



Leveraging the Same GIS and CAMA Data for Multiple Applications

Tennessee Comptroller of the Treasury



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Assessment Systems Manager
Division of Property Assessments

Ken Morrell



Tennessee Comptroller of the Treasury

- Constitutional officer elected by a joint vote of both Houses of the General Assembly for a twoyear term
- Duties include the audit of state and local governmental entities and participation in the general financial and administrative management and oversight of state government





Tennessee Comptroller of the Treasury

- Responsibilities also include property tax administration, oversight and assistance at the state level through...
 - Division of Property Assessments (Appraisal, Assessment, CAMA)
 - Office of Local Government (GIS, Mapping, Redistricting)
 - Office of State Assessed Properties (Public Utilities)
 - State Board of Equalization (Policy, Exemptions, Appeals)
- Property tax in Tennessee is a local tax. The state receives no revenue from the property tax.





Tennessee Comptroller of the Treasury

Mission

To make government work better.



Justin P. Wilson Comptroller of the Treasury

http://www.comptroller.tn.gov/





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The Data The Maintenance The Applications





The Data



Ken Morrell

Assessment Systems Manager
Division of Property Assessments
Comptroller of the Treasury
State of Tennessee





A long time ago in a galaxy far, far away...

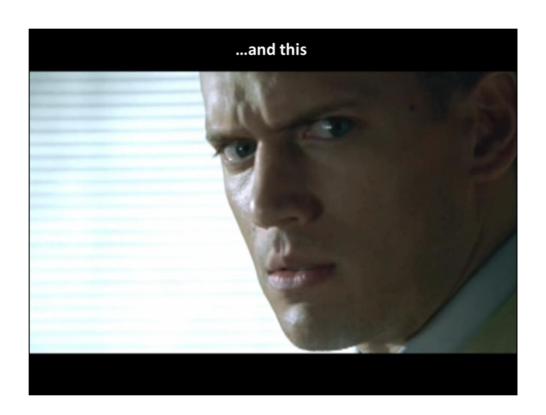
- GIS was being used by only a handful of counties and cities in Tennessee
 - ChattMap conferences
- · There was no overall state GIS effort
 - GIS was being used in certain agencies such as Wildlife Resources and Transportation
- The Comptroller's Division of Property Assessments saw a need...













The Data

It all starts with data...

Tennessee Base Mapping Program (TNBMP)

Vision Statement

Create a statewide GIS base map through partnership development that can be used in support of a wide range of local, state, and federal programs





The Data Building the Digital Map

- Tennessee Base Mapping Program was initiated by the Comptroller of the Treasury, Division of Property Assessments in 1996
 - · Presentations to decision makers on benefits of statewide GIS
- Phase 1 (1997-98)
 - Pilot program to develop specs and test concept of a digital statewide mapping program
 - 5 counties
 - · CAMA data integration included in pilot
- Phase 2 (1998-2000)
 - · Creation of GIS Services division in Finance & Administration
 - · Development of business plan with sustainable funding





The Data Building the Digital Map

- Phase 3 (2000-07)
 - Statewide GIS data production
 - Managed by GIS Services

 - Paper parcel maps digitized by contractor Partnership between GIS Services and Comptroller's Office
 - Deliverables: Digital orthophotography and features
 - Partnership development

 - Funded by state / local partnerships Data available for use by multiple levels of government
- Phase 4 (2008 present)
 - Data Maintenance through Comptroller's Office of Local Government
 - Ortho Imagery Update





- Statewide digital orthophotography program conducted in cooperation with the Tennessee Department of Transportation (TDOT)
- Updates ortho imagery for a quarter of the state annually
- With 4 regions, TDOT collects 1 foot digital color ortho imagery for the entire state once every 4 years





- Key elements of GIS Services / TDOT Partnership
 - TDOT
 - Responsible for project management, base map data development, and data delivery
 - Capture orthophotos for ¼ of State annually
 - GIS Services
 - Responsible for data hosting and distribution
 - TNMap enterprise GIS as the data access mechanism to the general public and state agencies
 - Dissemination to local government





- Cost effective approach that meets needs of State and local users
- Ability to leverage federal funding to help reduce or eliminate duplication of effort
- · Regional acquisition
 - · County-by-county is more expensive/inefficient
 - Eliminate production of overlapping map sheets
- Ability to develop set schedule for updates





Original TNBMP Grayscale Orthophotos vs.

