

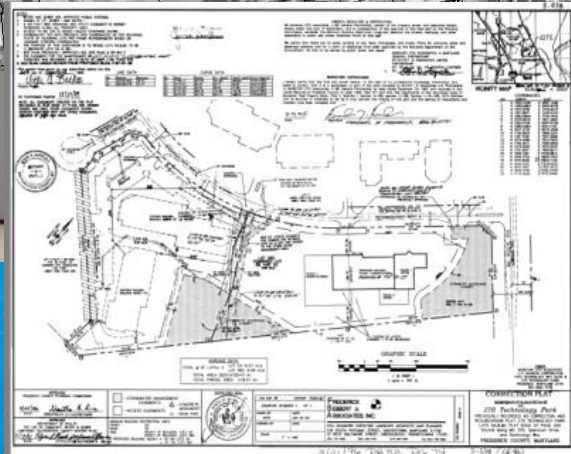
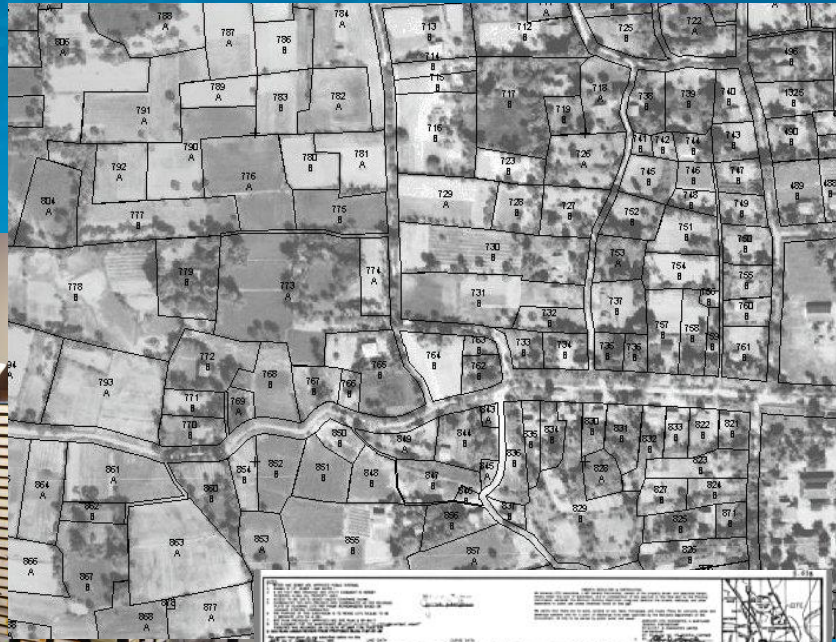
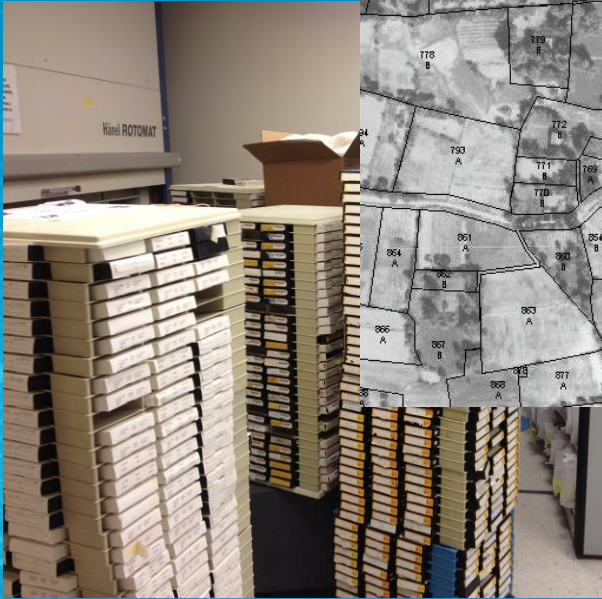


