

Collaboration and Coordination

**Demonstrating the IndianaMap Data
Sharing Initiative with
Four Key Framework Data Layers**

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Indiana Geographic Information Council



Demonstrating the IndianaMap Data Sharing Initiative with Four Key Framework Data Layers

A data sharing initiative with **County government** to share their local developed and maintained:

- **Road Centerlines**
- **Point Addresses**
- **Parcel Boundaries**
- **Jurisdictional Boundaries**



The IndianaMap Data Sharing Initiative

- The County Government data is shared with State Government and with the general public through the IndianaMap and other outlets.
- Monthly Updates from each County are harvested through OGC Compliant Web Feature Services (WFS) using an automated extraction, transformation and loading (ETL) process.



The IndianaMap Data Sharing Initiative

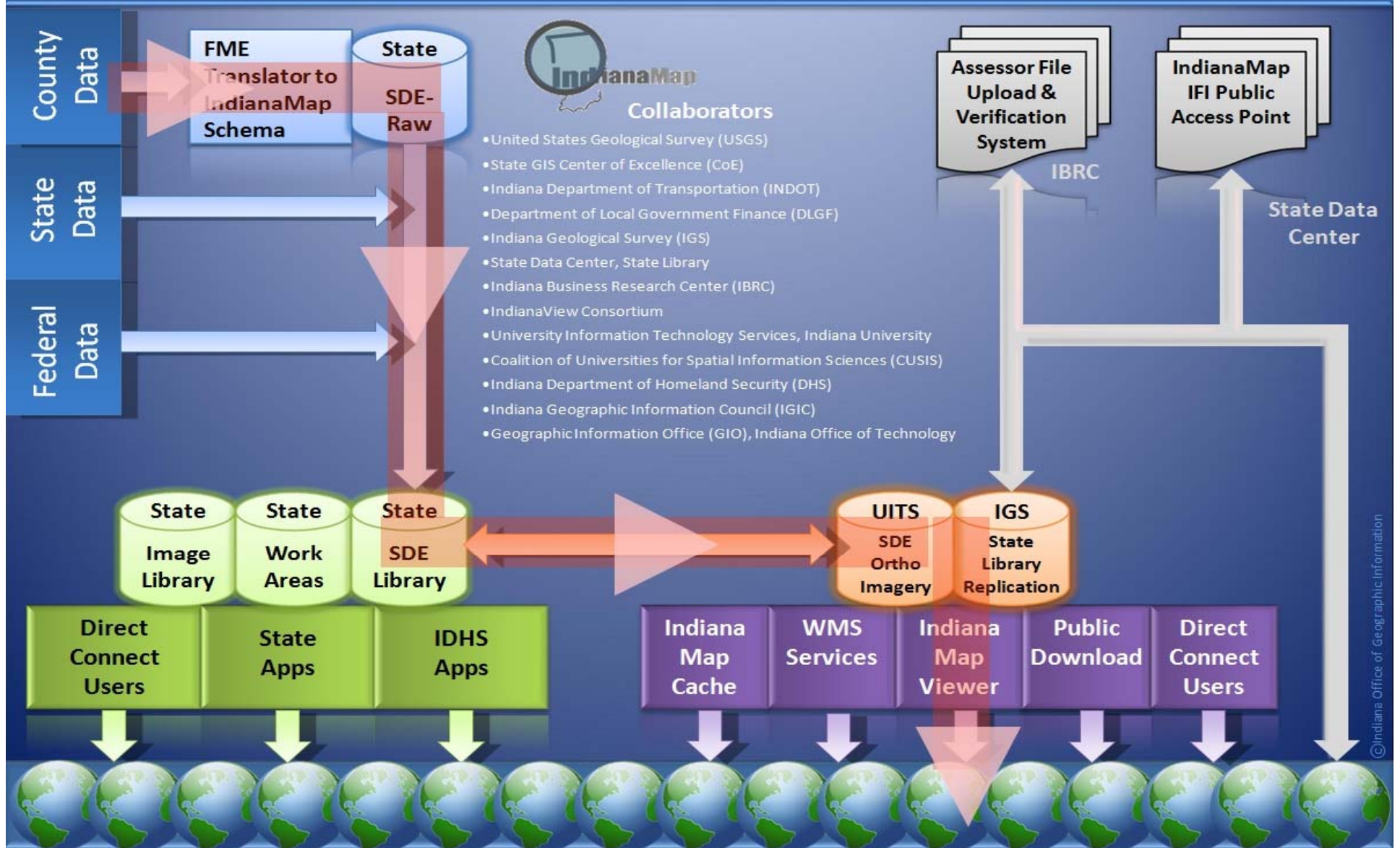
This presentation will discuss:

- **The Overall Process** to automate the workflow
- The **Partnership and Outreach Mechanisms** Used
- Statewide Minimum **Data Sharing Standards**
- The ETL Harvesting **Technology Used**
- **Harvesting Results**
- **QA/QC and Reports** on Harvested Data