Updated TNBMP Color Orthophotos









The Data

For more information on GIS Services

http://tn.gov/finance/section/sts-gis-section-main-page







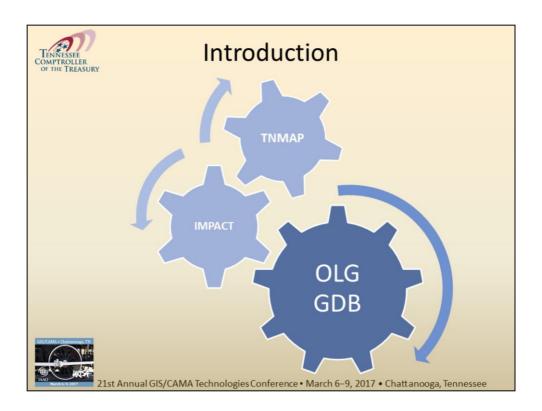
Outline

- Introduction
- OLG Enterprise Geodatabase
- System Diagram
- Core Maintenance Architecture Components
- Summary by the Numbers

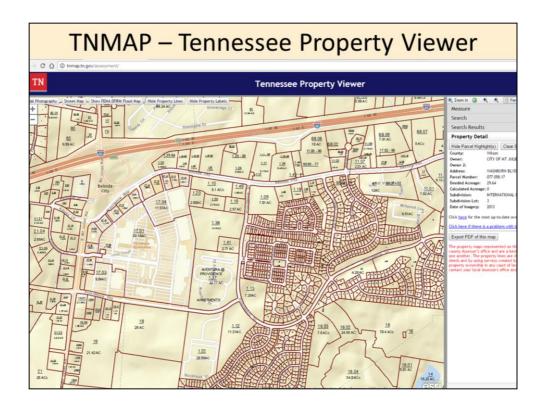


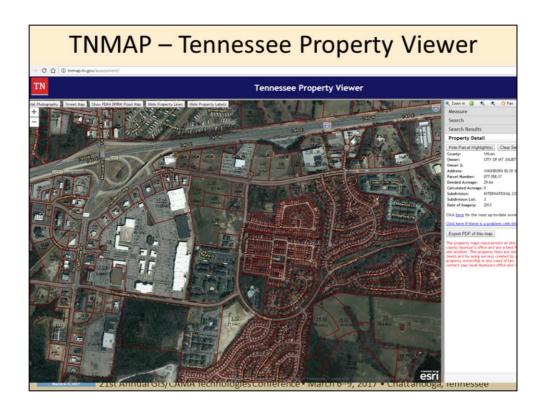


The Comptroller of the Treasury - Office of Local Government (OLG) manages the cadastral GIS programs for approximately 86 of the 95 county property assessors in the State of Tennessee.



OLG's statewide enterprise geodatabase is then made available to Government entities, as well as the general public, through applications like the TNMap, IMPACT, etc.



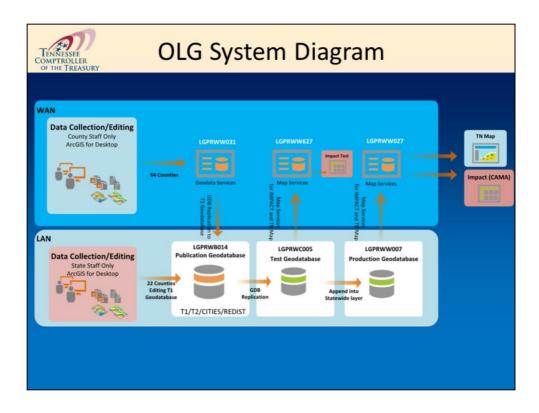




OLG Enterprise Geodatabase

- We have 4 database instances that reside in Publication Geodatabase.
- One of them houses the parcel data for the 22 counties that are maintained internally by the OLG's Mapping division (T1).
- The other geodatabase houses the parcel data for the 64 counties that maintain their data locally (T2).





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OLG Geodatabase System

Core Maintenance Components

- 1. Data Loading
- County-Level Configuration and Replication
- 3. State-Level Data Distribution
- 4. Data Managed and Maintained by OLG





Data Loading

- This process consists of taking a copy of the county's most recent data and loading it into our enterprise geodatabase.
- We then run some QA/QC processes to ensure good data quality.

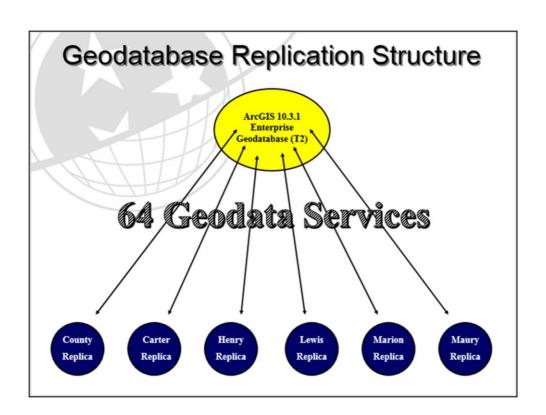




County-Level Configuration & Replication

- This process replicates changes from the local geodatabase into OLG's statewide geodatabase via GeoData web services.
- 64 distributed geodatabases that have been deployed to counties throughout the state.
- We use a scheduled task to automatically execute the replication process on a predefined interval.