# GIS and CAMA Integration 101

Brent A. Jones, PE, PLS

# System of Record

Organizes and Manages the Legal Record of Ownership, Value and Location



## Cadastral History



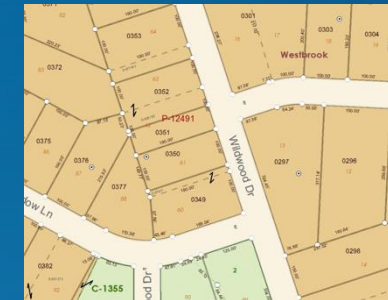
Quebec, Canada

## Parcel Query



Auckland, New Zealand

## Tax Parcels



Wisconsin

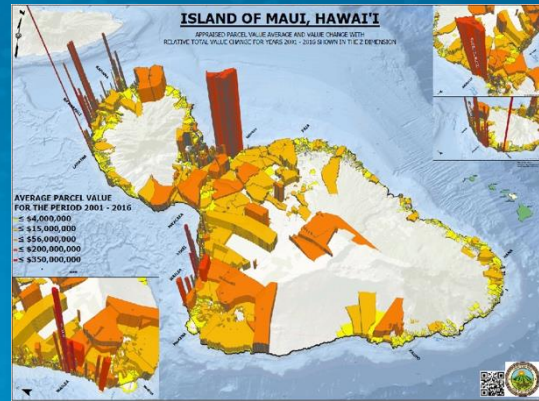




# System of Insight

Understand the factors impacting property value and use

## Parcel Values



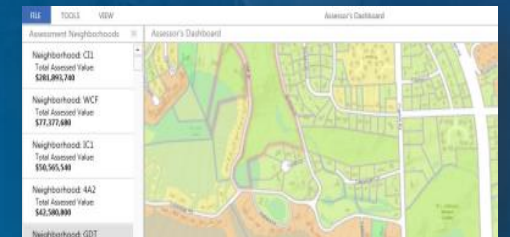
Maui

## Historic District Property Values

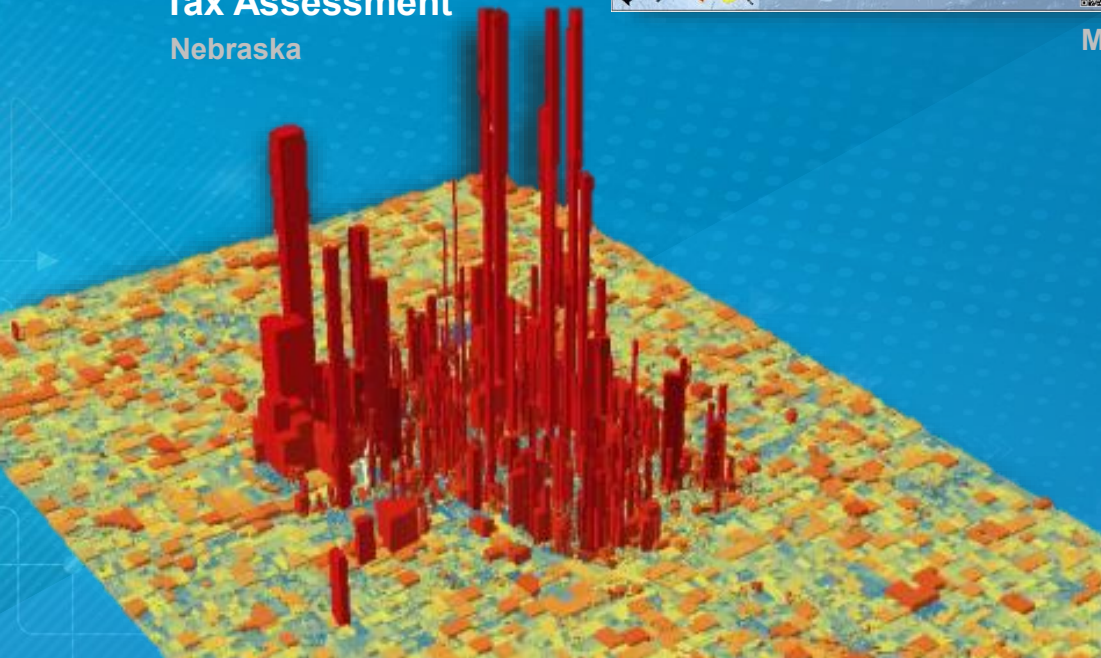


Georgia

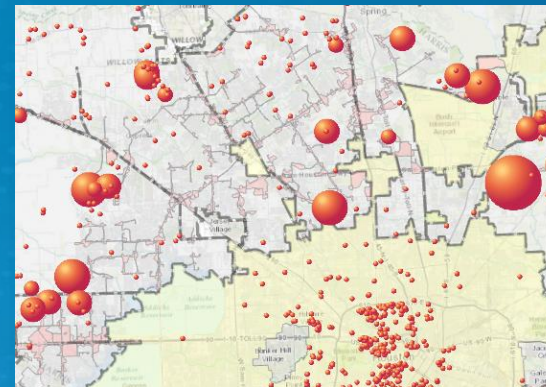
## Value Analysis Dashboard



## Tax Assessment Nebraska

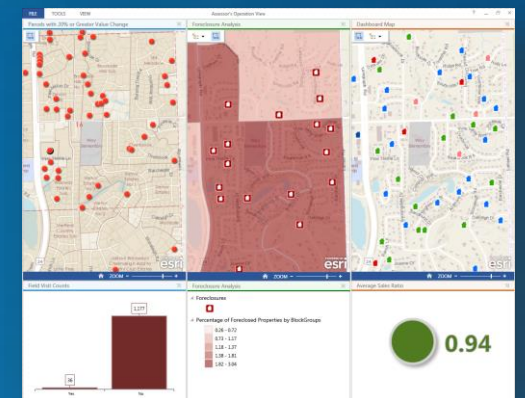


## Residential Platting



Texas

## Operations Dashboard

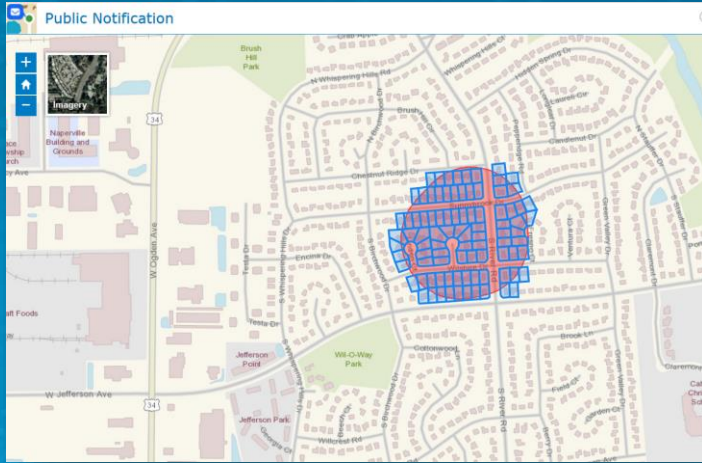




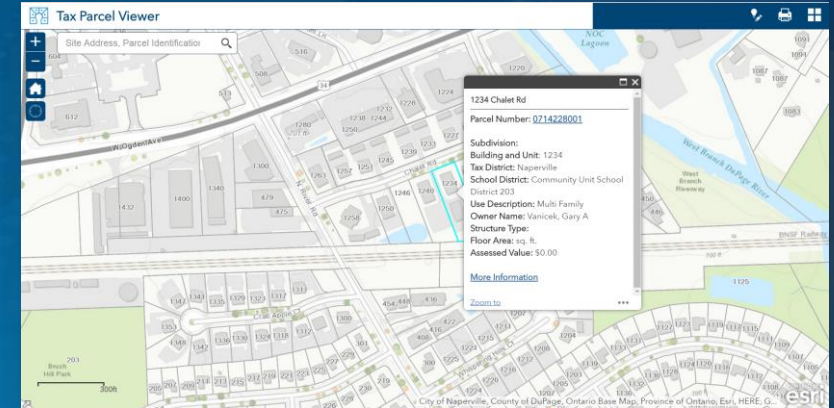
# System of Engagement

Modern Transparency

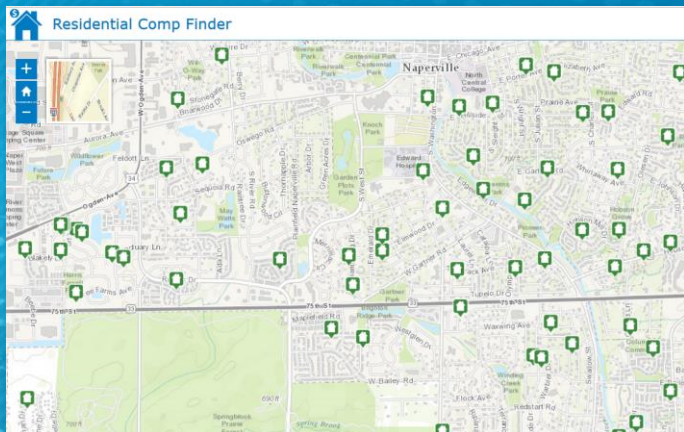
Engaging taxpayers, businesses and citizens with government



