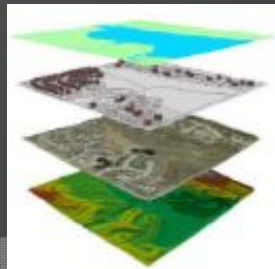




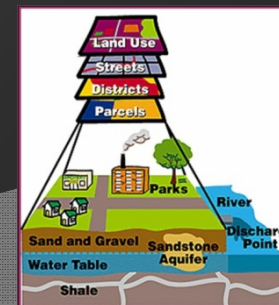
Geographic Information Systems (GIS)



CITY OF SUPERIOR/DOUGLAS COUNTY ENTERPRISE GIS



Presented to the
Douglas County
Highway
Department
July 19, 2012





Cooperative Agreement Between the City of Superior and Douglas County



Cooperative Agreement: Statement of Services

The County agrees to maintain Geographical Information System (GIS) hardware and software for the County and City users to include:

- Perform system functions to transfer data into GIS software or new software packages.
- Cooperatively perform GIS mapping and data entry support for base map data, roads, geocoded addresses, voting data/boundaries, Public Land Survey System (PLSS), etc.
- Maintain City parcel map edits.
- Perform imaging and indexing of survey maps,
- County Surveyor review of Certified Survey Maps (CSM) maps and plats for the City
- Provide GIS data to any appropriate person, agency or entity.
- Facilitate public access to City/County spatial data through a GIS web site.



Cooperative Agreement Between the City of Superior and Douglas County



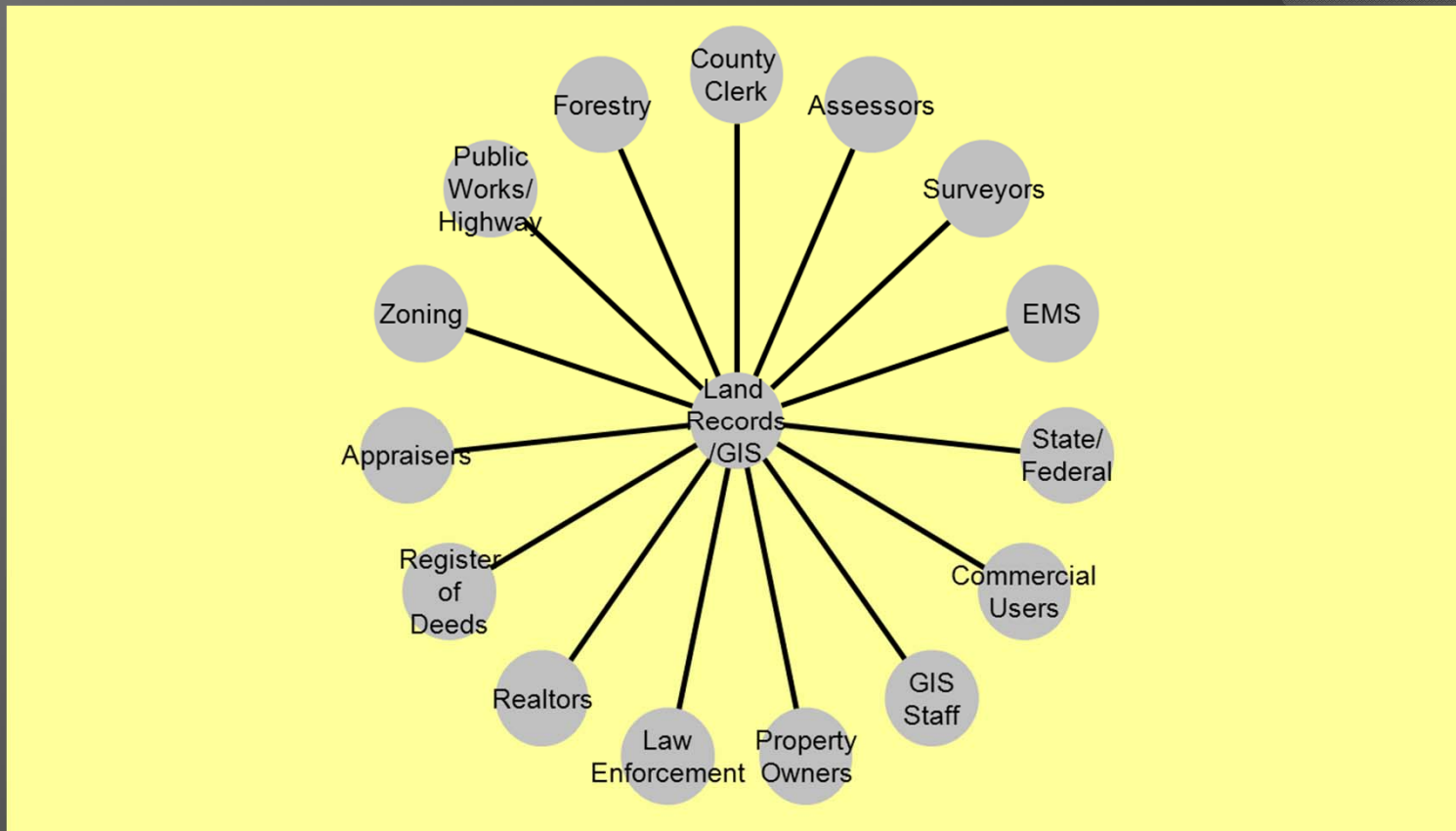
Cooperative Agreement: Statement of Services

