MUNICIPALITY: ELLISVILLE COUNTY: St Louis County
 NATURE OF WORK: INSTALL 2" PLIP/ABANDON 2" SIP
 WO#: 900813
 START DATE: 8/22/2014 FINISH DATE: 9/23/2014
 FOREMAN: ELLIOT CREW#: SC435 NOTES BY: DMG
 GRID: 195-25
 LOCATION: FROESSEL DR - HUTCHINSON RD
 WORKCODE: 52 DIVISION: South
 RLTD RETIRE#: 900813
 Exported on 9/23/2014 by LACL\06839 version 1.2.0.1

STA	Dim1 & Dim2	Cover	Description
FROESSEL DR / HUTCHINSON RD			
0+02	4.0 SSCL & 25.0 WWCL	2.5	2" Plastic End Cap
0+00	4.0 SSCL & 23.0 WWCL	3.0	2" Plastic Stopper Tee
0+01	5.0 SSCL & 23.0 WWCL	3.0	2" Plastic Bend
1+11	6.0 CL	2.5	2" PL IP
2+02	4.5 CL	2.5	2" PL IP
3+02	5.0 CL	2.5	2" PL IP
3+86	5.5 CL	2.5	2" PL IP
4+81	6.5 CL	2.5	2" PL IP
5+79	6.0 CL	2.5	2" PL IP
6+76	6.0 CL	2.5	2" PL IP
FROESSEL DR / VEGA DR			
7+13	1.0 NSPE & 40.0 EECL	2.5	2" Plastic Bend
7+14	0.0 SSPE & 40.0 EECL	2.5	2" Plastic Stopper Tee
7+16	0.0 SSCL & 42.0 EECL	2.5	2" Plastic End Cap



1:1,022

2013 – TARGETED FOR ASBUILT UPGRADE

- Motivating Goals

- Need to Upgrade to 10.1
 - Not compatible with current process
- Need to Upgrade GPS Receivers to Pro6H
 - Not compatible with current process
- Need for a more repeatable work process
 - Simplify process, improve efficiency, advance technology
- Reduce versioning footprint of AsBuilting
 - State 0
- Collect GPS data in real time using MODOT's free VRS Network
 - Not compatible with current process