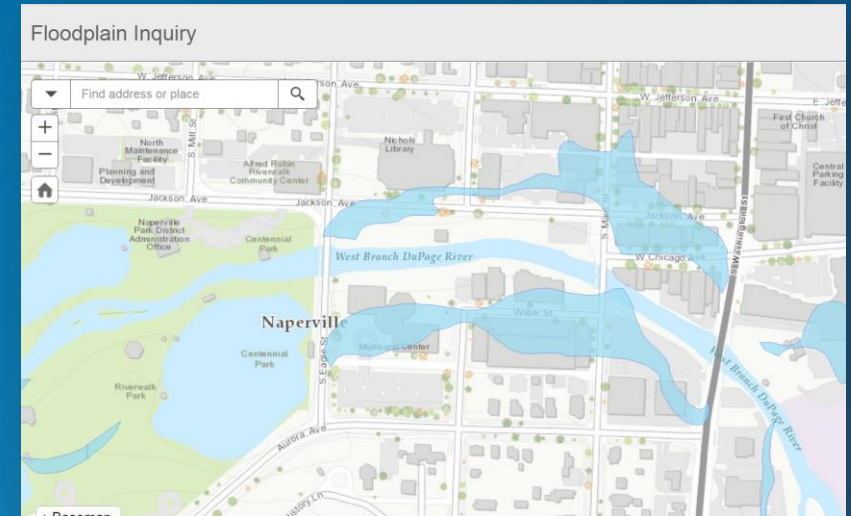
Public Notification



Public Access to Tax/Parcel Data



Residential Comparable Sales

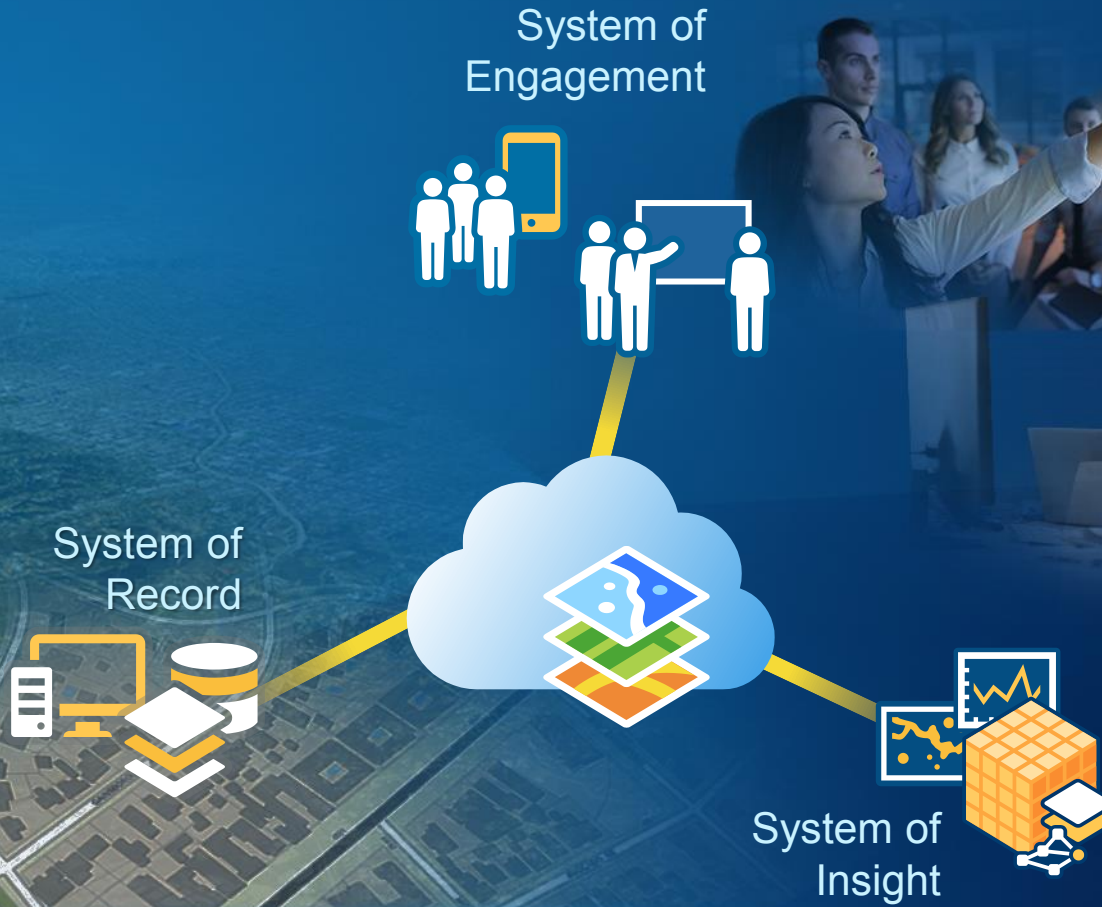


Flood Plain Locator

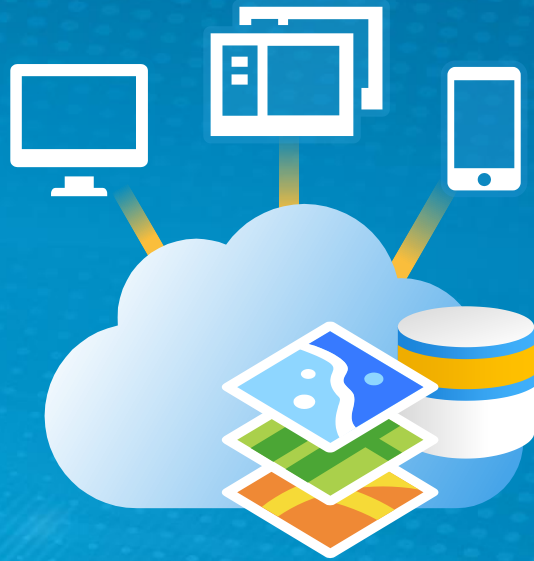


# GIS

Enables Multiple Types of Systems



# GIS Is Evolving



## Expanding Your Capabilities

Client / Server	→	Web Services & Apps
Stand-Alone Desktop	→	Connected Desktop
Data Models	→	Web Maps & Layers
Static Data	→	Real-Time
Single Server	→	Distributed Computing
Custom Applications	→	Configurable Templates & Apps
Proprietary Data	→	Open Data & Shared Services
2D Features	→	3D Features
Spatial Analysis	→	Spatiotemporal & Big Data Analytics
Digital Cartography	→	Smart Mapping



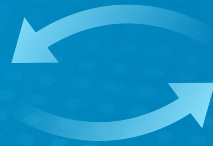
# GIS

## An Integrated Web Platform

Web GIS



CAMA



Desktop



Web



Device



Apps



Identity  
Security

Portal



Access

Geoinformation  
Model

Services



Server



Online Content  
and Services

*Available on the Open Web . . .  
. . . and On-Premises*

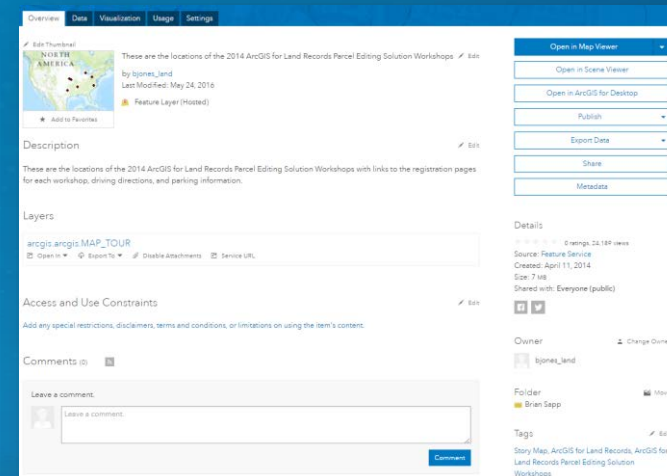
# Web Services

Organizes and Securely Sharing Data.....

# https://

- **Secure**
- **Standards-based**
- **Controlled Access via Identity**
- **Control Who Does What**
  - **View**
  - **Query**
  - **Edit**
- **Monitor/Track**

<http://esriland.maps.arcgis.com/home/item.html?id=5969689b642840e39cf0491669484e0b>

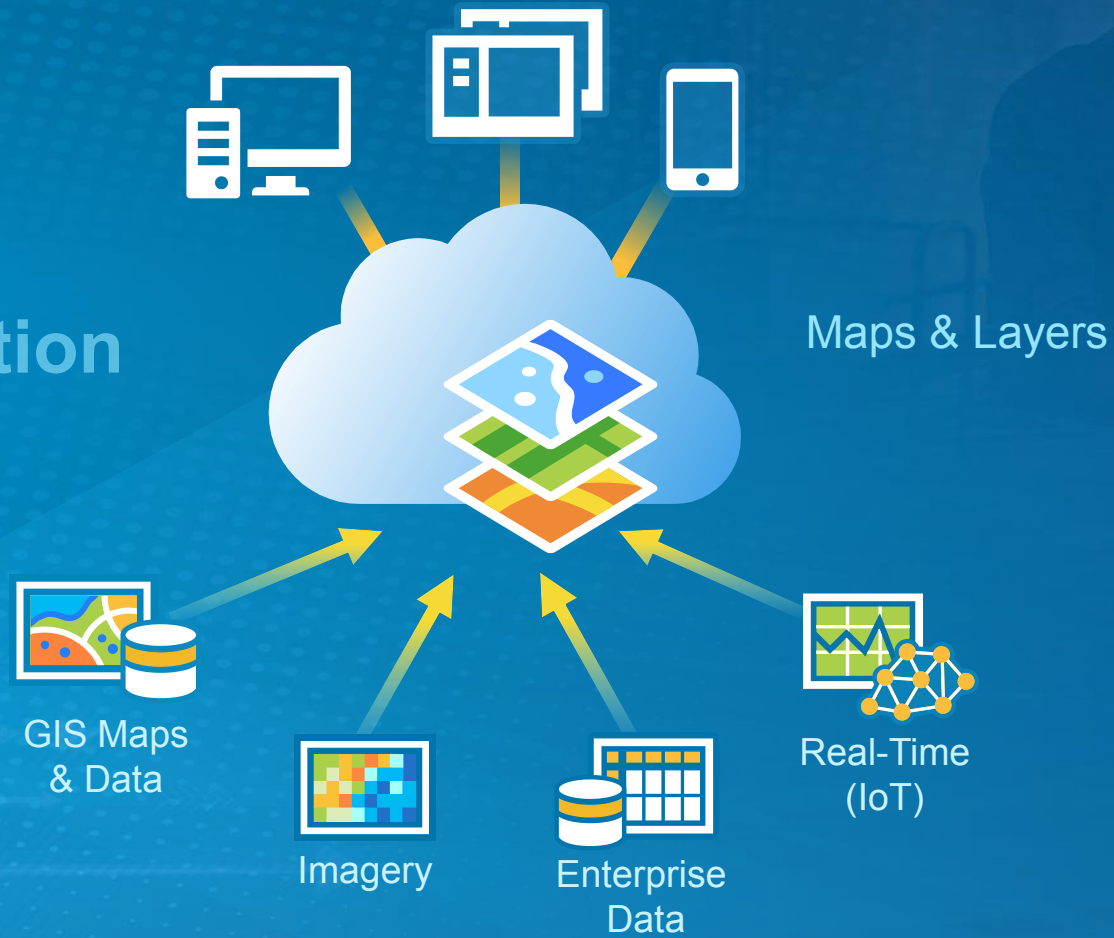




# Web GIS

Dynamically Abstracts and Organized All Types of Geospatial Data...