The **City** agrees to provide the following consultation services to the County provided by the City's Geographic Information System Coordinator:

- Identify and propose which hardware/software solutions will be implemented.
- Install, configure and manage the maintenance of GIS and Microsoft software on workstations.
- Evaluate and create procedures for data edits and data capture.
- Design custom macros and scripts that will be available to all GIS users.
- Represent the City/County GIS interests as a GIS liaison to departments, organizations and other government agencies.
- Provide ongoing GIS training and facilitate a technical users group.
- Provide access to GIS data to any appropriate employee or agency.
- Secure cost sharing for software and technical support that will benefit both parties.
- Establish and Implement a GIS Strategic Plan for City/County
- Administer and manage the Enterprise License Agreement with ESRI
- Manage the Enterprise GIS System for the County
- Develop Map Service templates for GIS users within the County
- Creation and maintenance of a Data Infrastructure Catalog
- IS support for GIS related activities
- Coordinate and Supervise the County GIS Technicians efforts to meet the provisions of the City/County GIS Strategic Plan and the Land Records Modernization Plan
- Supervise/manage GIS Interns for the City and County

CITY OF SUPERIOR/DOUGLAS COUNTY ENTERPRISE GIS

Bud's Wheel



CITY OF SUPERIOR/DOUGLAS COUNTY ENTERPRISE GIS

ESRI ArcGIS ELA Products



ArcGIS Desktop

ArcInfo

ArcEditor

ArcView

ArcGIS Server

Esri Data and Maps

ArcGIS for Desktop

ArcGIS for Desktop Advanced

ArcGIS for Desktop Standard

ArcGIS for Desktop Basic

ArcGIS for Server

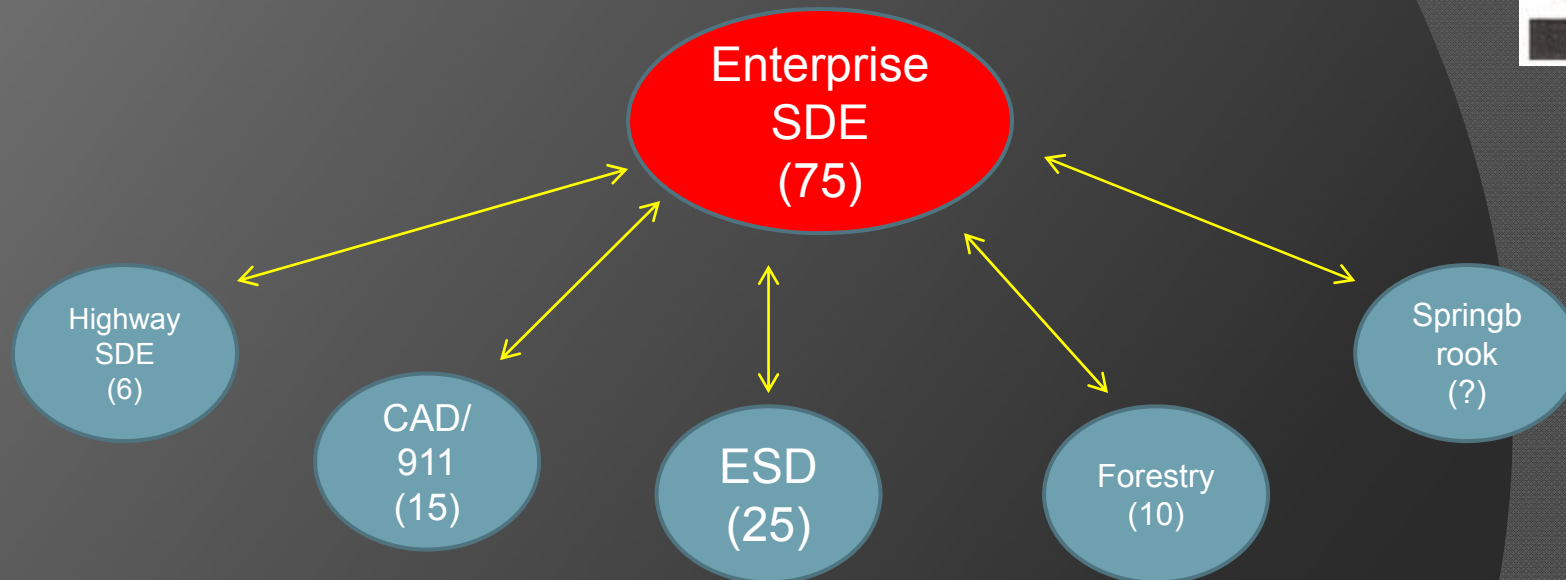
Data and Maps for ArcGIS

Unlimited Licensing to ArcGIS and Core Extensions



CITY OF SUPERIOR/DOUGLAS COUNTY ENTERPRISE GIS

Server Infrastructure and Replication



Enterprise Server Based Management allows for:

- Multiple Editors and Viewers
- Replication of data
- Backups Simplified
- Less Duplication of data
- More efficient data delivery and speeds to users



CITY OF SUPERIOR/DOUGLAS COUNTY ENTERPRISE GIS

GIS Implementation

- Land Records Live
- GIS Users Training
 - Beginner/Novice - 2008-2010
 - Pictometry Extension for ArcGIS Trainings held 2009 - 2011
- GIS DAY Held in November 2008 -2011
 - Attendance for 2008 – 50 attendees
 - Attendance for 2009 – 55 attendees
 - Attendance for 2010 – 75 attendees
 - Attendance for 2011 – 100 attendees

November 14, 2012
- “Help Desk” Creation
 - Email Address gishelp@ci.superior.wi.us for taking GIS questions for City/County employees



CITY OF SUPERIOR/DOUGLAS COUNTY ENTERPRISE GIS

City of Superior / Douglas County: Data Overview

The City of Superior and Douglas County have adopted the following standards from St. Louis County, MN. This is a geospatial data structure to be used in developing and organizing geospatial data that is interoperable and cataloged along Federal, State, and local structures.

COSDC.DBO.E911_COS_FIRE_DISTRICTS
DATABASE.SCHEMA.CATEGORY_[SOURCE]_GEOGRAPHY_LAYERNAME

Data Categories (SDE Naming) DATABASE.SCHEMA.CATEGORY_[SOURCE]_GEOGRAPHY_LAYERNAME

Imagery Imagery typically refers to aerial photography, which is used for many purposes at the City of Superior & Douglas County. It is effective as a "background" layer to other geospatial data, and can be used by GIS specialists to delineate real-world features.	IMAGE	
Cadastral (Parcels) The Cadastral (Parcel) layer at the City of Superior & Douglas County is the fundamental tool for analyzing land ownership information. The county is in the process of developing parcel data. This data will provide the foundation for many applications across the county pertaining to land ownership.	CDSTRL	
Transportation Transportation features typically include roads (centerlines), trails, airports, shipping ports, and other representations of features that depict the transportation systems in the county. The road centerline layer is critical since it provides the necessary information for emergency dispatch and public works maintenance.	TRANS	
Addressing & Places The city/county recently completed an official Address Point layer for use in GIS systems across departments. The address dataset can be used for emergency dispatch and other law enforcement purposes, as well as a further piece of information for land use planning with the parcel data layer.	ADDRPLCS	
Elevation Elevation data, typically in the form of contour maps and Digital Elevation Models, is used extensively for modeling the surface of the earth. This type of information is useful for departments such as Land, Planning, Public Works, and others as they determine appropriate land uses, forestry and construction processes.	ELEV	
Structures Structural data, often known as planimetrics, will be developed in the future to highlight the locations and dimensions of buildings and important structures throughout the county. Along with parcel and address data, this information will be particularly useful for law enforcement, planning, and assessment purposes.	STRUCT	
Utilities Utility data is utilized for site planning, economic development, land use planning, emergency / homeland security, and many other operations at the city/county. Having an understanding of the locations of utility features (electric, gas, sewer, water) is key to development and emergency response.	UTIL	
Administrative Boundaries Many administrative boundaries exist within the City of Superior and Douglas County. Examples include municipalities, state and federal management areas, zoning districts, and many more. Geospatial analysis depends on these boundaries to render accurate results.	ADMIN	
Geodetic Control & PLSS Geodetic control refers to precise surveys covering very large areas such as the High Accuracy Reference Network (HARN) developed in Wisconsin in the 1990s. The Public Land Survey System is the basis for all land titles and property descriptions in Wisconsin. With GPS surveying, PLSS corners can be referenced to geodetic control.	GEOD	

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COSDC.DBO.E911_COS_FIRE_DISTRICTS
DATABASE.SCHEMA.CATEGORY_[SOURCE]_GEOGRAPHY_LAYERNAME



Data Categories (SDE Naming) DATABASE.SCHEMA.CATEGORY_[SOURCE]_GEOGRAPHY_LAYERNAME