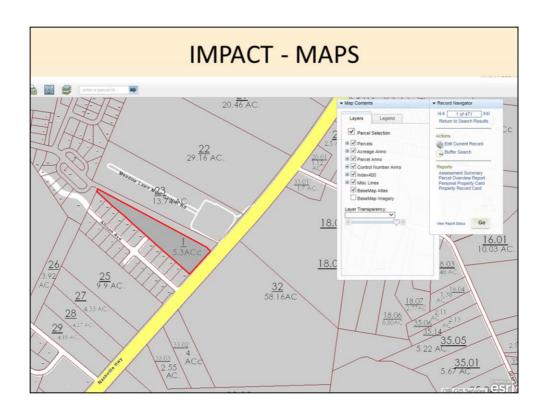


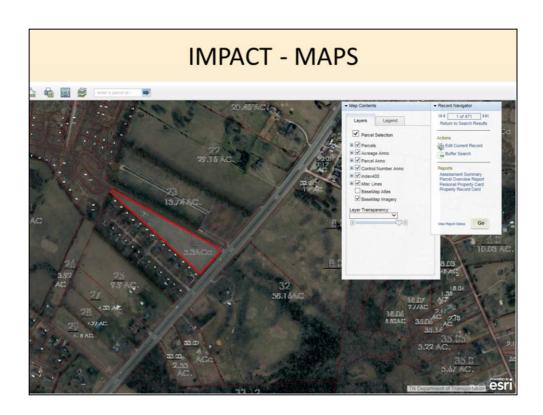


State-Level Data Distribution

- Comptroller's Integrated Multi-Processing of Administrative and CAMA Technology (IMPACT) application via map services.
- Strategic Technology Solutions via appended statewide layers. STS houses services that target state and federal agencies. Via the folks at STS, OLG's parcel (with a few other layers) will be incorporated into the TNMap

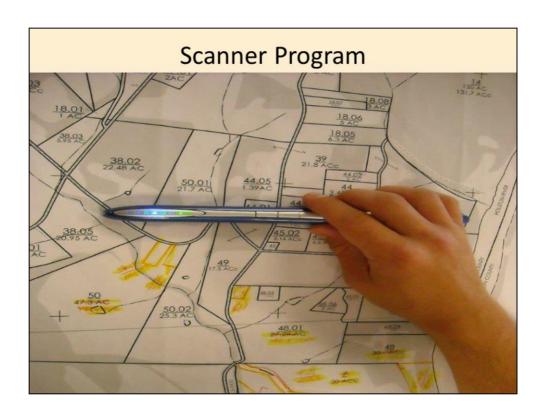


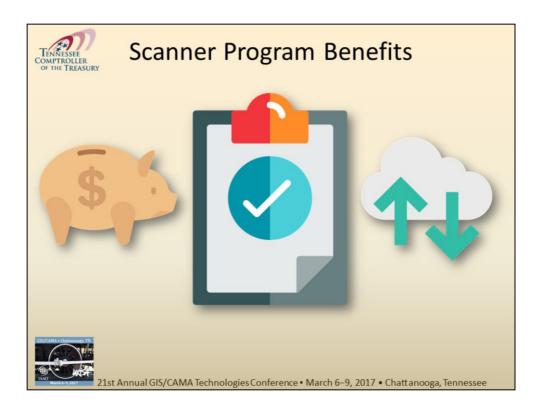






Some counties (22) still use good old paper maps due to the low cost (no computer hardware or software needed).





Click

• Counties realize cost savings of not having to ship maps to Nashville. The counties also realize cost savings by requesting only updated maps instead of complete sets.

Click

• Map data is more current and accurate.

Click

• Map data is closer to being in sync with the assessment information.



Scanner Program Benefits

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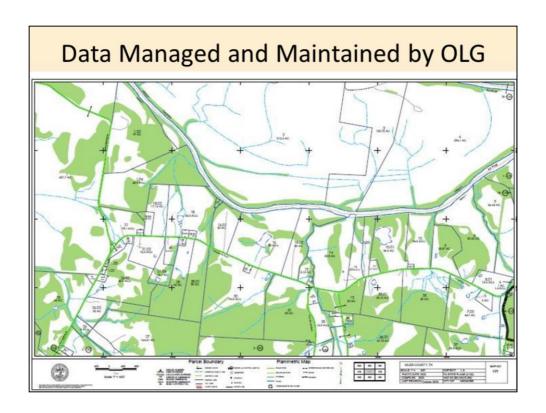


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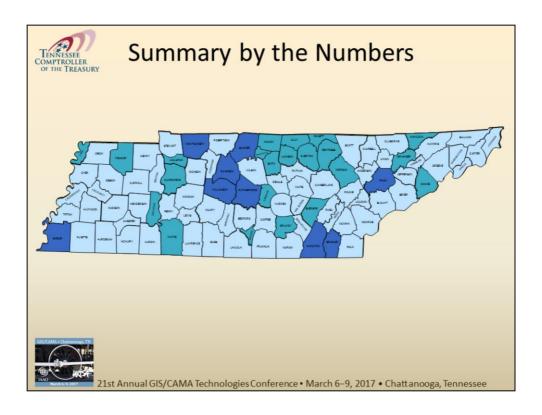
Counties realize cost savings of not having to ship maps to Nashville. The counties also realize cost savings by requesting only updated maps instead of complete sets.

Map data is more current and accurate.

Map data is closer to being in sync with the assessment information.



• The counties request only updated maps instead of complete sets. These are printed in house and shipped to the county as needed.



State of Tennessee is comprised of **95 Counties**.