## GeoInformation Model



Maps & Layers

GIS Maps & Data

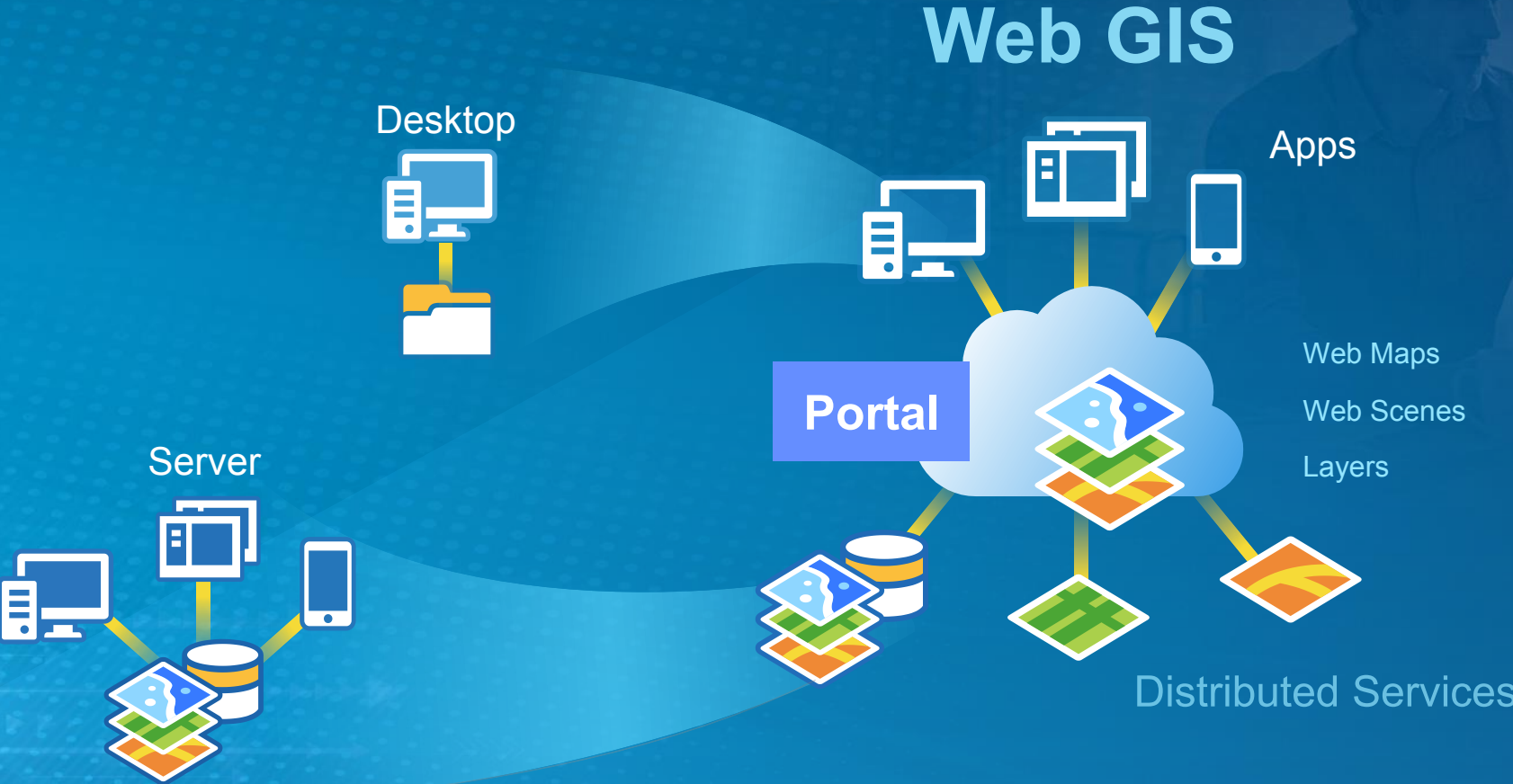
Imagery

Enterprise Data

Real-Time (IoT)

# Web GIS

WebGIS is a Transformational Architecture



*Bringing Together Systems of Record with a System of Engagement*

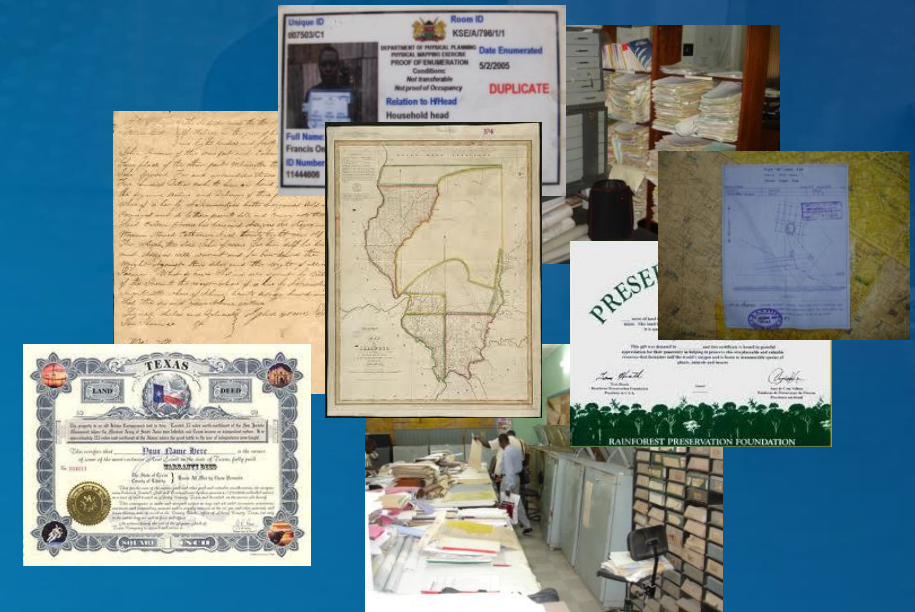


# Land Records

Parties, Geometry, Rights

Documents and data - ownership, value, use, planning and development of real property

- Deeds
- Mortgages
- Leases
- Titles
- Liens
- Foreclosures
- Discharges
- Easements
- Plats
- Subdivisions
- Land Surveys
- Assessment Data
- Property Tax Data
- Images
- Parcels
- .....