MODOT VRS NETWORK

Missouri Department of Transportation Virtual Reference Station Network

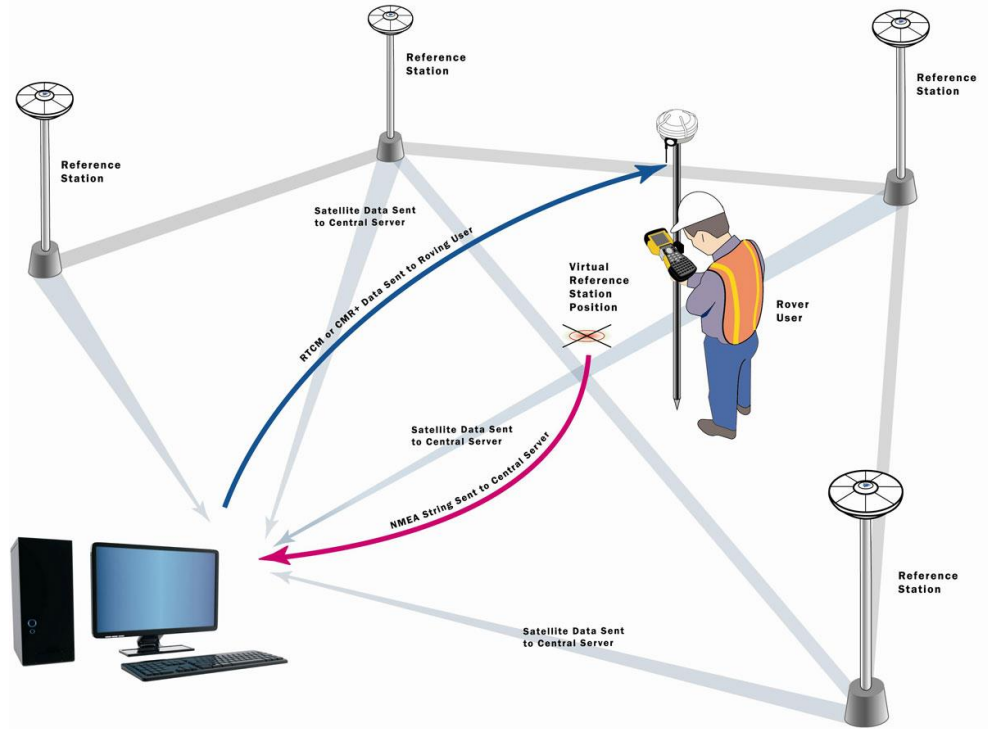
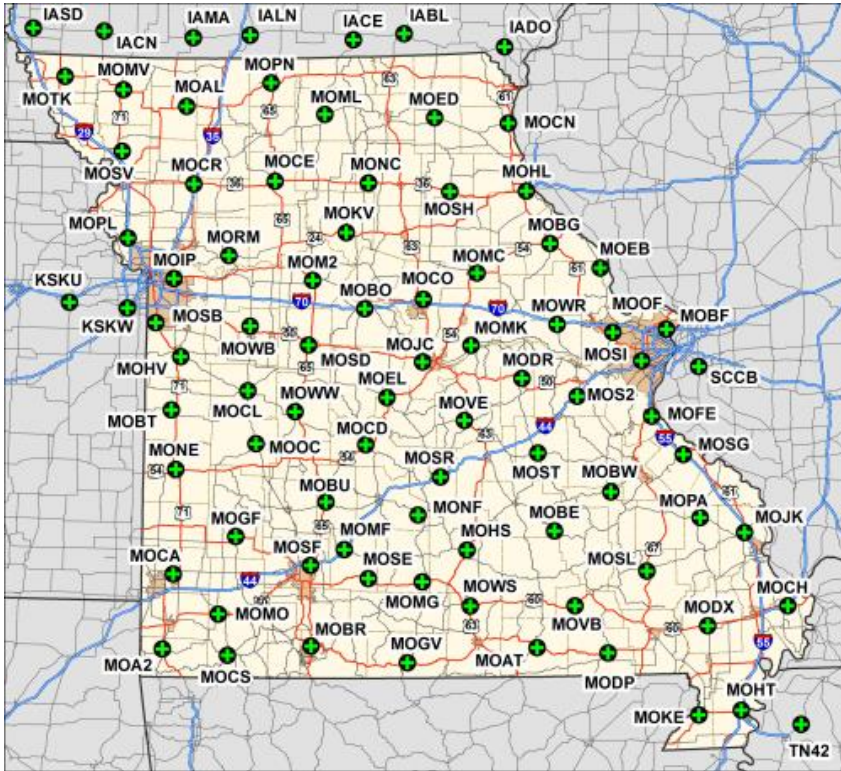


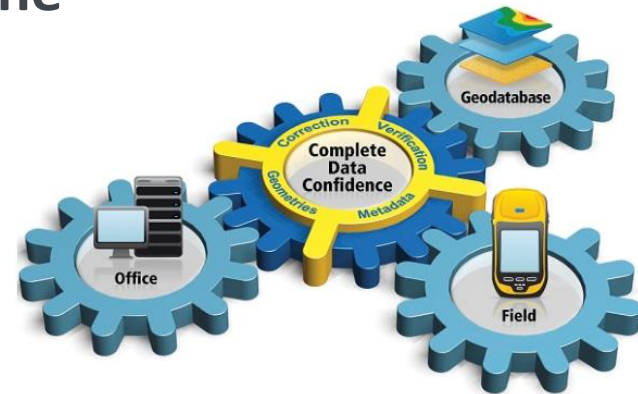
Image courtesy of Trimble

ARCGIS FOR WINDOWS MOBILE WITH TRIMBLE POSITIONS

Recently released Trimble Positions was the obvious choice for us



- Replacement to GPS Analyst at 10.1 and available under current maintenance agreement
- Compatible on all levels (10.1, Pro6H, VRS)
- ArcGIS for Windows Mobile 3.1 simplified the process and was available with our current server advanced licensing



WORKFLOW CONSIDERATIONS

- Geometric Network
 - Compatibility Issues
- Versioning
 - Reduce Number
 - Sync / Reconcile / Post
- Mobile Project Creation
 - Job vs User Mobile Project
 - Templates???