95 Counties approximately 3.2 million parcels.

- -CLICK
- 86 counties managed by OLG, same GIS dataset schema.
- 86 Counties managed by OLG approximately 1.9 million parcels.
- -CLICK
- (OF THOSE 86) 64 Counties Replicate data changes nightly to OLG.
- -CLICK
- (OF THOSE 86) 22 Counties edited in house by OLG.
- -CLICK
- 9 Counties have their own schema but most very similar and integrates well with our data (All ArcGIS Geodatabases).



Contact Information

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The Applications

- GIS has become an indispensable tool in the assessment process
- As the uses of integrated GIS and CAMA data have grown, the number of mission-specific applications using the same data has grown
- Using the data in multiple applications places even more importance on having and maintaining accurate GIS data





The Applications

- GIS and CAMA data is integrated in multiple targeted applications for the assessment process
 - 1. GIS integrated into the CAMA system
 - 2. PC application for GIS-centric inquiry and reappraisal analysis in the office and in the field
 - 3. Mobile field data collection application
 - 4. Public web access to CAMA and GIS data

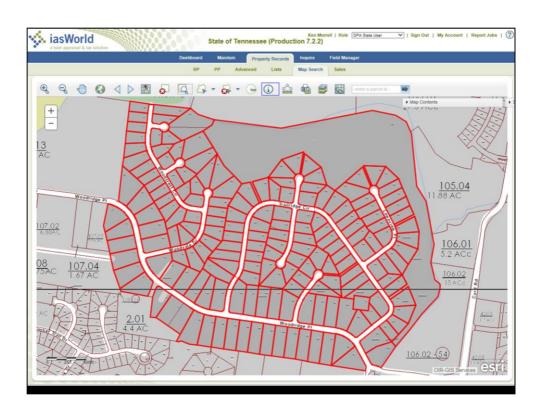


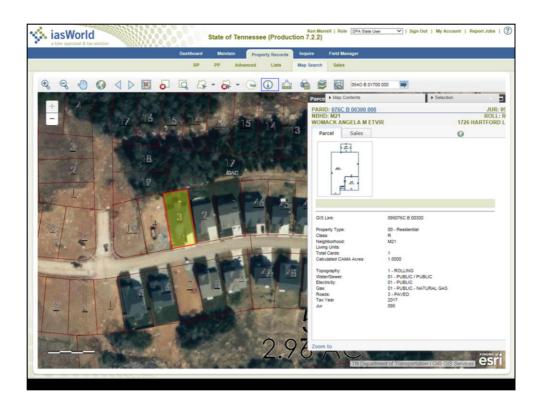


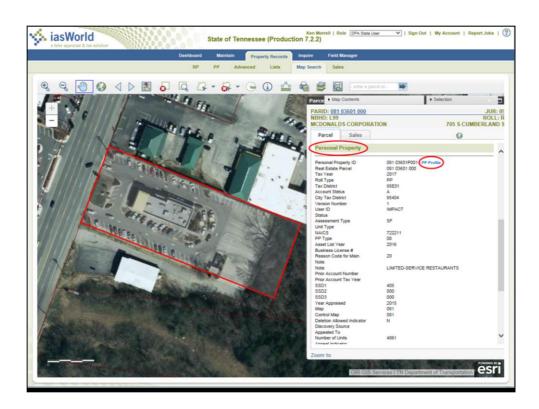
The Applications GIS integrated into CAMA

- 84 of Tennessee's 95 counties use a CAMA system hosted and managed by the Comptroller's Office
 - 2 million parcels
- Current TNBMP data exposed in CAMA as services from the Comptroller's enterprise geodatabase
- · Visualization of selected parcel(s)
- Typical GIS functionality (zoom, pan, select, identify, measure, buffer, print, export)
- · Select parcels on map to create list for batch update
- View related Personal Property accounts from map











MapViewer

- Current TNBMP data extracted from county and/or state geodatabases into shapefiles
- · Orthos in MrSID format
- User-friendly interface customized for use in property assessment
- Can run in a networked or disconnected environment





The Applications GIS Inquiry/Analysis Application for Office/Field

- MapViewer (cont'd.)
 - GIS in the hands of assessment personnel
 - 724 machines statewide (621 county, 103 state)
 - Current version
 - Developed in 2003 using Visual Basic and ESRI MapObjects
 - Coming version
 - Currently in development using Visual Studio and ArcGIS Runtime
 - Prototype code written by ESRI
 - · Application to be completed by state





The Applications GIS Inquiry/Analysis Application for Office/Field

- MapViewer (cont'd.)
 - Parcel lookup and inquiry (owner, address, parcel)
 - View CAMA data (property record card) from map
 - Thematic maps, labels, measure, overlay, buffer, print, export
 - View the map and property record card for any parcel in the county
 - View live GPS location