*And ancient indexing systems.....*

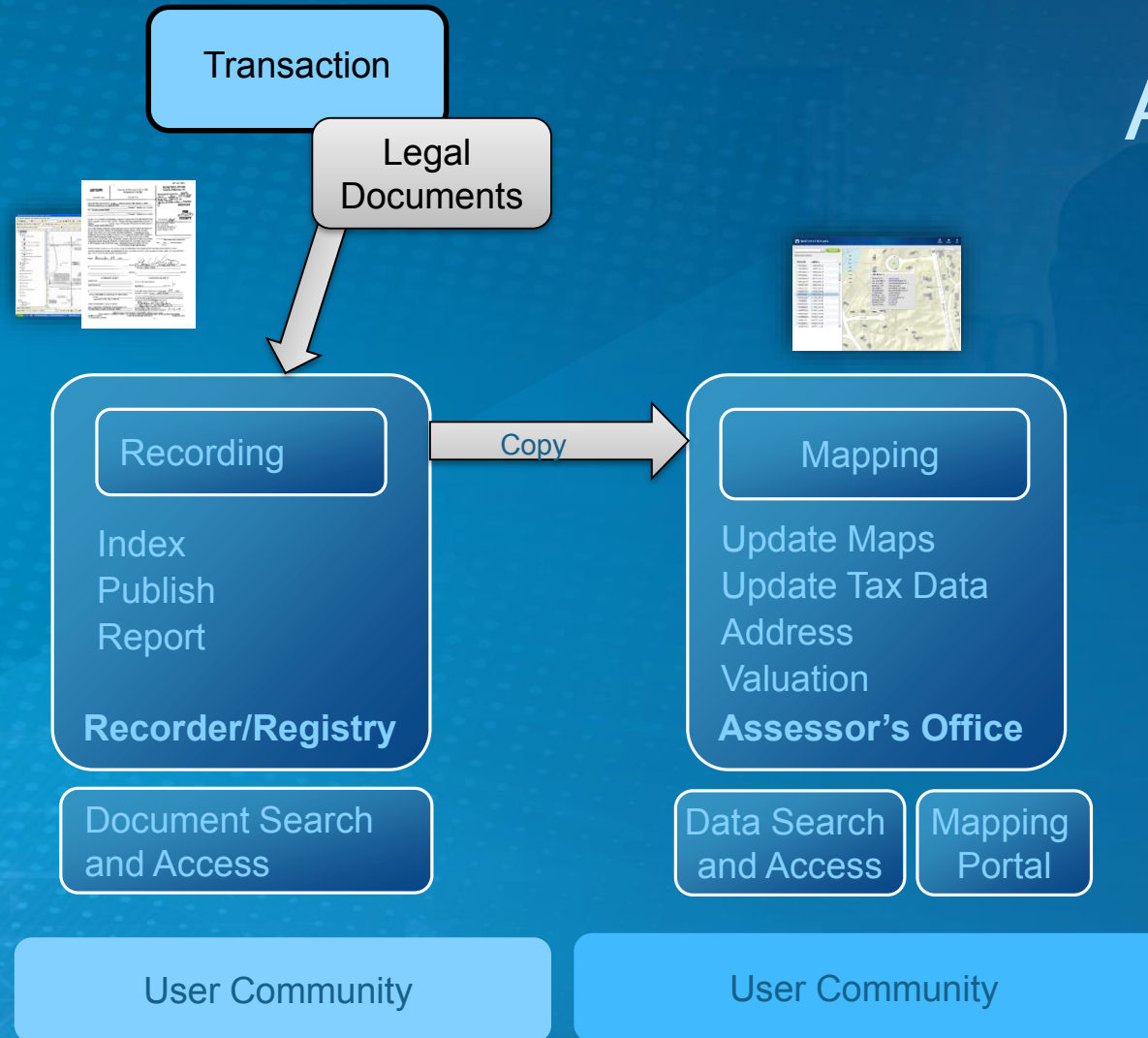




# Recording & Parcel Mapping

## Recorder

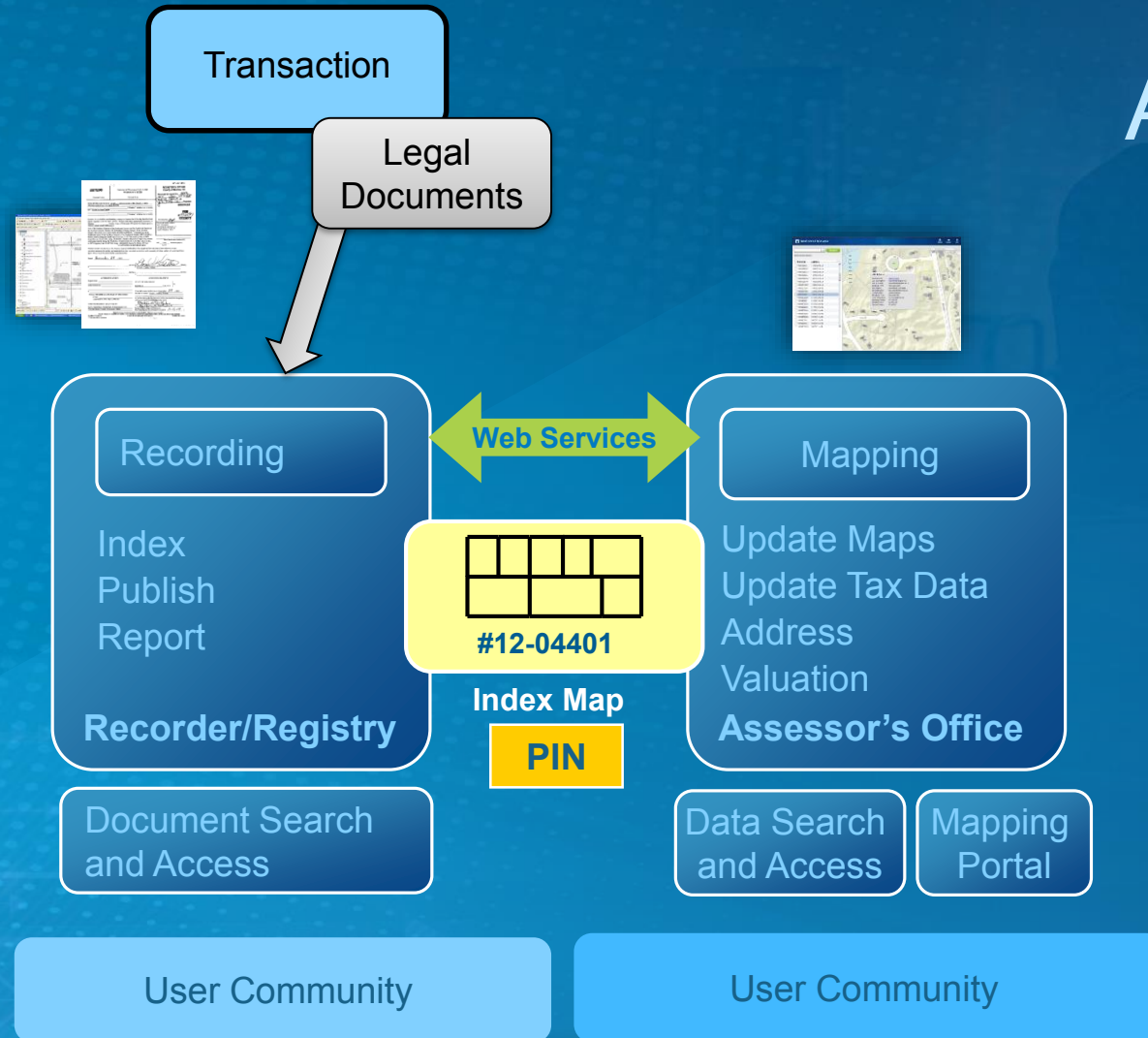
## Assessor



# Recording & Parcel Mapping

## Recorder

## Assessor





# GIS & CAMA Integration

Services

## CAMA/Assessment / Tax Systems



Spatial Features in RDBMS  
Geo-enriched Assessment / Tax Data

## GIS Portal/Cloud



## Land Records Services

- Tax Parcels
- Sales
- Foreclosures
- Appeals
- Assessment Neighborhoods
- Tax Reverted Property
- Historic Parcels
- Parcel Basemaps
- Public Notification
- Others...

Tax Parcel Geometry

Python Scripts



Update Feature Service

New Parcel Descriptions



Parcel Editing Solution

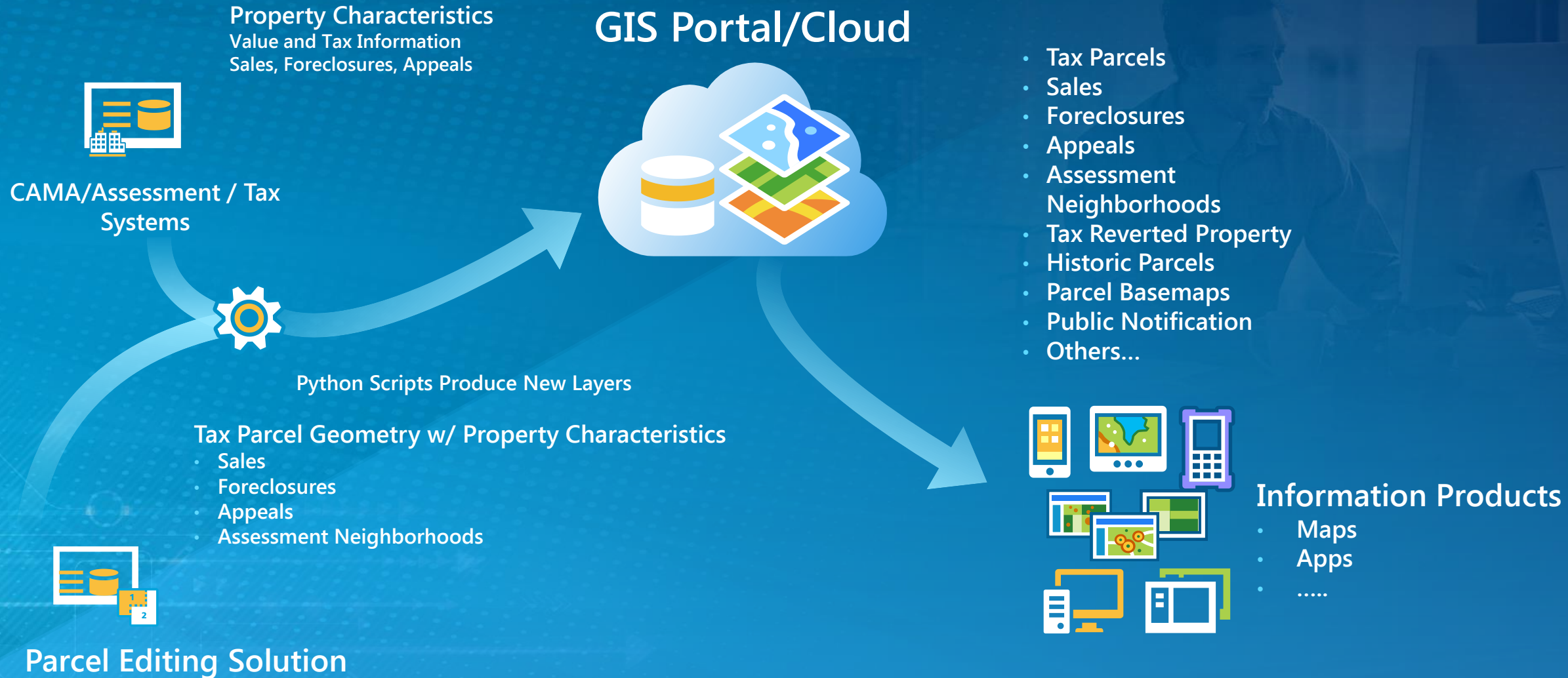


## Information Products

- Maps
- Apps
- .....

# GIS & CAMA Integration

Extract Transform and Load - ETL





# GIS & CAMA Integration

Rapid Deployment

## CAMA/Assessment / Tax Systems



Python Scripts



Update Feature Service



Parcel Editing

Tax Parcel Geometry

## GIS Portal/Cloud



## Land Records Services

- Tax Parcels
- Sales
- Foreclosures
- Appeals
- Assessment Neighborhoods
- Tax Reverted Property
- Historic Parcels
- Parcel Basemaps
- Public Notification
- Others...

## Information Products

- Maps
- Apps
- .....