WORK PROCESS DEFINED

- GPS Features

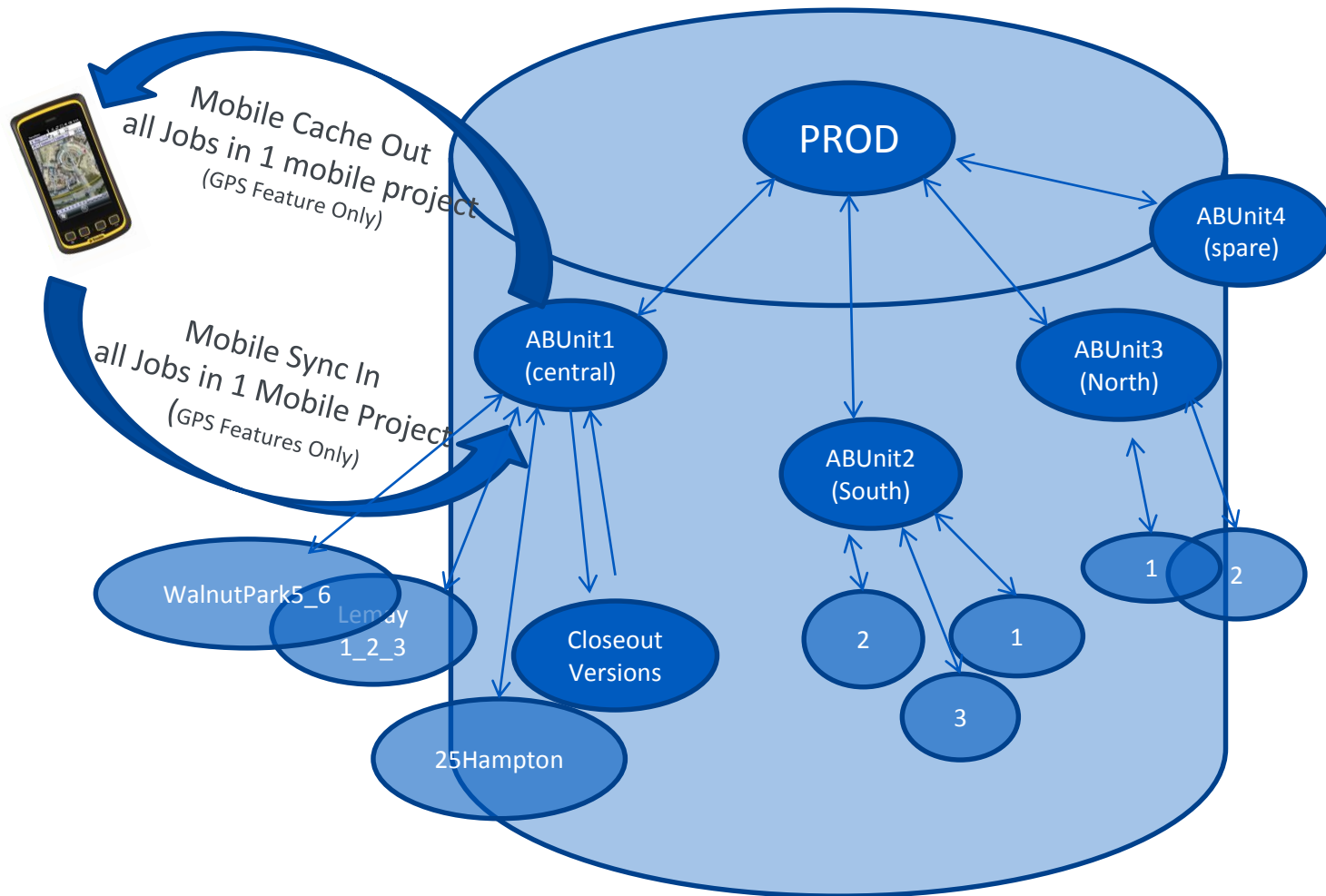


Separate feature classes for GNSS Collection

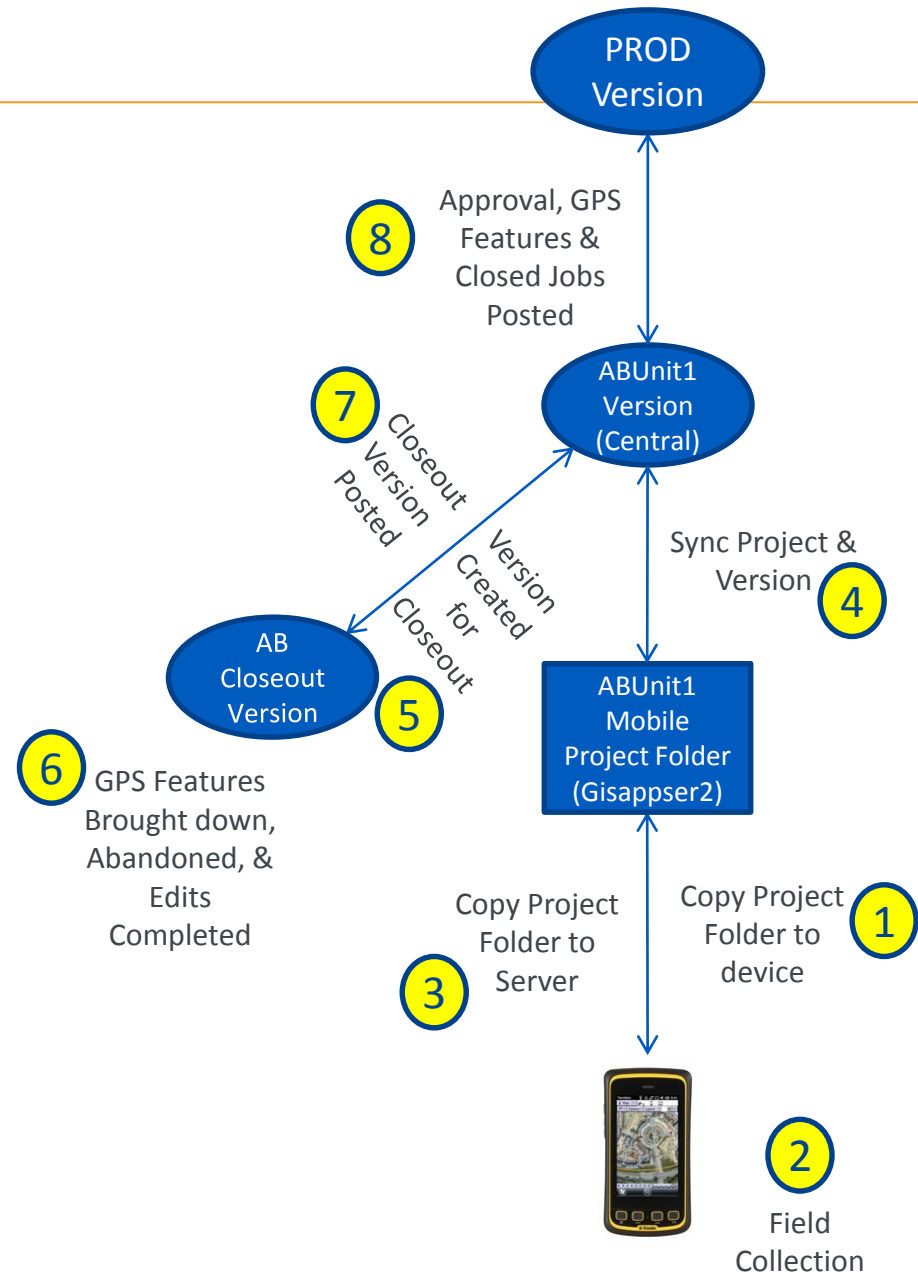