The IndianaMap Data Sharing Initiative

The Overall Process

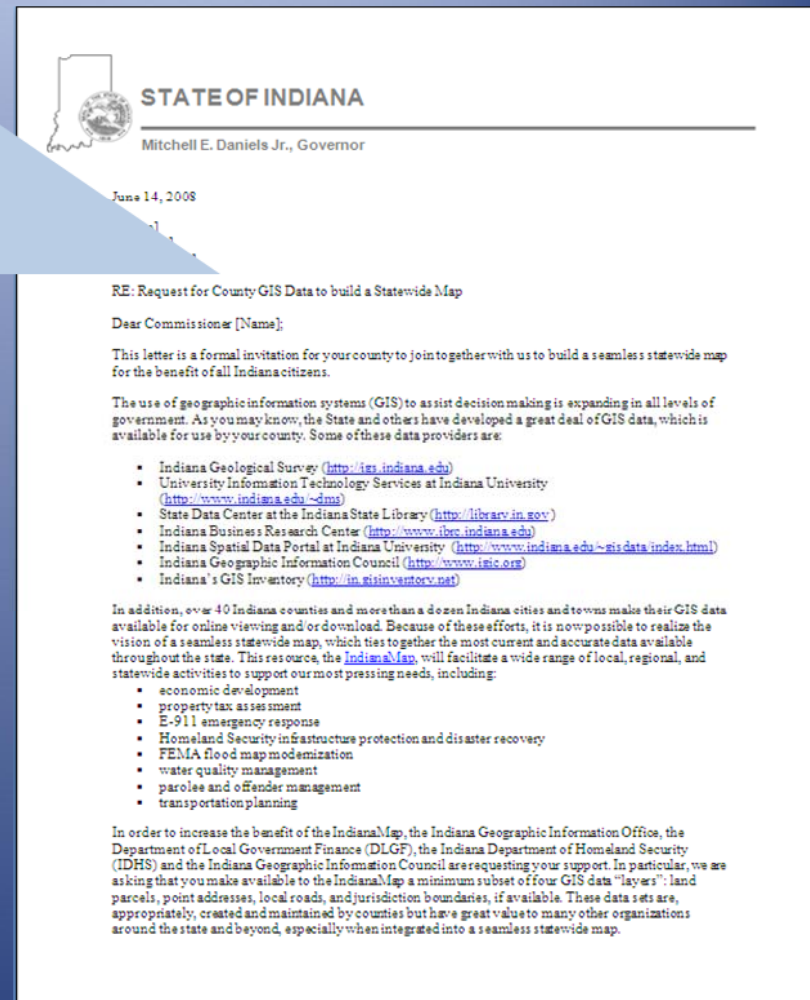


The IndianaMap Data Sharing Initiative Partnership and Outreach Mechanisms

IndianaMap Data Sharing Request Letter

Dear Commissioner;

This letter is a formal invitation for your county to join together with us to build a seamless statewide map for the benefit of all Indiana citizens.



The IndianaMap Data Sharing Initiative Partnership and Outreach Mechanisms

Reasons To Participate: You created GIS to make your County Government run more efficiently and improve decision making. Participating helps you do this by:

- Improving communication with a “common operating picture”
- Enabling regional collaboration & mutual aid
- Facilitating economic development inquiries
- Potentially lowering insurance rates
- Speeding up disaster response and recovery
- Empowering government and citizens through new applications
- Supporting the IndianaMap
- Increasing funding by \$14,894 from an IDHS grant



The IndianaMap Data Sharing Initiative Partnership and Outreach Mechanisms

IDHS WebGIS Grant request &
budget by County EMA Director

- County will make the 4 data layers available as Web Feature Service (WFS) for consumption (est. ~5k)
- County can spend remainder of grant ~\$10k on related GIS services, hardware, or software

IDHS Grant
\$14,894



The IndianaMap Data Sharing Initiative

Minimum Graphic and Attribute Data Requested

Point address data (excluding personal information e.g., names and phone numbers)

- Address Number
- Street Name Prefix
- Street Name
- Street Name Suffix
- Place Name (e.g., city, town, unincorporated area)
- State Name (IN)
- Zip Code

Parcel data (excluding personal information e.g., names, phone numbers)

- GIS Parcel Number (State number) as defined in 50 IAC 23-20-4
- Parcel Number (County number) as defined in 50 IAC 23-20-4, if available and different from GIS Parcel Number

Local governmental unit boundary data

- Boundary Type (municipality, precinct, tax district, school district, etc.)
- Boundary Name (name/identifier of municipality, precinct, tax district, school district, etc)

Street centerline data

- Street name
- Address maximum and minimum number ranges for left and right side of street, if available



The IndianaMap Data Sharing Initiative

Technology Used - OGC Web Feature Services (WFS)

A Basic Web Feature Server can handle 3 types of operations:

GetCapabilities. Describes using an XML-encoding the capabilities of the service, e.g. the features that are available and the supported transactional operations.

DescribeFeatureType. Provides a description of the structure of a one, many, or all feature types (i.e. the schema that describes the attributes).

GetFeature. Provides access to features based on a filter that constrains the request using spatial and non-spatial parameters.



The IndianaMap Data Sharing Initiative

Technology Used - OGC Web Feature Services (WFS)



WFS Summarizer

Instructions:

Enter the URL for a Web Feature Service (WFS) in the search bar below. Then click 'Summarize' to see information about that WFS including the operations it supports and the features it offers. To view the summary in a separate window, click 'Summarize in New Window'.

WFS Url:



Loading WFS Summarizer v1.0.0

100%

org.igic.plugin

The IndianaMap Data Sharing Initiative

Technology Used - OGC Web Feature Services (WFS)

MadisonWFS

URL : <http://arcgis01.madisoncty.com/arcgis/services/>
Service Type : WFS
Service Version : 1.1.0
Provider :

Operations

GetFeature
DescribeFeatureType
GetCapabilities

Feature Types

- *Incorporated_Areas*

Type Name : MadisonWFS:Incorporated_Areas
Default SRS : urn:ogc:def:crs:EPSG:6.9:2965
Available SRS(s) : urn:ogc:def:crs:EPSG:6.9:2965
Number of Features : 15
Attributes:

Av_HH_Sz_2 : double
OBJECTID : int
Med_Age_20 : double
Est_2005_Pop : int
PCI_2000 : double
Med_Hm_Val : double
Pop_1910 : double
Pop_1960 : double
Pop_1930 : double
Med_Hs_Inc : double
Pov_Lev_20 : double
Per_Fem_20 : double
Pop_1980 : double
Med_Hs_I_1 : double
Pop_90 : double
Av_HH_Sz_9 : double
OBJECTID_1 : int
GlobalID : string
Shape_Leng : double
Pop_1900 : double