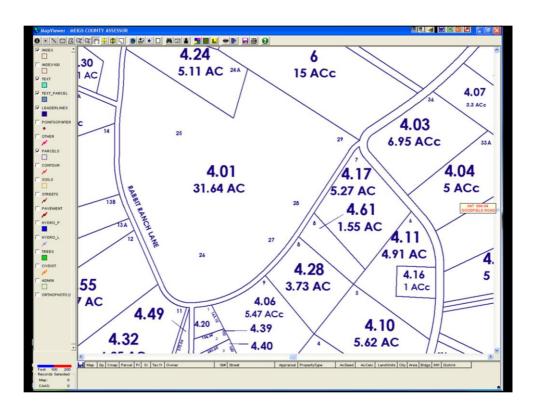


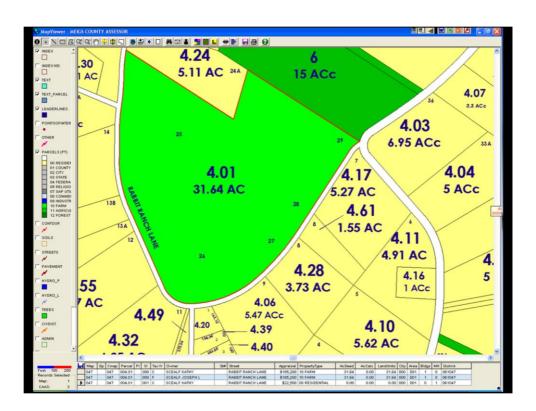


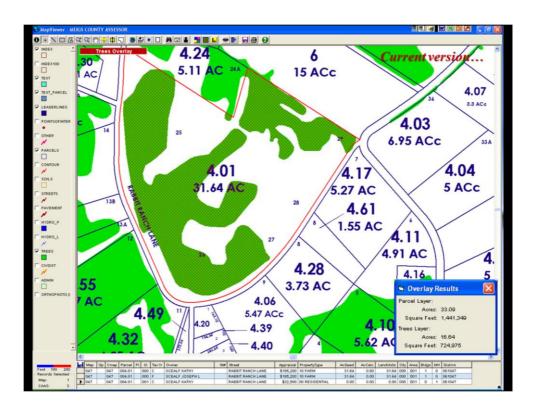
The Applications GIS Inquiry/Analysis Application for Office/Field

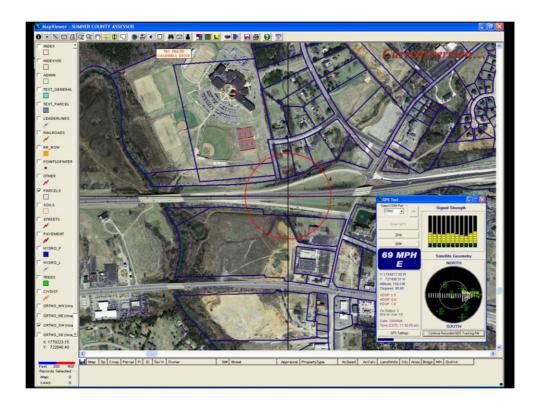
- MapViewer (cont'd.)
 - Used in the Assessor's Office by
 - Office personnel
 - Appraisal personnel
 - · General public
 - Used in the Field by
 - · Appraisal personnel