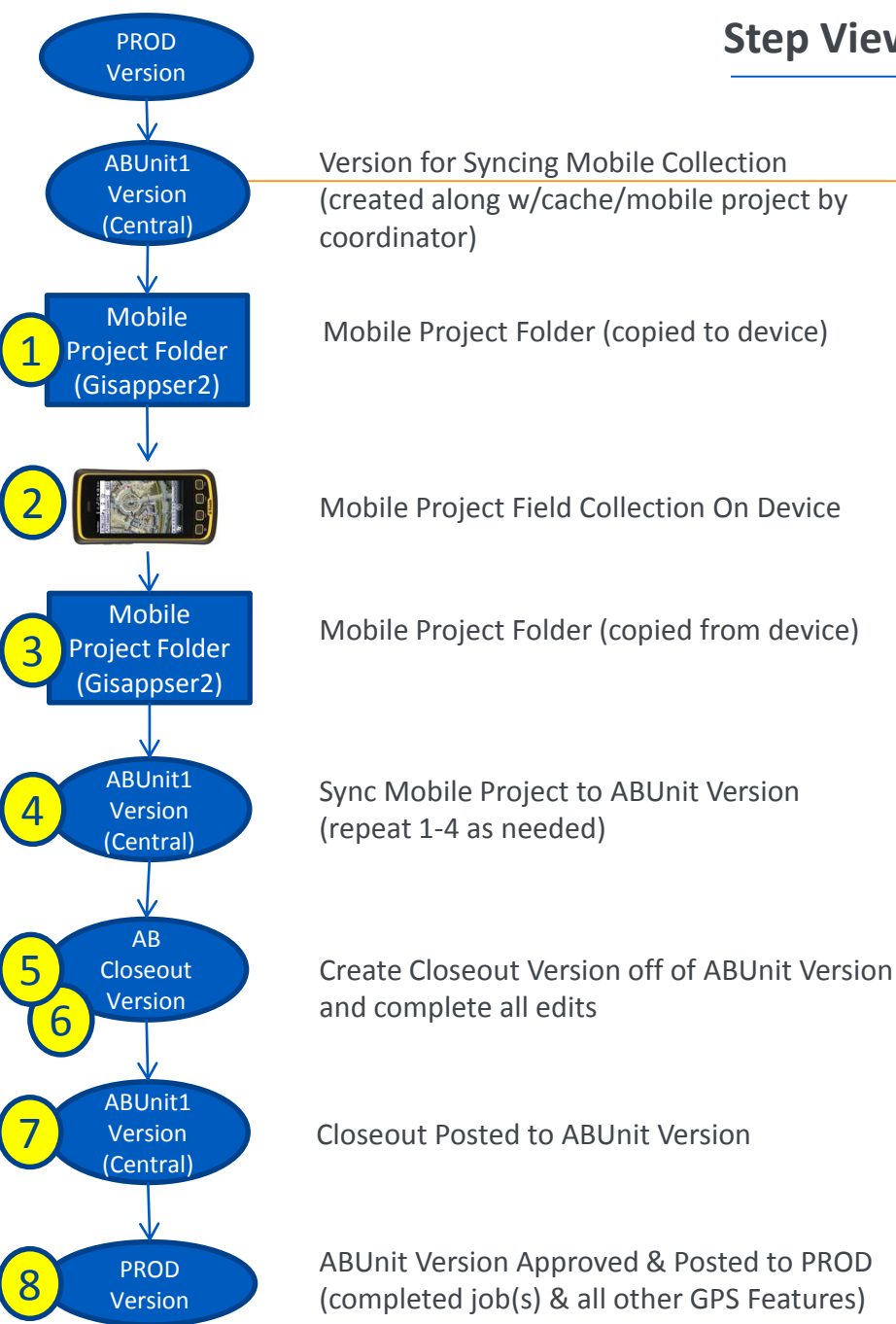
- No Geometric network
- Can reconcile and post GPS features freely while jobs are in progress
- In progress GPS data available in production
- ArcFM Abandonment tools configured to transfer GPS Features to Gas Facility Features at closeout (mirrored schema)
- Further facilitates user templates and improved versioning structure