- *CommissionerWards*

Type Name : MadisonWFS:CommissionerWard
Default SRS : urn:ogc:def:crs:EPSG:6.9:2965
Available SRS(s) : urn:ogc:def:crs:EPSG:6.9:2965
Number of Features : 6
Attributes:
Shape_Leng : double
OBJECTID : int
Shape.len : double
Shape.area : double
WARD : short
Cnt_WARD : int
Shape : MultiSurfacePropertyType
GlobalID : string

- *SchoolDistricts*

Type Name : MadisonWFS:SchoolDistricts
Default SRS : urn:ogc:def:crs:EPSG:6.9:2965
Available SRS(s) : urn:ogc:def:crs:EPSG:6.9:2965
Number of Features : 6
Attributes:
Pop_School_Age_Children : double
District_Pop : double
OBJECTID : int
Est_Child_Pov : double
Shape.len : double
Shape.area : double
Shape : MultiSurfacePropertyType
GlobalID : string
Est_Child_Pov_Percent : double

- *EmergencyServiceAreas*

Type Name : MadisonWFS:EmergencyServiceA
Default SRS : urn:ogc:def:crs:EPSG:6.9:2965
Available SRS(s) : urn:ogc:def:crs:EPSG:6.9:2965
Number of Features : 13
Attributes:
OBJECTID : int
SHAPE : MultiSurfacePropertyType
SHAPE.len : double
GlobalID : string
SHAPE.area : double

- *StreamDoubleLine2009*

Type Name : MadisonWFS:StreamDoubleLine2009
Default SRS : urn:ogc:def:crs:EPSG:6.9:2967
Available SRS(s) : urn:ogc:def:crs:EPSG:6.9:2967
Number of Features : 1272
Attributes:
OBJECTID : int
SHAPE : MultiSurfacePropertyType
SHAPE.len : double
GlobalID : string
SHAPE.area : double

- *Street_Centerlines*

Type Name : MadisonWFS:Street_Centerlines
Default SRS : urn:ogc:def:crs:EPSG:6.9:2965
Available SRS(s) : urn:ogc:def:crs:EPSG:6.9:2965
Number of Features : 14736
Attributes:
LENGTH : double
OBJECTID : int
Join_Count : int
ORIG_FID : int
L_Add_To : double
R_Add_To : double
Shape.len : double
R_Add_From : double
L_Add_From : double
GlobalID : string
Shape_Leng : double
Shape : MultiCurvePropertyType
Pavement_2 : int
Shape.len : double

- *Precincts*

Type Name : MadisonWFS:Precincts
Default SRS : urn:ogc:def:crs:EPSG:6.9:2965
Available SRS(s) : urn:ogc:def:crs:EPSG:6.9:2965
Number of Features : 112
Attributes:
New_Numb : double
OBJECTID : int
Old_Numb : int

- *County_Parcels*

Type Name : MadisonWFS:County_Parcels
Default SRS : urn:ogc:def:crs:EPSG:6.9:2965
Available SRS(s) : urn:ogc:def:crs:EPSG:6.9:2965
Number of Features : 85920
Attributes:
OBJECTID : int
Shape.len : double
Shape.area : double
Shape : MultiSurfacePropertyType
GlobalID : string

- *County_Address_Points*

Type Name : MadisonWFS:County_Address_Points
Default SRS : urn:ogc:def:crs:EPSG:6.9:2965
Available SRS(s) : urn:ogc:def:crs:EPSG:6.9:2965
Number of Features : 55416
Attributes:
OBJECTID : int
Address_Number : int
Shape : PointPropertyType
Zip_Code : int
GlobalID : string

- *StateTaxingUnits*

Type Name : MadisonWFS:StateTaxingUnits
Default SRS : urn:ogc:def:crs:EPSG:6.9:2965
Available SRS(s) : urn:ogc:def:crs:EPSG:6.9:2965
Number of Features : 113
Attributes:
OBJECTID : int
Shape.len : double
Shape.area : double
Shape : MultiSurfacePropertyType
ORIG_FID : int
GlobalID : string