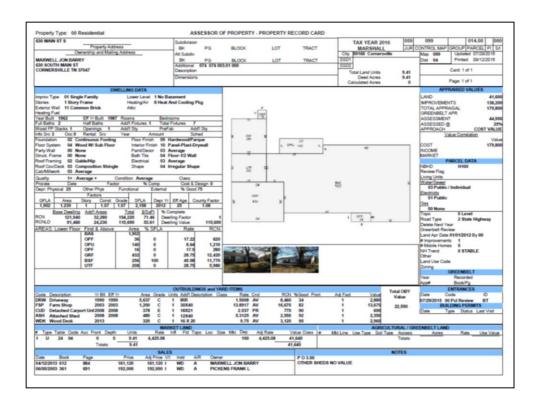


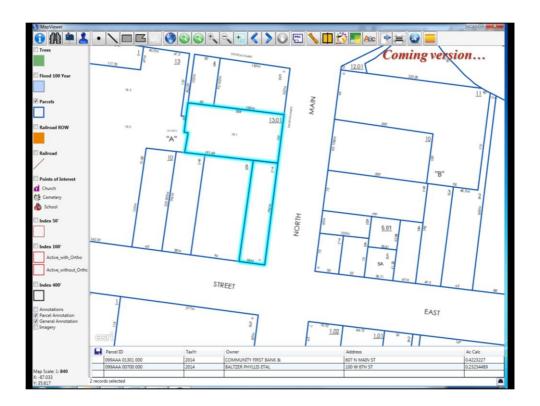


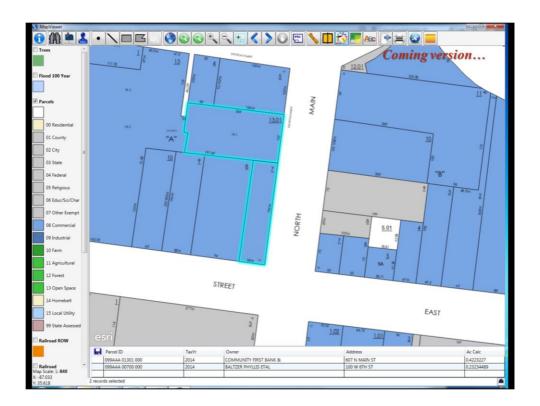


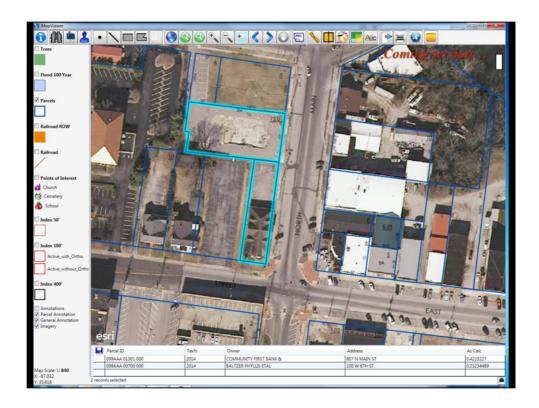














The Applications Field Data Collection

- · Mobile field data collection application by CAMA vendor
- Current TNBMP data extracted from geodatabase into runtime geodatabase (i.e., runtime content)

(See next presentation on Python script to extract and prepare runtime data)

- Runs in a disconnected environment
 - · Connect to download / upload CAMA parcels
- Limited number of parcels at a time (neighborhood, permits to review, etc.)
- · Parcels on device displayed on map
- · Status changes visible on map

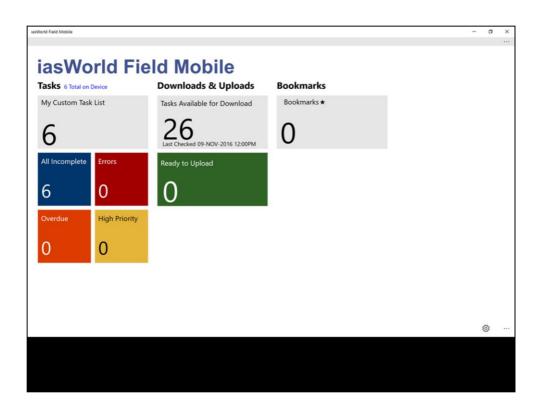


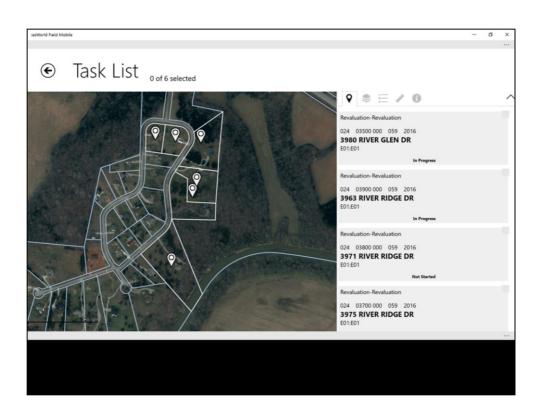


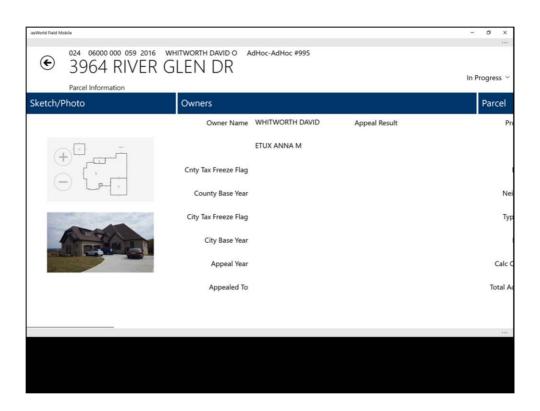
The Applications Field Data Collection

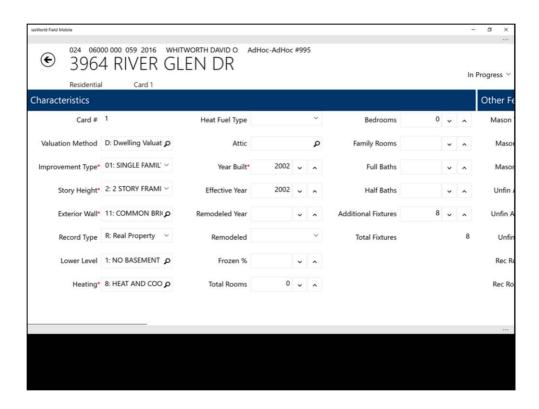
- Currently in testing prior to implementation
- Basic GIS data currently seen can be expanded as we get closer to implementation

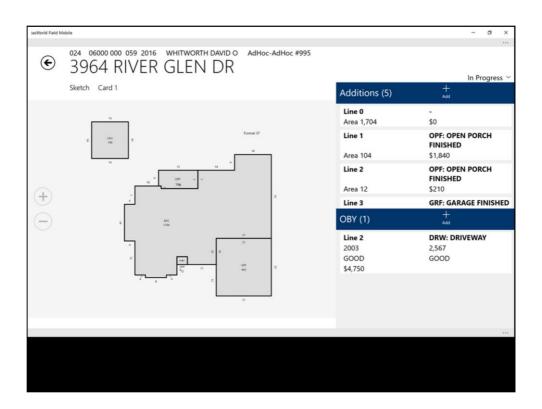














The Applications Public Web Access

- Updated TNBMP data provided by Comptroller's Office of Local Government to GIS Services (F&A)
 - Monthly updates of digital parcel data and municipal boundaries
- GIS Services hosts the Tennessee Property Viewer to display that map data
- Subset of attributes from CAMA data also provided
- Live link to more complete CAMA data on the Comptroller's Real Estate Assessment Data website