Environmental The physical world within and around Douglas County is represented with numerous environmental layers. Lakes, rivers, streams, wetlands, soils, land cover/land use, geomorphology, mining areas and many other physical earth features will be available for use in mapping and analysis.	ENVIRO	
Emergency Operations In addition to the layers listed above, law enforcement, 911 Communications, and others will utilize additional geospatial data in emergency response situations such as response districts, hazard areas, critical infrastructure, and other emergency geospatial data to conduct emergency operations.	E911	
Recreation Recreational use trends are increasing around the state and in Douglas County. Recreation information is represented in various layers. Some of the layers are Boat Accesses, Hunting Sites, Trailheads, Matinas, Parks, Points of Interest and many more are available for use in mapping and analysis.	REC	

MSDC: National Spatial Data Infrastructure — (Several main framework themes: Imagery, Cadastral, Transportation, Elevation, Administrative Units, Geodetic Control, and Hydrography)
WSDC: Wisconsin Spatial Data Infrastructure — (In Development)
MSDC: Minnesota Spatial Data Infrastructure — (Eight main framework themes: Imagery, Cadastral, Transportation, Elevation, Administrative Units, Geodetic Control, Hydrography and Soils)
GN: GIS for the Nation — (Urban main framework themes: Imagery, Cadastral, Transportation, Elevation, Administrative Units, Geodetic Control, Hydrography, Environmental, Land Use/Land Cover, Address, Utilities, Structures/Critical Infrastructure, Emergency Operations, and Base Map)

GLOBAL.DBO.ENVIRO_WIDGET_LOC_WebIndex

Geography COAWI = City/County of Ashland COO = City of Duluth COS = City of Superior COGOC = City of Superior & Douglas County DC = Douglas County GL = Great Lakes Region MI = Michigan MN = Minnesota US = United States STL = St. Louis County Minnesota WI or STATE = State of Wisconsin WW = Worldwide	ARDC = Arrowhead Regional Development Comm. Census = US Census DU = Ducks Unlimited ESRI = Environmental Systems Research Institute GLA = Great Lakes Association GNIS = Geographic Names Info System (USGS) LHB = LHB Corporation MIDNR = MI Dept of Natural Resources MNDNR = MN Dept. of Natural Resources NCT = North Country Trail Association NPS = National Park Service	Data Source Comm. SALO = Salo Engineering SEH = Short Elliott Hendrickson, Inc. SWLP = Superior Water, Light & Power USFS = US Forest Service USFWS = US Fish & Wildlife Service USGS = US Geological Survey USGS_NHD = US Geological Survey National Hydrology Data WHS = WI Historical Society WIDNR = WI Dept. of Natural Resources
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3



Over 500 Feature Classes Maintained



CITY OF SUPERIOR/DOUGLAS COUNTY ENTERPRISE GIS

City of Superior / Douglas County: Data Sub-Categories

The City of Superior and Douglas County have adopted following sub-categories or themes from St. Louis County, MN to further assist in cataloging geospatial data as follows:

Sub-Categories	(SDE Naming)	
Imagery Left-Off Aerial Color Infrared Aerial Natural Color Aerial	IMAGE Miscellaneous Photos LIDAR-based Imagery Scanned Documents	
Cadastral (Parcels) Parcels Subdivisions/Plats Blocks	CDSTRL Lots Right-of-Way Lease Sites	Discrepancy Points Pre-Placement
Transportation Roads Forest Roads Trails	TRANS Railroads Waterways Airports	Seaports Alleys
Addressing & Places Address Points Geocoding Services	ADDRPLCS Driveway Locations Places	
Elevation Digital Elevation Models Digital Raster Graphics Digital Terrain Models	ELEV Point-specific Elevations LIDAR-based points	
Structures Building Footprints County Facilities Driveways Parking	STRUCT Apartment Buildings Dumpsters Wells	
Utilities Electric Lines Gas Pipelines Sewer Lines	UTIL Water Lines Utility Poles Radio Towers	Fire Hydrants Manholes Steam
Administrative Boundaries Jurisdictional Judicial Political School District	ADMIN Zoning Voting Zip Code Service Areas	Tax Forfeet Econ Dev DNR / Census TFR/ID Districts
Geodetic Control & PLSS HARN PLUS Corners PLUS Lines Sections	GEOD Quarter Lines Quarter-Quarter Lines Site-specific survey data	

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City of Superior / Douglas County: Data Sub-Categories

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Sub-Categories	(SDE Naming)	
Environmental Lakes Rivers & Streams Wetlands Watersheds	ENVIRO Soils Land Cover Geomorphology Flood Plains	Climate & Weather Vegetation Physiography Mining Trees
Emergency Operations Police Districts/Station Fire Districts/Station Fire Responders District Ambulance Districts Incidents & Hazards	E911 Evacuation Routes Shelters & Evt. Facilities Critical Infrastructure Road Closures, Route Condemnation Areas	Disaster Recovery Hazard Mitigation
Recreation Hunting Sites Archery Sites Scout Accesses Trail Heads	REC Parks Points of Interest Marinas Fishing Piers	