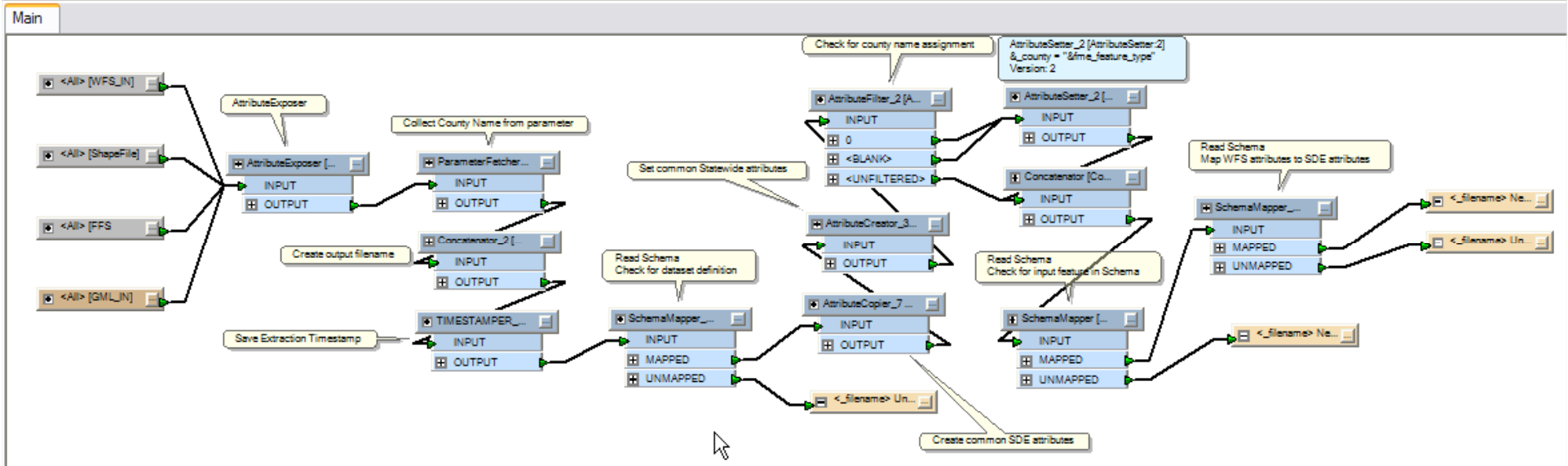
- *StreamDoubleLine2009*

Type Name : MadisonWFS:StreamDoubleLine2009
Default SRS : urn:ogc:def:crs:EPSG:6.9:2967
Available SRS(s) : urn:ogc:def:crs:EPSG:6.9:2967
Number of Features : 1272

The IndianaMap Data Sharing Initiative

Technology Used

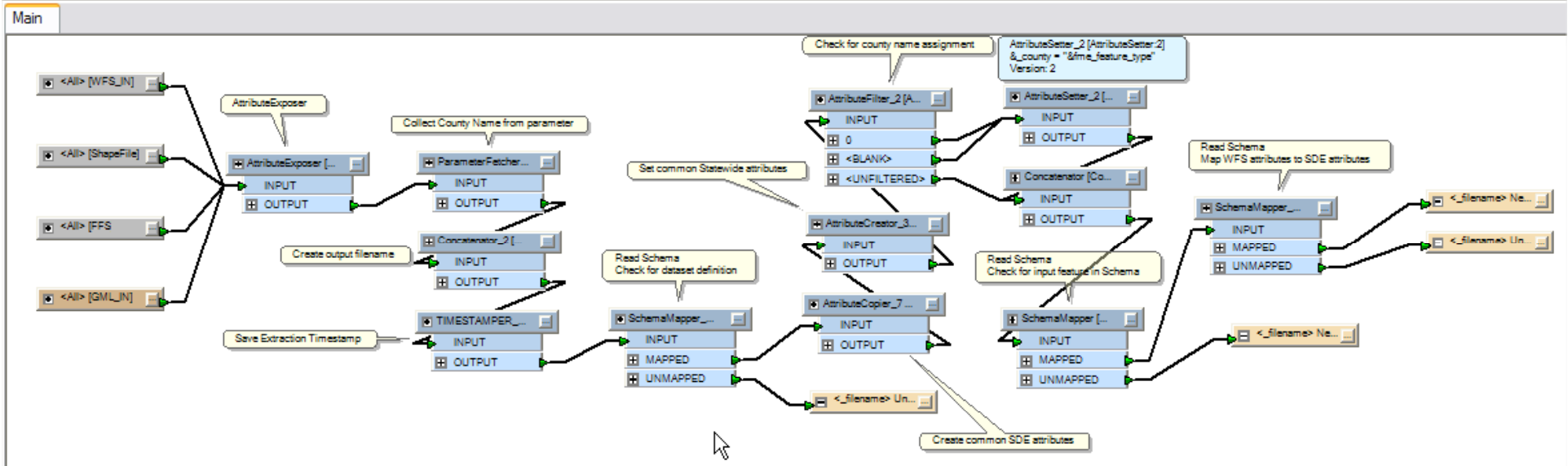
Safe Software – Feature Manipulation Engine (FME)



The IndianaMap Data Sharing Initiative

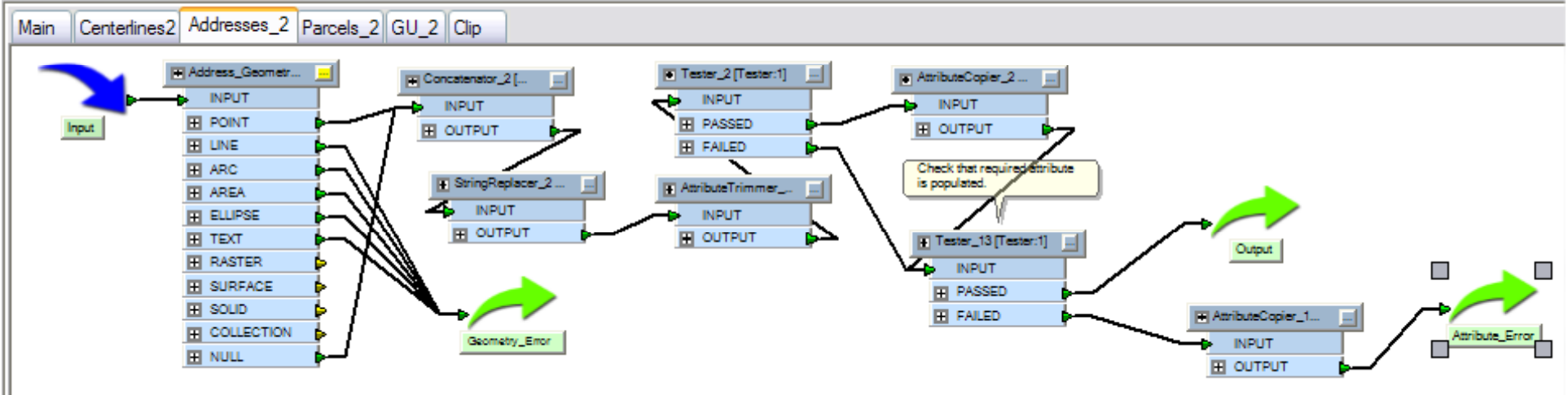
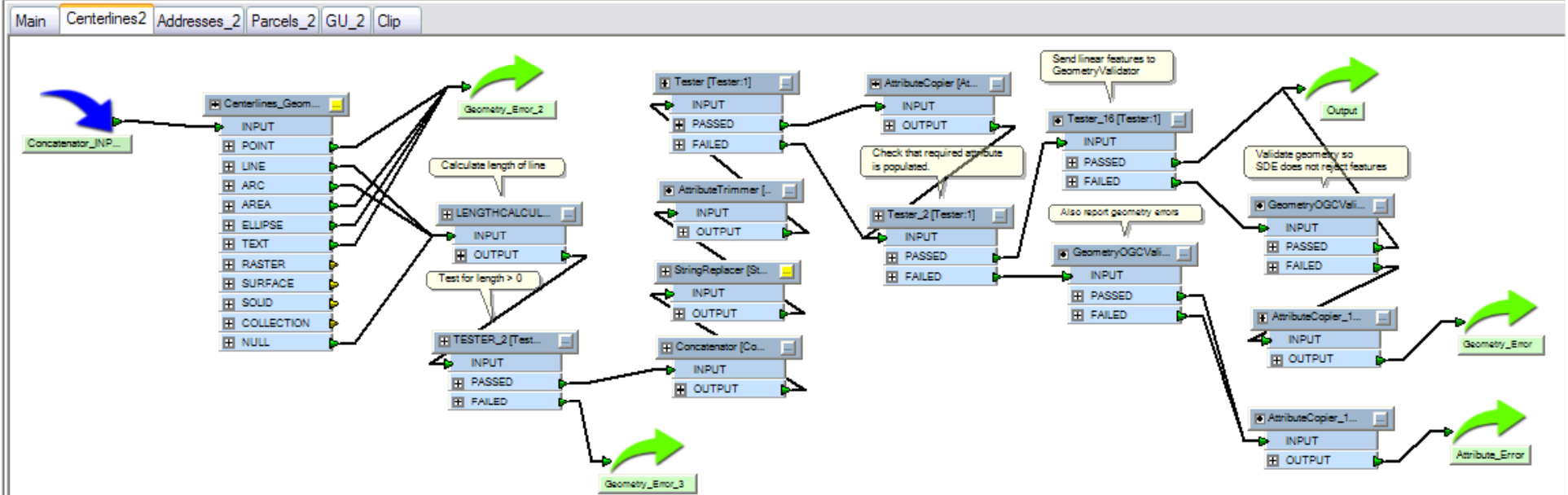
Technology Used