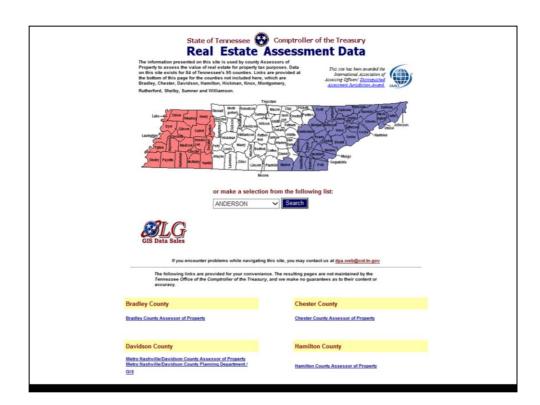


The Applications Public Web Access

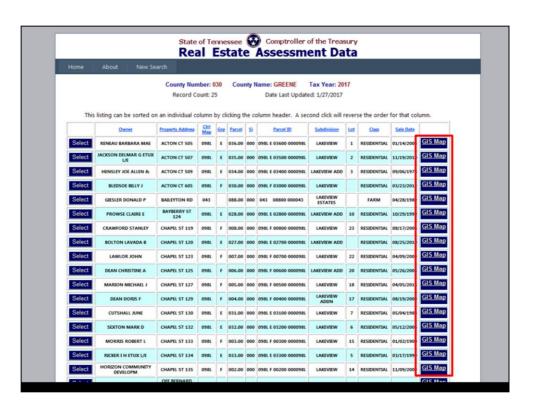
- Two-way interaction between Tennessee Property Viewer and Real Estate Assessment Data
 - Search assessment data and view related map
 - · Search map and view related assessment data
- Free to the public 2 million assessment records and their related maps
- · One way to make government work better

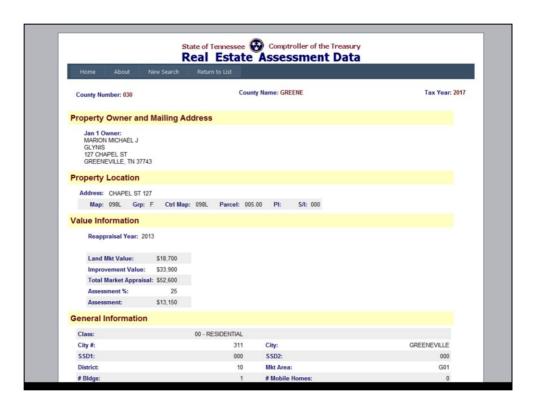


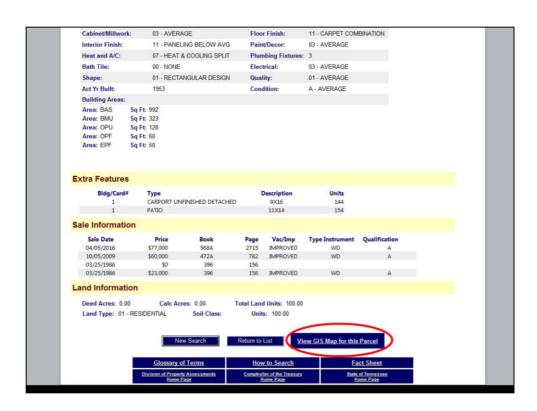
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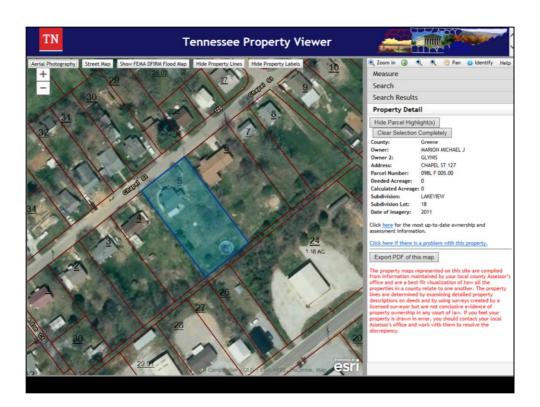