NSDI: National Spatial Data Infrastructure (Seven main framework themes: Imagery, Cadastral, Transportation, Elevation, Administrative Units, Geodetic Control, and Hydrography)
 WSDI: Wisconsin Spatial Data Infrastructure (In Development)
 MNSDI: Minnesota Spatial Data Infrastructure (Eight main framework themes: Imagery, Cadastral, Transportation, Elevation, Administrative Units, Geodetic Control, Hydrography, and Soils)
 GN: GIS for the Nation (Fourteen main framework themes: Imagery, Cadastral, Transportation, Elevation, Administrative Units, Geodetic Control, Hydrography, Environmental, Land Use/Land Cover, Address, Utilities, Structures/Critical Infrastructure, Emergency Operations, and Base Map)

5



Highway Bridges, Culverts, ROW, Construction Projects,
Load Limits, Road Damage Areas,
Sign Inventory, Adopt A Highway



What is Pictometry?

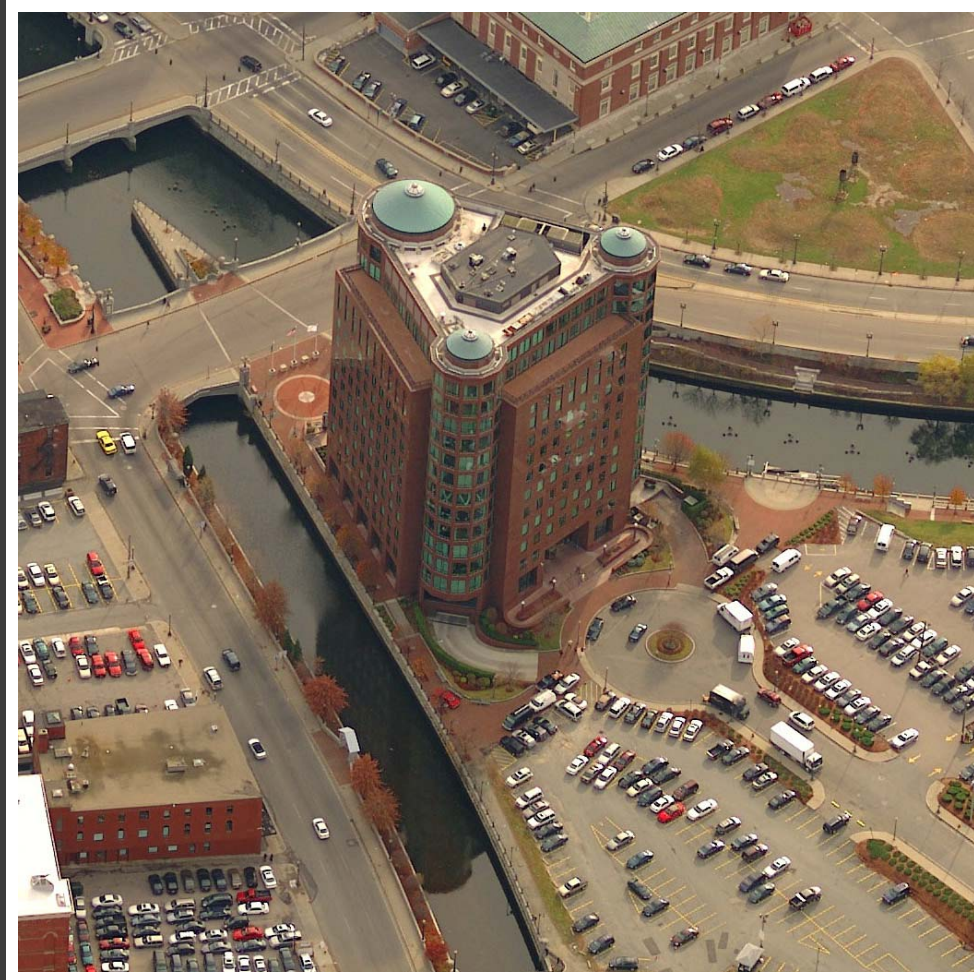
Pictometry - has been described as “geometry on images” but that description only captures one aspect of Pictometry.

Pictometry technologies are widely used by county GIS, planning and assessing professionals around the country and a growing number of commercial businesses including those in insurance, utilities, real estate, construction, and more.

Unlike traditional geospatial information systems that rely on only an **orthogonal**, or top-down view of an area, Pictometry captures images **obliquely**, or from an angle, and create a more natural three-dimensional view so that users can see land features and structures clearly and in their entirety.