Safe Software – Feature Manipulation Engine (FME)



The IndianaMap Data Sharing Initiative

Technology Used



The IndianaMap Data Sharing Initiative

Harvesting Results

2010-06-15	10:39:47	0.9	0.9	INFORM	Feature Manipulation Engine 2009 (20090505 - Build 5676)
2010-06-15	11:01:57	182.6	0.0	STATS	-----
2010-06-15	11:01:57	182.6	0.0	STATS	Count' Domain Summary
2010-06-15	11:01:57	182.6	0.0	STATS	-----
2010-06-15	11:01:57	182.6	0.0	STATS	Counter_counter (range was 1 to 53022) 53021
2010-06-15	11:01:57	182.6	0.0	STATS	GeomReport_2_Counter_2_counter (range was 1 to 53014) 53013
2010-06-15	11:01:57	182.6	0.0	STATS	GeomReport_2_Counter_counter (range was 1 to 6) 5
2010-06-15	11:01:57	182.6	0.0	STATS	MissingAttributes_4_Counter_8_counter (range was 1 to 53019) 53018
2010-06-15	11:01:57	182.6	0.0	STATS	-----
2010-06-15	11:01:57	182.6	0.0	STATS	Total '@Count' Invocations: 159057
2010-06-15	11:01:57	182.6	0.0	STATS	-----
2010-06-15	11:01:57	182.6	0.0	INFORM	Final transaction (transaction # 531) successfully committed!
2010-06-15	11:01:57	182.6	0.0	INFORM	-----
2010-06-15	11:01:57	182.6	0.0	INFORM	Feature output statistics for 'SDE30' writer using keyword 'SDE30_1':
2010-06-15	11:01:57	182.6	0.0	STATS	-----
2010-06-15	11:01:57	182.6	0.0	STATS	Features written
2010-06-15	11:01:57	182.6	0.0	STATS	-----
2010-06-15	11:01:57	182.6	0.0	STATS	COUNTY_PARCEL (COUNTY_PARCEL) 53013
2010-06-15	11:01:57	182.6	0.0	STATS	-----
2010-06-15	11:01:57	182.6	0.0	STATS	Total Features written 53013
2010-06-15	11:01:57	182.8	0.0	STATS	-----
2010-06-15	11:01:57	182.8	0.0	STATS	GeometryErrors_Parcel (GeometryErrors_Parcel) 2
2010-06-15	11:01:57	182.8	0.0	STATS	-----
2010-06-15	11:01:57	182.8	0.0	STATS	Total Features written 2
2010-06-15	11:01:58	183.0	0.0	STATS	-----
2010-06-15	11:01:58	183.0	0.0	STATS	MissingAttributes_Parcel (MissingAttributes_Parcel) 1
2010-06-15	11:01:58	183.0	0.0	STATS	-----
2010-06-15	11:01:58	183.0	0.0	STATS	Total Features written 1
2010-06-15	11:01:58	183.0	0.0	INFORM	-----
2010-06-15	11:01:58	183.0	0.0	INFORM	MULTI_WRITER: multi_writer_id '2': done writing 1 feature(s)
2010-06-15	11:01:58	183.0	0.0	STATS	-----
2010-06-15	11:01:58	183.0	0.0	STATS	Features Read Summary
2010-06-15	11:01:58	183.0	0.0	STATS	-----
2010-06-15	11:01:58	183.0	0.0	STATS	Parcels-parcels 53021
2010-06-15	11:01:58	183.0	0.0	STATS	-----
2010-06-15	11:01:58	183.0	0.0	STATS	Total Features Read 53021
2010-06-15	11:01:58	183.0	0.0	STATS	-----
2010-06-15	11:01:58	183.0	0.0	STATS	Features Skipped Summary
2010-06-15	11:01:58	183.0	0.0	STATS	-----
2010-06-15	11:01:58	183.0	0.0	STATS	AddressPoints-addpoint (WFS_1) 44
2010-06-15	11:01:58	183.0	0.0	STATS	ESNZones-esnzones (WFS_1) 43
2010-06-15	11:01:58	183.0	0.0	STATS	Towns-towns (WFS_1) 15
2010-06-15	11:01:58	183.0	0.0	STATS	Townships-townships (WFS_1) 1
2010-06-15	11:01:58	183.0	0.0	STATS	-----
2010-06-15	11:01:58	183.0	0.0	STATS	Total Features Skipped 103
2010-06-15	11:01:58	183.0	0.0	STATS	-----
2010-06-15	11:01:58	183.0	0.0	STATS	Features written Summary
2010-06-15	11:01:58	183.0	0.0	STATS	-----
2010-06-15	11:01:58	183.0	0.0	STATS	COUNTY_PARCEL 53013
2010-06-15	11:01:58	183.0	0.0	STATS	GeometryErrors_Parcel 2
2010-06-15	11:01:58	183.0	0.0	STATS	MissingAttributes_Parcel 1
2010-06-15	11:01:58	183.0	0.0	STATS	-----
2010-06-15	11:01:58	183.0	0.0	STATS	Total Features written 53016
2010-06-15	11:01:58	183.0	0.0	STATS	-----