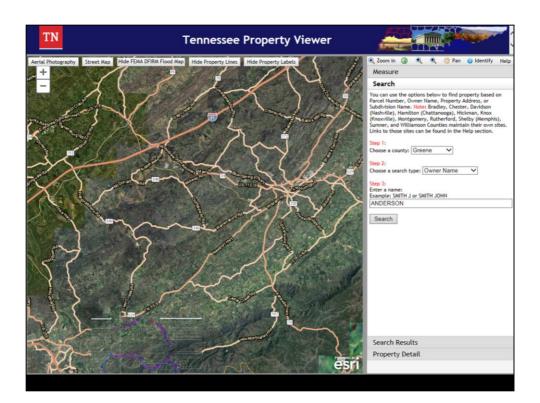


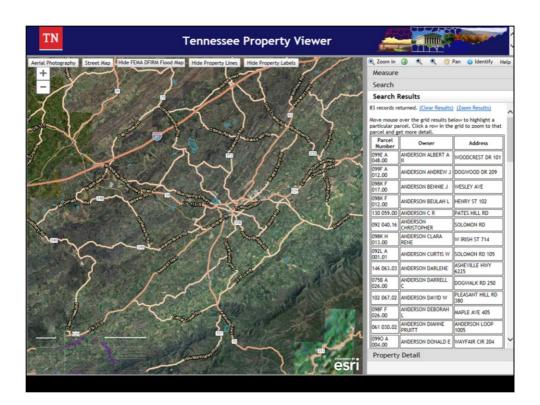












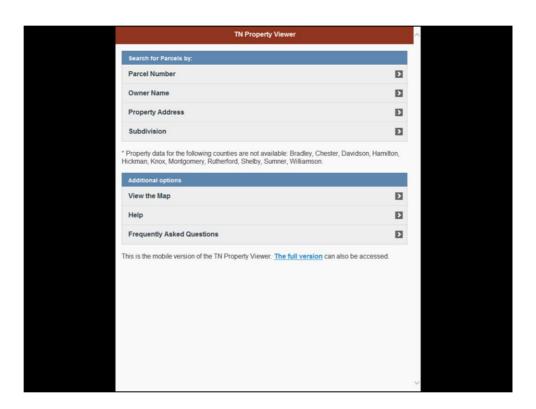


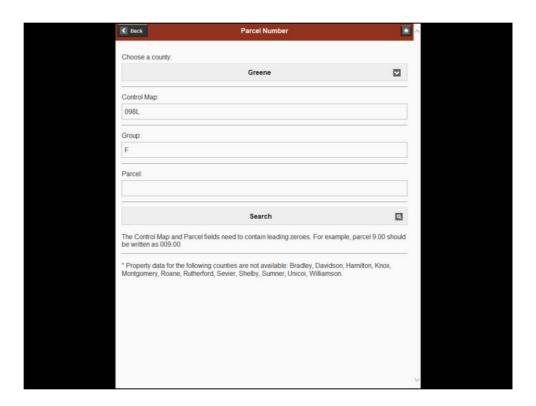
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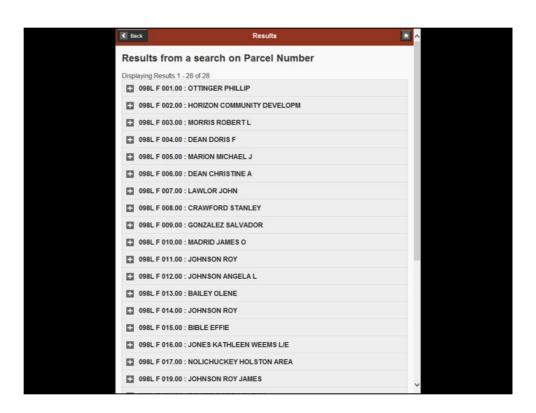
And, there's a mobile version...

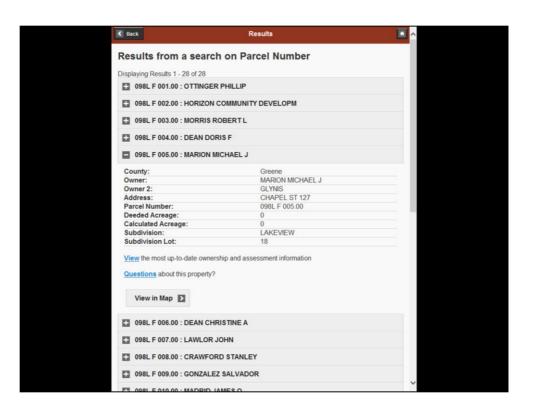


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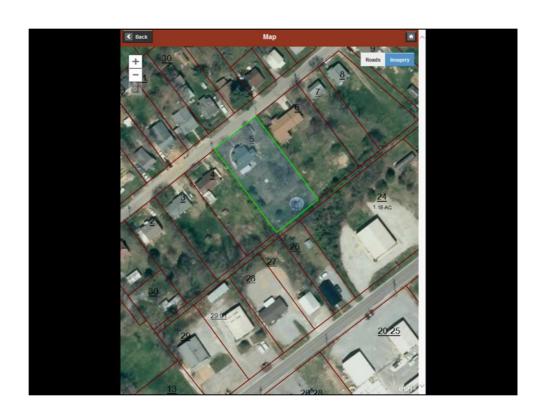














Why Multiple Applications?

- · Different needs for different audiences
- Applications focused to specific needs
- Location of usage (office vs. field vs. public)

Note: The age of the applications using the same spatial data may require the data to be in different formats



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Conclusion

Using Tennessee's GIS and CAMA data together in multiple applications and providing it to multiple audiences is helping to make government work better.



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