WORK PROCESS DEFINED

- Versioning



Step View Flow View



WORK PROCESS DEFINED

- Mobile Project Templates Created

- 1 AsBuilt Unit Folder Created for each User / GPS Unit

- ABUnit4Cache.mxd
 - mxd used to create original cache, also used to sync data back to corresponding version
 - ABUnitMPF Folder
 - “Mobile Project Folder”, copied back and forth from Juno
 - Contains ABUnitCache file along with Mobile Schema and Configuration
 - ABUnitGPSEdit.mxd
 - For editing jobs (different setup, can be saved)

AsBuilt Template Work Process

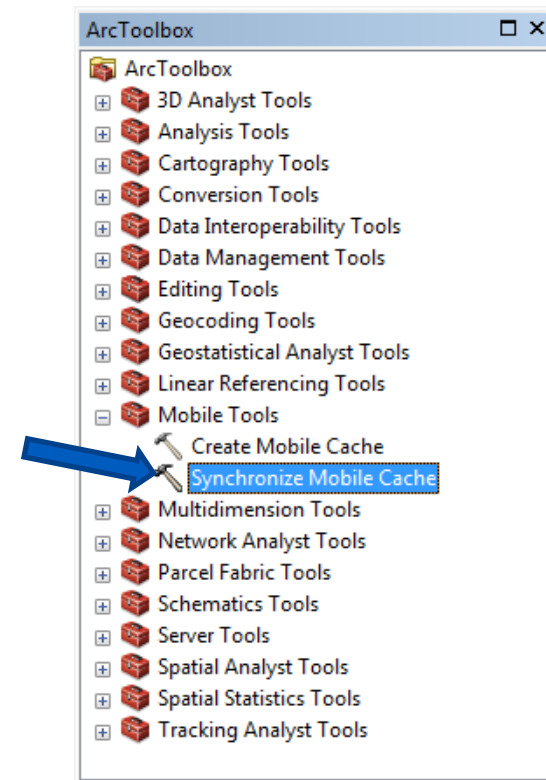
AsBuilt Collection Work Process

MOBILE COLLECTION DEMONSTRATION

- Collect



- Sync



CONCLUSIONS

- Improved Efficiency
 - Elimination of check-out/check-in overhead for each job huge time saver
 - Simplified field collection and added flexibility
 - Real time collection nearly all of the time has virtually eliminated the need for post processing data
- Successfully Upgraded All Technologies
- Versioning Footprint Reduced
 - Overall number of versions and their life cycle significantly reduced; therefore, reconcile conflicts were also reduced and version management improved
 - State 0 reached and remains achievable
- Next Steps
 - Sync w/ ArcServer....
 - Other special project uses for mobile....

RECOGNITIONS

- Tyler Suda, Michael Bartlett, and Mark Vlaich at Laclede Gas
- Matt Morris at Trimble
 - Positions Blog - <http://positionsblog.trimble.com/>
 - ESRI Training Course – “Collect High-Accuracy Data with ArcGIS for Windows Mobile”
 - <http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseID=2593>
- Jay Riester at Seiler Instruments
 - Mapping Support Blog - <http://seilermapsupport.wordpress.com/>
- Melvin Distler at MODOT
 - <http://gpsweb.modot.mo.gov/>

Q&A