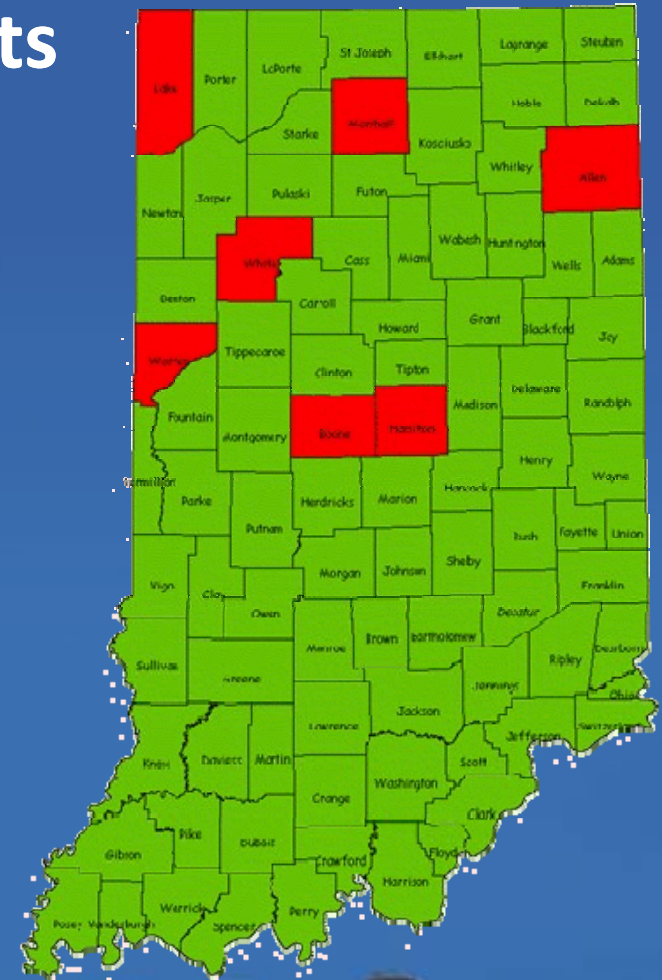


The IndianaMap Data Sharing Initiative

Harvesting Results

**August 2010 Data Harvest
(85 of 92 Counties participating)**

	Number of Records	Number of Counties
Parcels	2,741,120	76
Address Points	2,052,079	75
Centerline Segments	446,433	75
Admin Boundaries	3,205	73



The IndianaMap Data Sharing Initiative

The harvested data is shared with...

- Indiana State government (IDHS, GIO)
- And with the general public through the...
 - The IndianaMap (<http://www.indianamap.org>)
 - OpenAddresses.org (<http://www.openaddresses.org>)
 - *The National Map* (<http://nationalmap.gov/>)
 - *OpenStreetMap* (<http://www.openstreetmap.org>)