Solution  
Deployment Tool



# Challenges

## Common Goals and Challenges for Assessors

- **Maintaining trust and confidence of the public**
- **A lot of business systems....out of sync**
- **Keeping data current**
- **Minimizing appeals**
- **Transparent operations**
- **Reducing counter traffic**
- **Discover untaxed property**
- **Improved analysis**
- **Discover trends and patterns**
- **Sharing data**
- **Training**
- **Field appraiser management**
- **New devices**
- **Reduce operational costs**

*Similarities across the country.....*



# GIS

Supporting the entire assessor's office



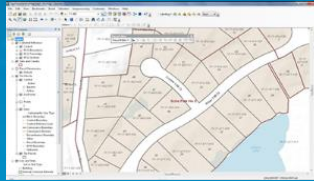
*Making Mapping and GIS Available Across Your Organization....*

# Apps for Land Records

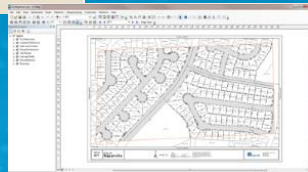
Supporting Assessor Requirements

## Parcel Management

### Parcel Editing



### Quality Control

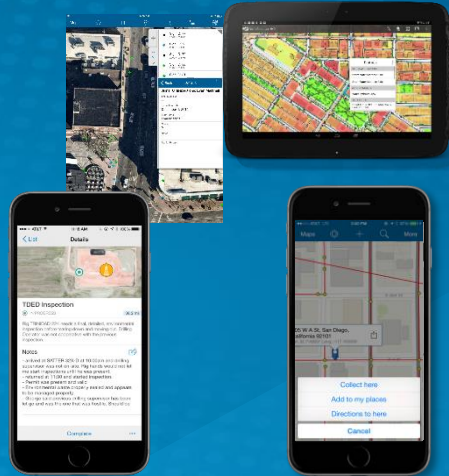


### Map Production

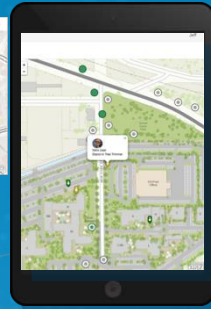
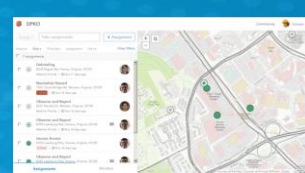


### Address Management

## Field Operations



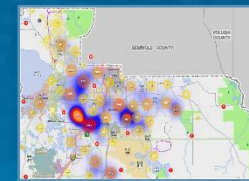
### Mobile Access to View & Edit



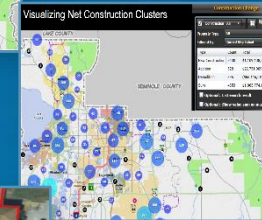
### Workforce

## Valuation Analysis

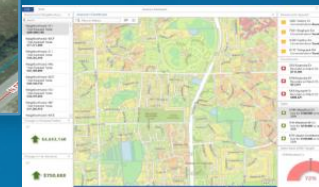
### Foreclosure Mapping



### Construction Permit Visualization



### Property Appraisal



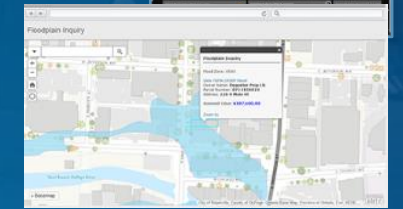
### Visualize Property Value



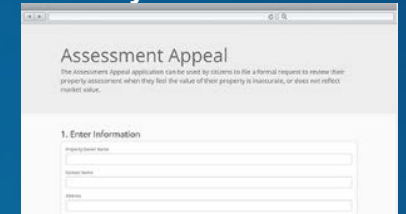
### CAMA Visualization

## Constituent Engagement

### Modern Public Access

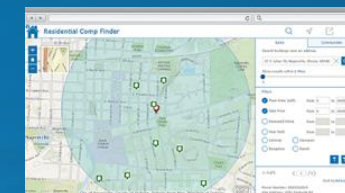


### Identify Flood Risk



### File Assessment Appeals

### Open Data



### Residential Comp Finder



# Parcel Data Management

Improved, Efficient Workflows

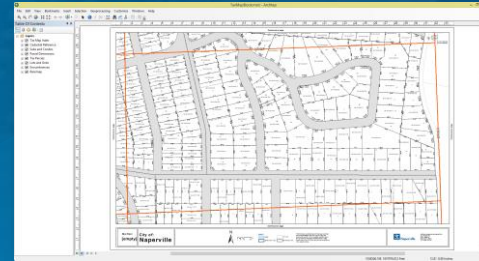
## Deed Examining



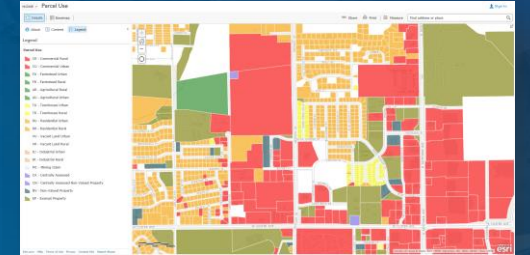
## Workflow Manager



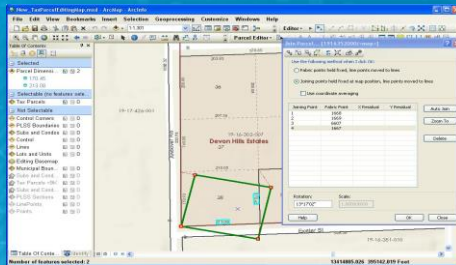
## Tax Map Book



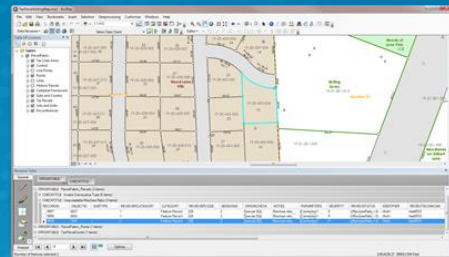
## Community Parcels



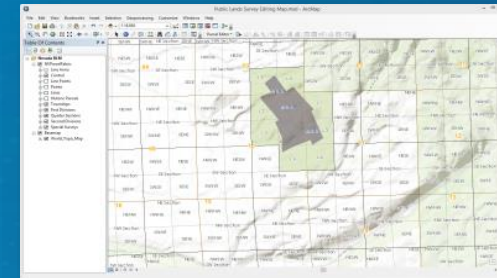
## Parcel Editing Solution



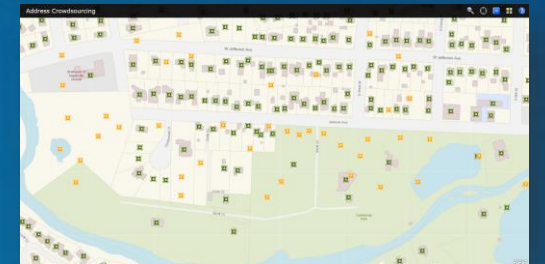
## Data Reviewer for Tax Parcels



## PLSS Editing



## Addressing



Collect, Organize and Manage Data in the System of Record.....