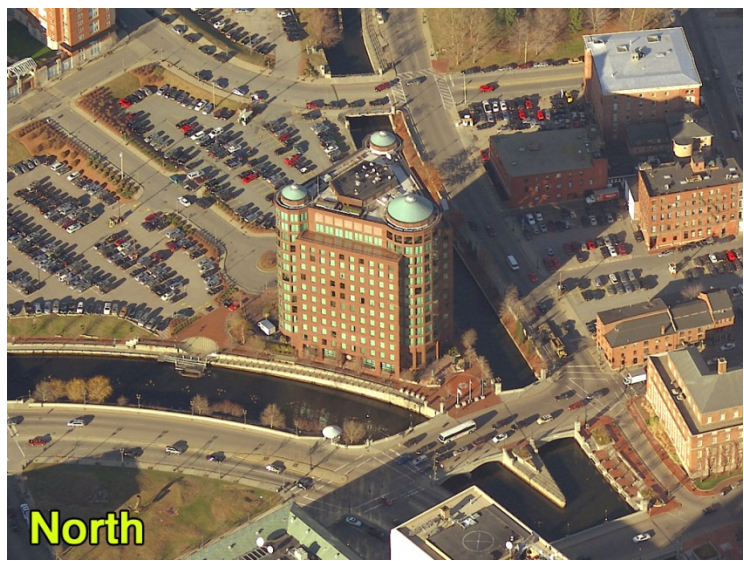


Tradition @ the Edge

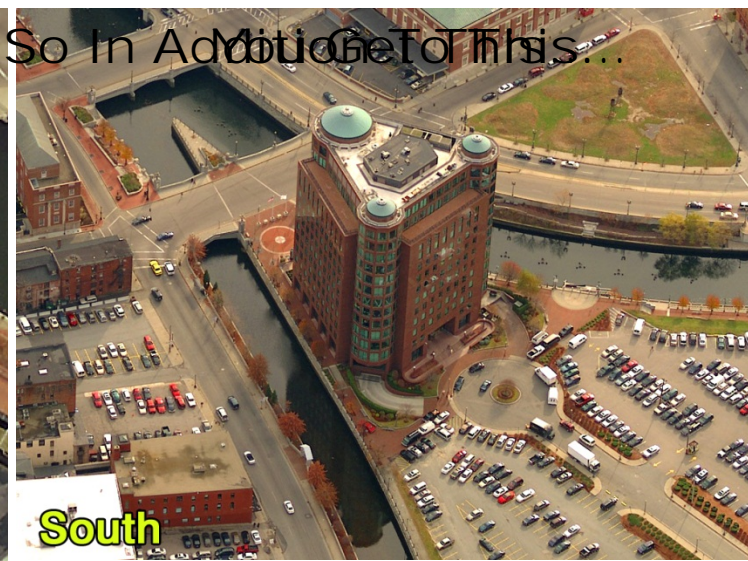


Providence, Rhode Island

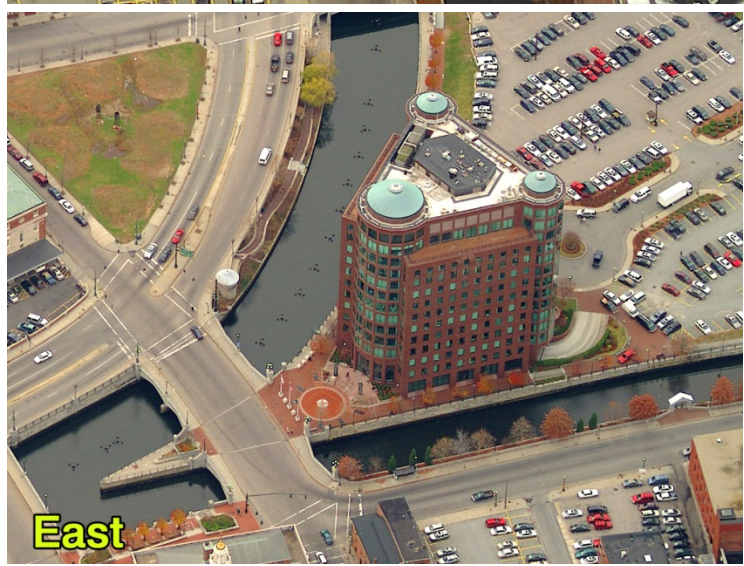
So In Addition To This...