The IndianaMap

www.indianamap.org

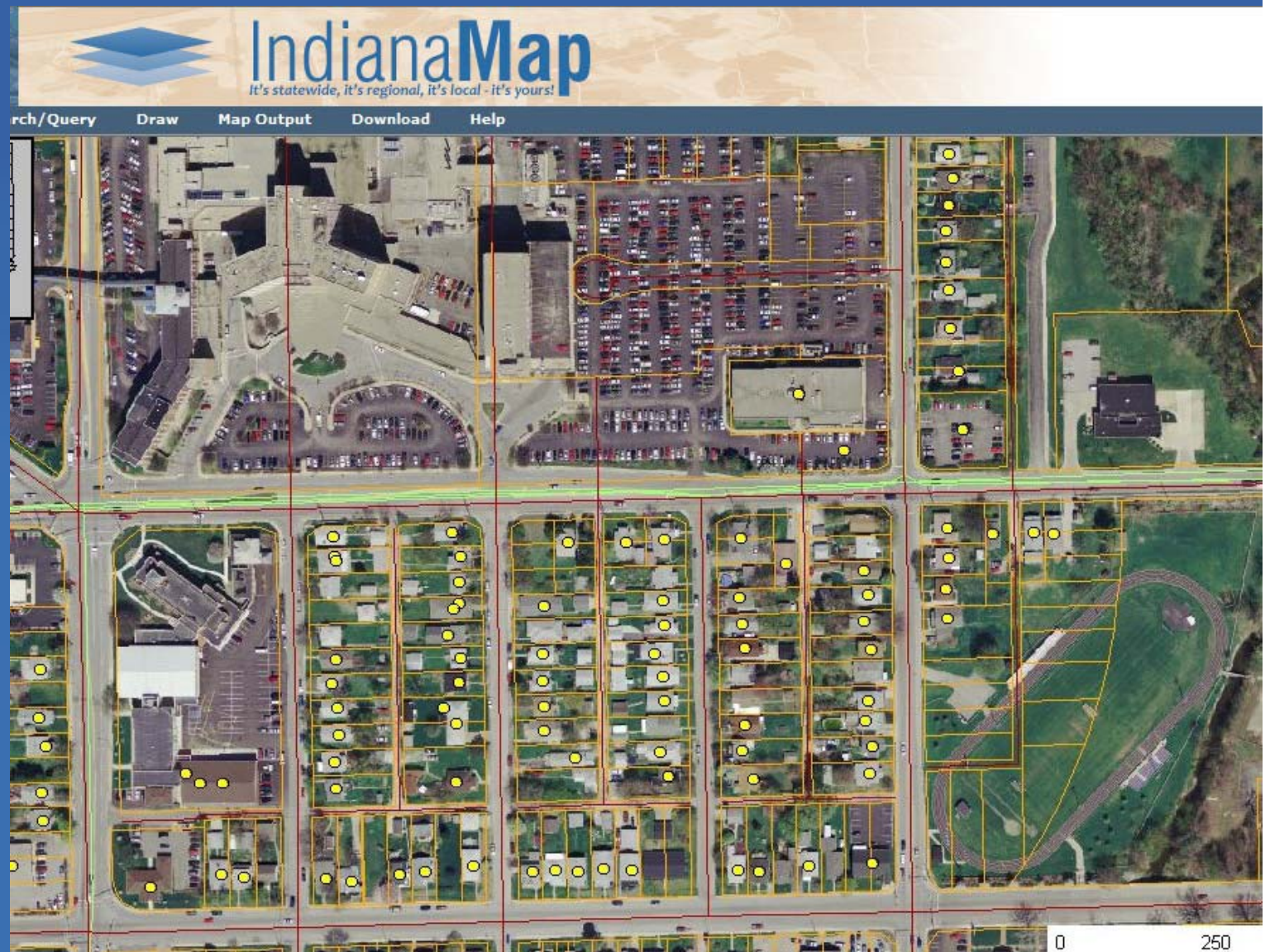


IndianaMap
Partners

Map Search/Query Draw Map Output Download Help

Over 230 layers of statewide data with metadata available for viewing, downloading and streaming