# Purpose-Built Tools

Integrity, Topology, History

Feature  
Adjustment

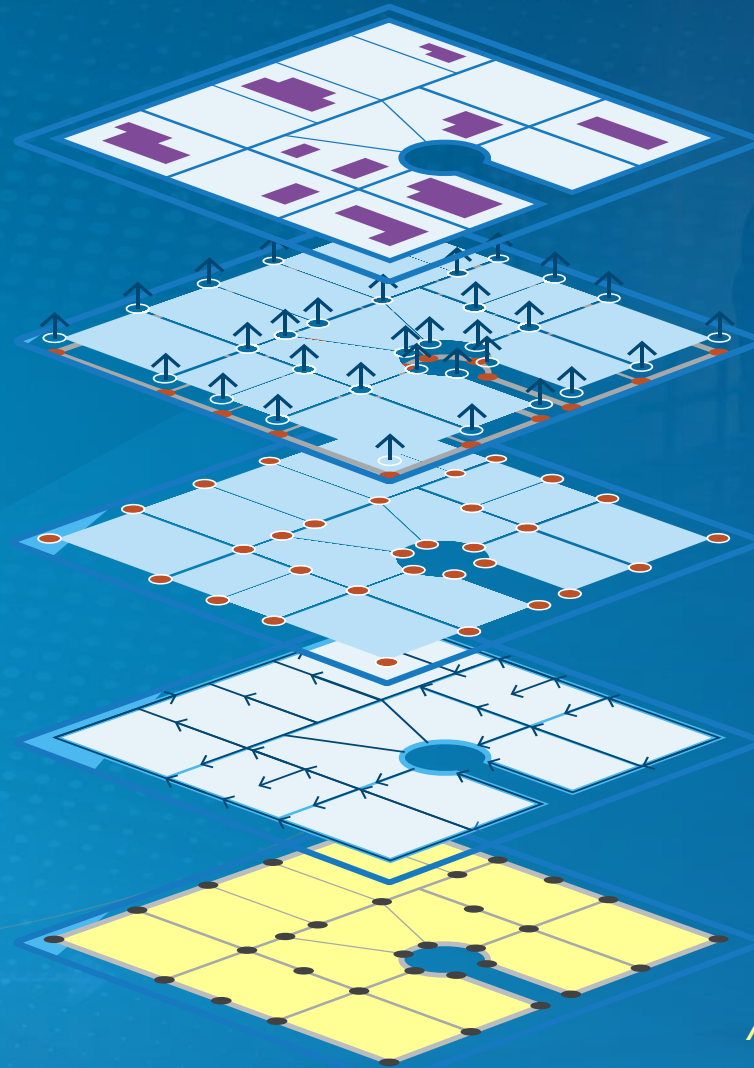
Coordinate  
Updates

Control Points

Fabric  
Adjustment

Measurements

Parcel Fabric

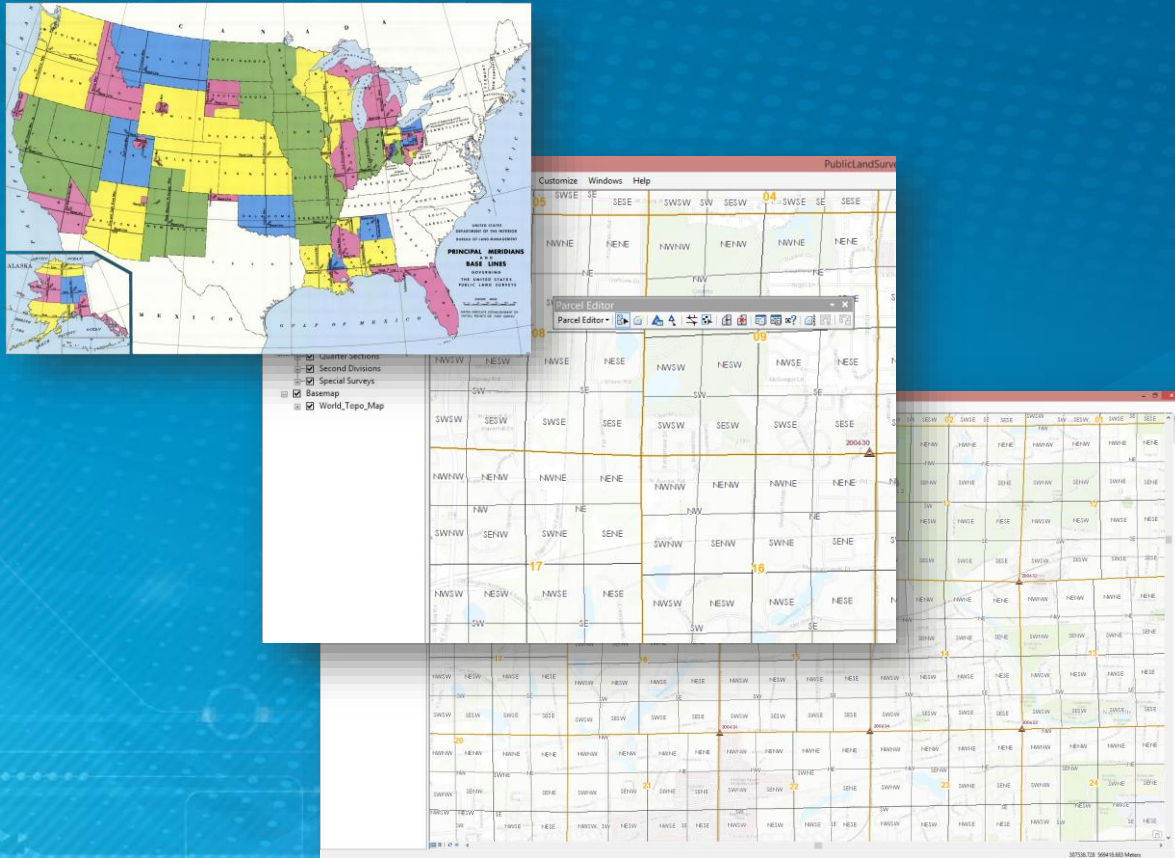


*Aligning Data Using Measurements.....*



# PLSS

## COTS Tools for Staying Current



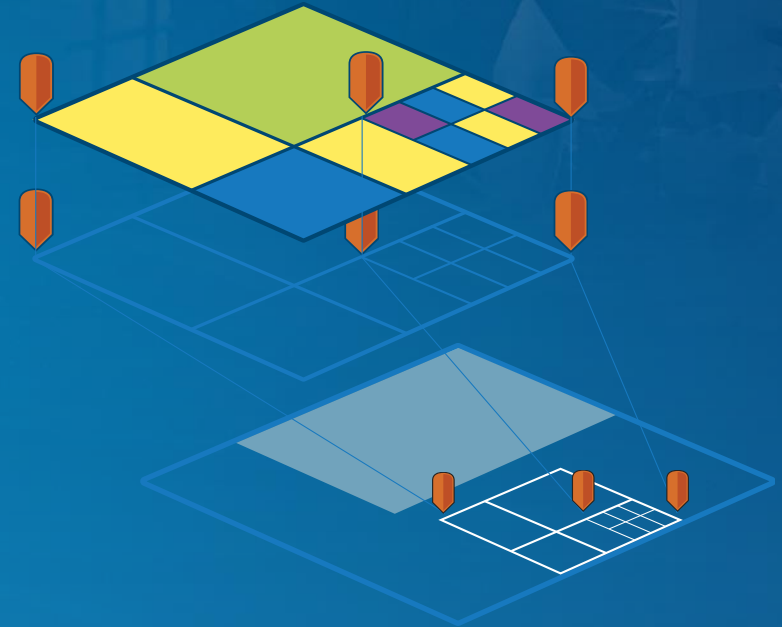
“By adopting a commercially supported package that’s compliant with national and federal standards, we’ve built a solid foundation for the future for the BLM,” Don Buhler, National Cadastral Director, BLM.

Parcel  
Fabric

GIS

Parcels

PLSS

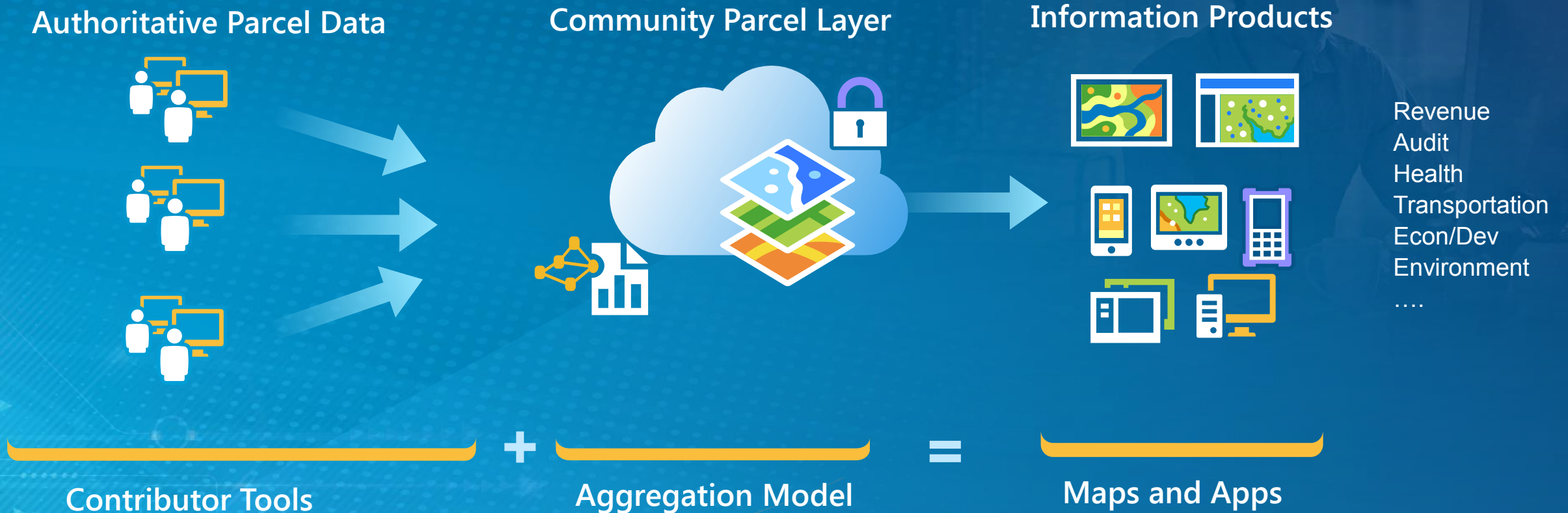


BLM – PLSS Managed in the Parcel Fabric

*Connecting Layers with Measurements.....*

# Support Parcel Aggregation

Web GIS solution for parcel aggregation



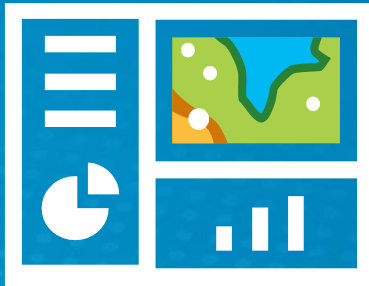
*COTS Tools for aggregating and sharing.....*