North



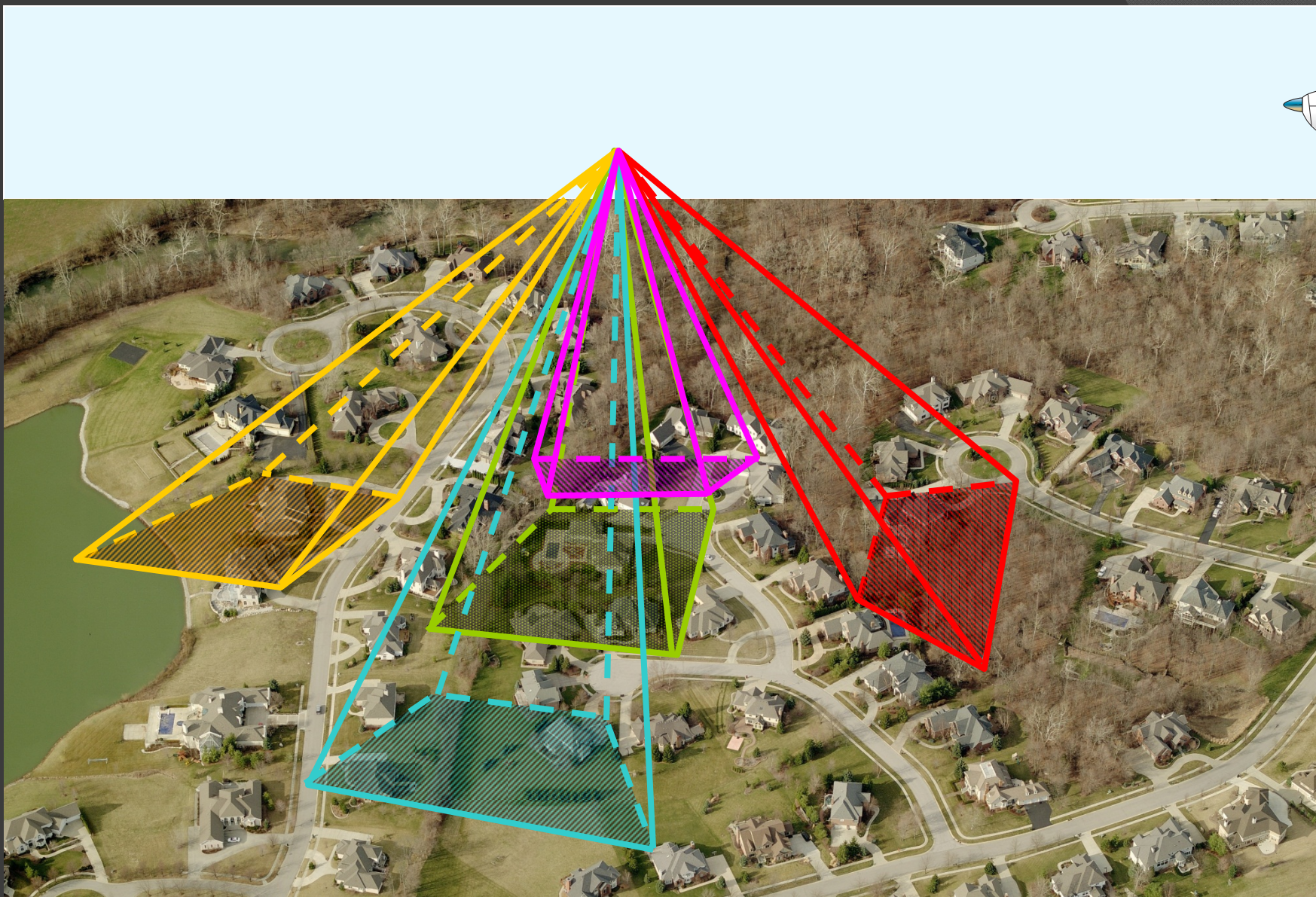
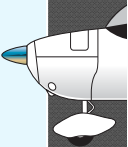
South