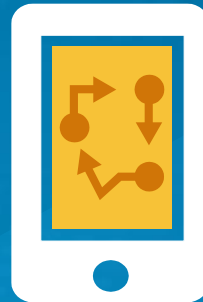
# Field Operations

## COTS Tools for Managing Field Appraisers

Workforce



Navigator



Collector



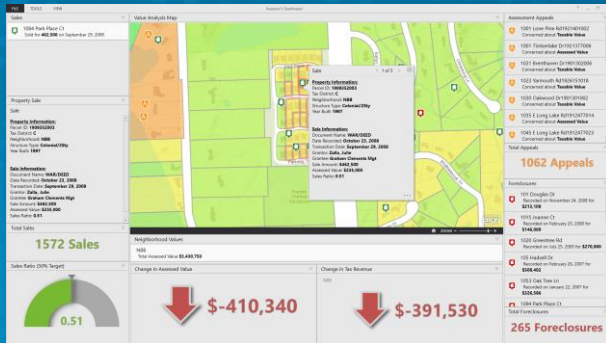
Photo Survey



*Understand backlog, navigate efficiently, collect effectively.....*

# Value Analysis

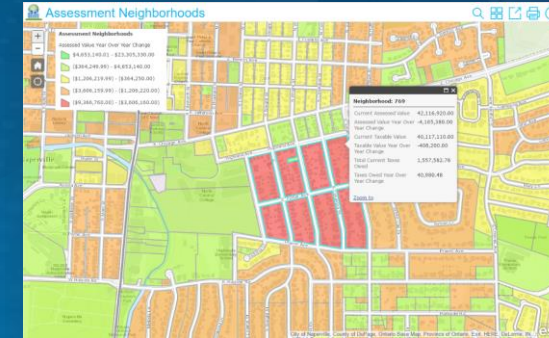
Analysis, Visualization, Maps and Apps



Value Analysis Dashboard



Value Change Over Time



Assessment Neighborhoods

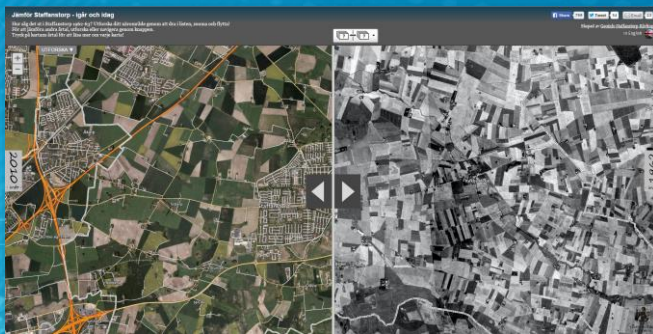


Image Comparison

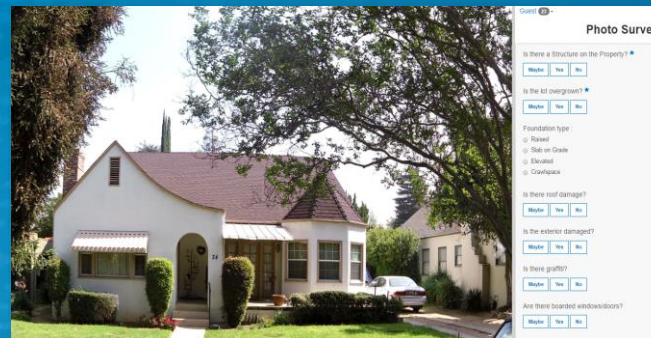
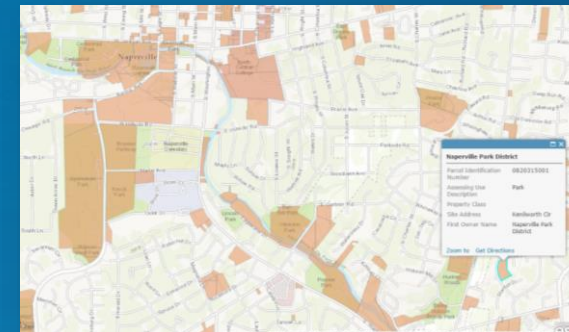


Photo Survey



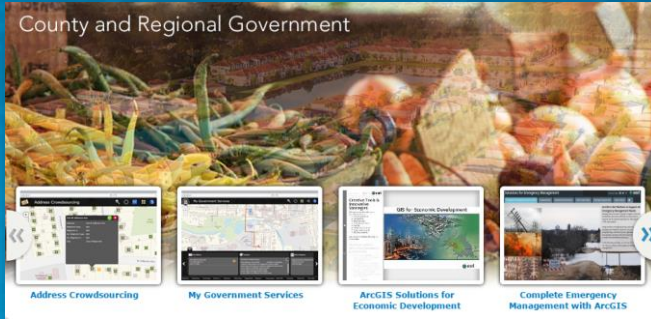
Exempt Properties

*Discover and visualize trends and patterns....*

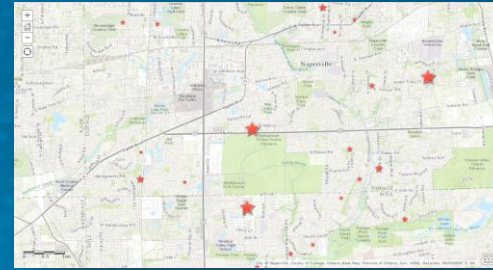


# Constituent Engagement

Maintain Taxpayer Trust and Confidence



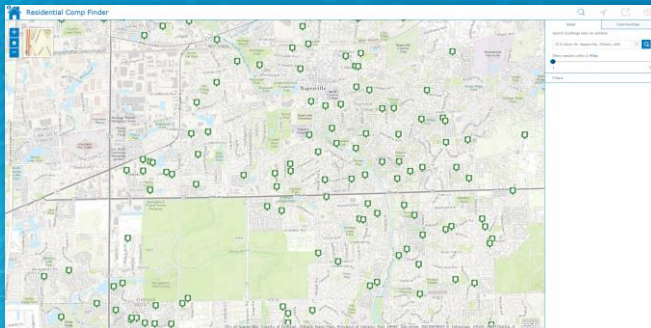
Portal



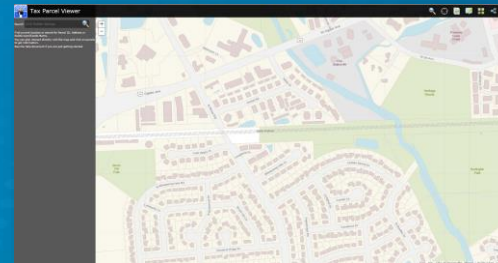
Top 25 Taxpayers



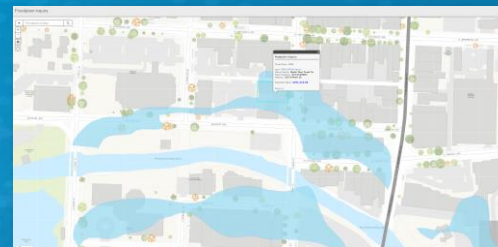
Story Maps



Comparable Sales Finder



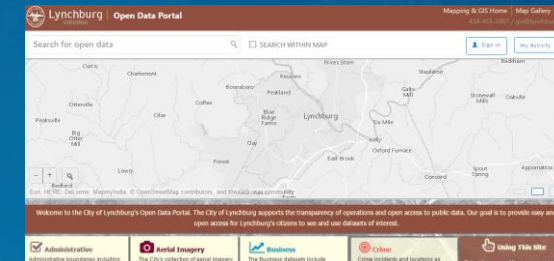
Tax Parcel Viewer



Identify Flood Risk



Assessment Appeal



Open Data

*Engage and inform the public and stakeholders....*



# Resources

Supporting Lifelong Learning

## Book Offer

<http://go.esri.com/gis4landrecords>

## Subscriptions

<http://go.esri.com/subscriptions>

 <p><b>Land Administration for Sustainable Development</b></p> <p>Examines global land administration systems at different levels of maturity.</p> <p><a href="#">View More Info</a></p>	 <p><b>Modernizing American Land Records</b></p> <p>Presents a design for a modern American Land Records System.</p> <p><a href="#">View More Info</a></p>	 <p><b>The GIS Guide for Elected Officials</b></p> <p>A valuable resource for government officials who want to better understand how to use GIS.</p> <p><a href="#">View More Info</a></p>	 <p><b>The ArcGIS Book</b></p> <p>Explore ten "big ideas" that encapsulate the technological and social trends that have pushed GIS onto the Internet.</p> <p><a href="#">View More Info</a></p>
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 <p><b>GISTUTORIAL</b> Basic Workbook</p> <p><b>GIS Tutorial 1</b></p> <p>GIS Tutorial 1: Basic Workbook, is a top-selling introductory text for learning ArcGIS for Desktop.</p> <p><a href="#">View More Info</a></p>	 <p><b>GISTUTORIAL</b> Spatial Analysis Workbook</p> <p><b>GIS Tutorial 2</b></p> <p>GIS Tutorial 2: Spatial Analysis Workbook, provides hands-on exercises to help GIS users.</p> <p><a href="#">View More Info</a></p>
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Free Book Offer





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OF  
WHERE**