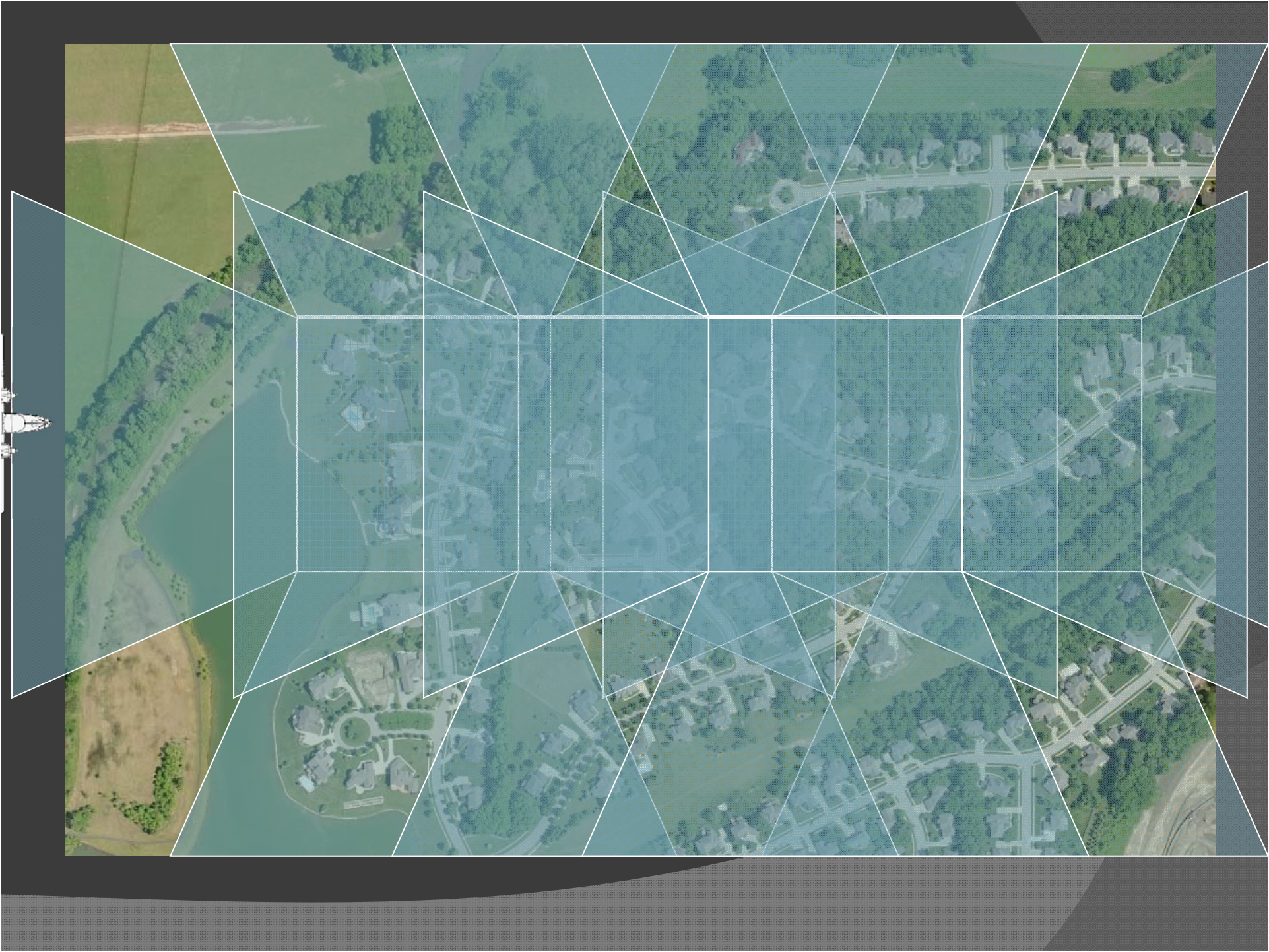


East



West

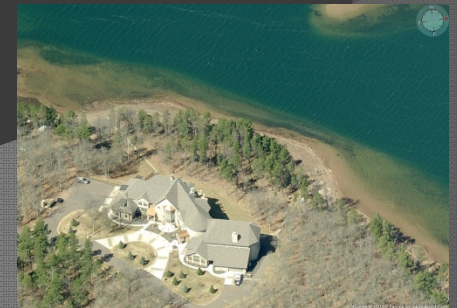






Methodology

- ▶ Produces Color, Digital Imagery
- ▶ Natural Perspective in Height & Scale
- ▶ Accurate Measurements can be Obtained
- ▶ Overlay GIS Data on Imagery
- ▶ Obliques and Orthos in One Flight!



CITY OF SUPERIOR/DOUGLAS COUNTY ENTERPRISE GIS



- Libraries
- Superior 2007
 - Douglas, Bayfield, Washburn Counties 2009
 - Douglas County Forestry Blow Down 2011
 - Douglas County 2013
 - St Louis County Duluth, Iron Range 2007



CITY OF SUPERIOR/DOUGLAS COUNTY ENTERPRISE GIS

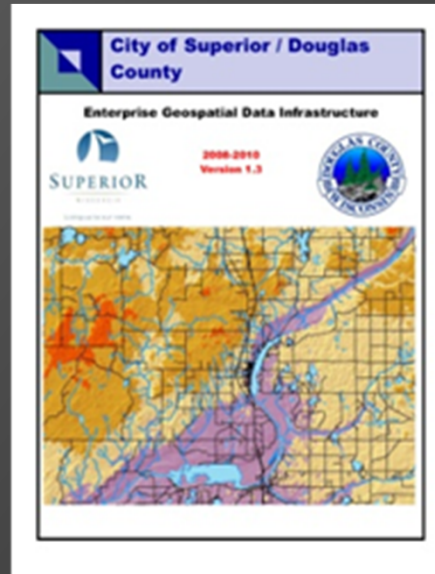
In Progress

- Remonumentation efforts continue we will be able to tighten up accuracy of the data, parcels, ROW, etc
- Parcel Fabric implemented Jan 1 –incorporates all the remonumentation work into a powerful cadastral management tool to greater increase accuracy and efficiencies in the Land Records
- Land Information Office – Proposed office to create a 1 stop shop for Land Records information at the County
 - Leveraging the ArcGIS Technologies for GIS and Parcel Fabric combined with the Remonumentation and bringing the land records staff together in 1 place will greatly increase customer service



CITY OF SUPERIOR/DOUGLAS COUNTY ENTERPRISE GIS

Available Resources



Some Online GIS Resources

- ▶ ESRI.com

Arcgis.com

- ▶ City/County Data Download Page (FREE)

<http://www.ci.superior.wi.us/index.aspx?nid=474>

- ▶ Douglas County Web Mapping

<http://douglascowi.wgxtreme.com/>



CITY OF SUPERIOR/DOUGLAS COUNTY ENTERPRISE GIS

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