The IndianaMap Data Sharing Initiative



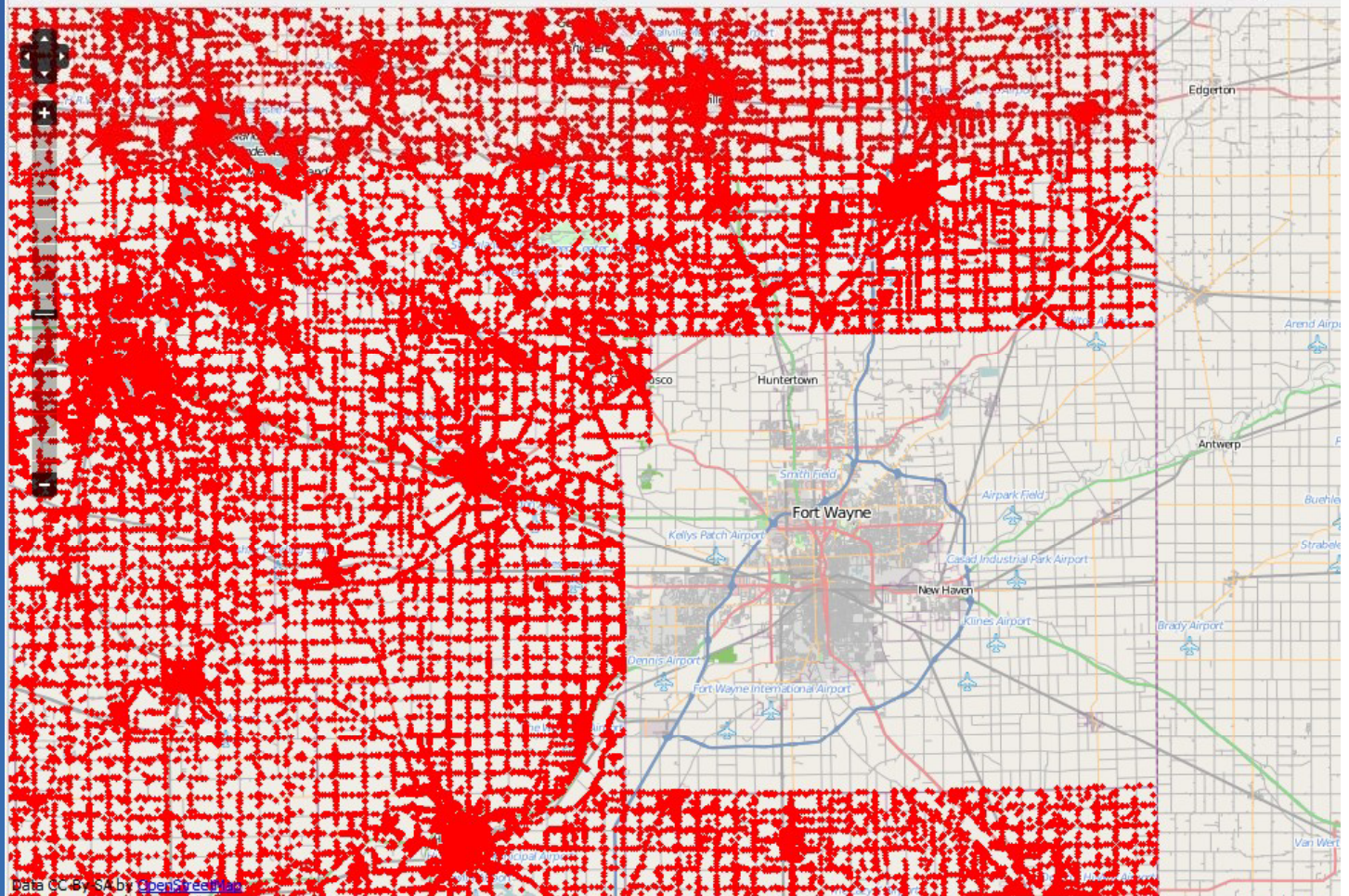
The IndianaMap Data Sharing Initiative

OpenAddresses.org

Localized addresses

Search address or location

English



Data CC BY SA by OpenStreetMap

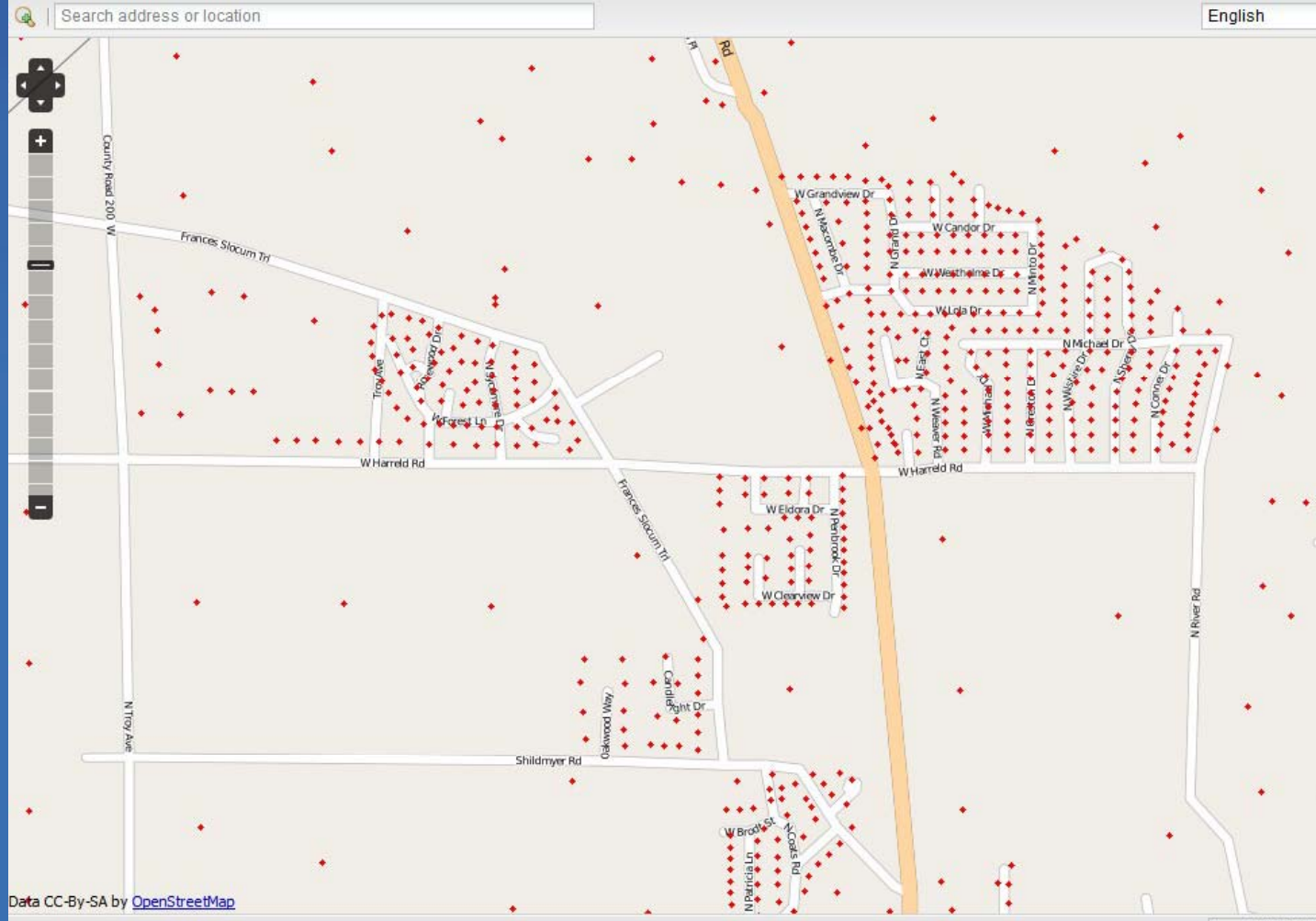
long/lat/WGS84



The IndianaMap Data Sharing Initiative

OpenAddresses.org

Localized addresses

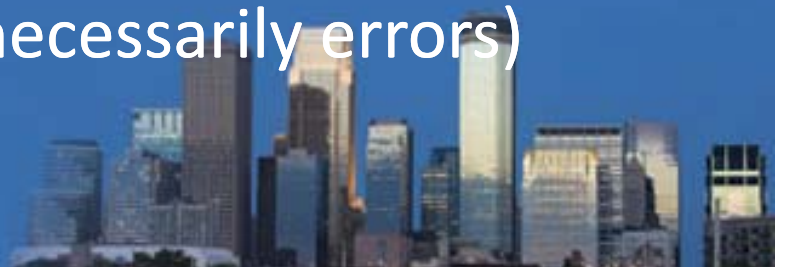


long/lat/WGS84

The IndianaMap Data Sharing Initiative

QA/QC and Reports on Harvested Data

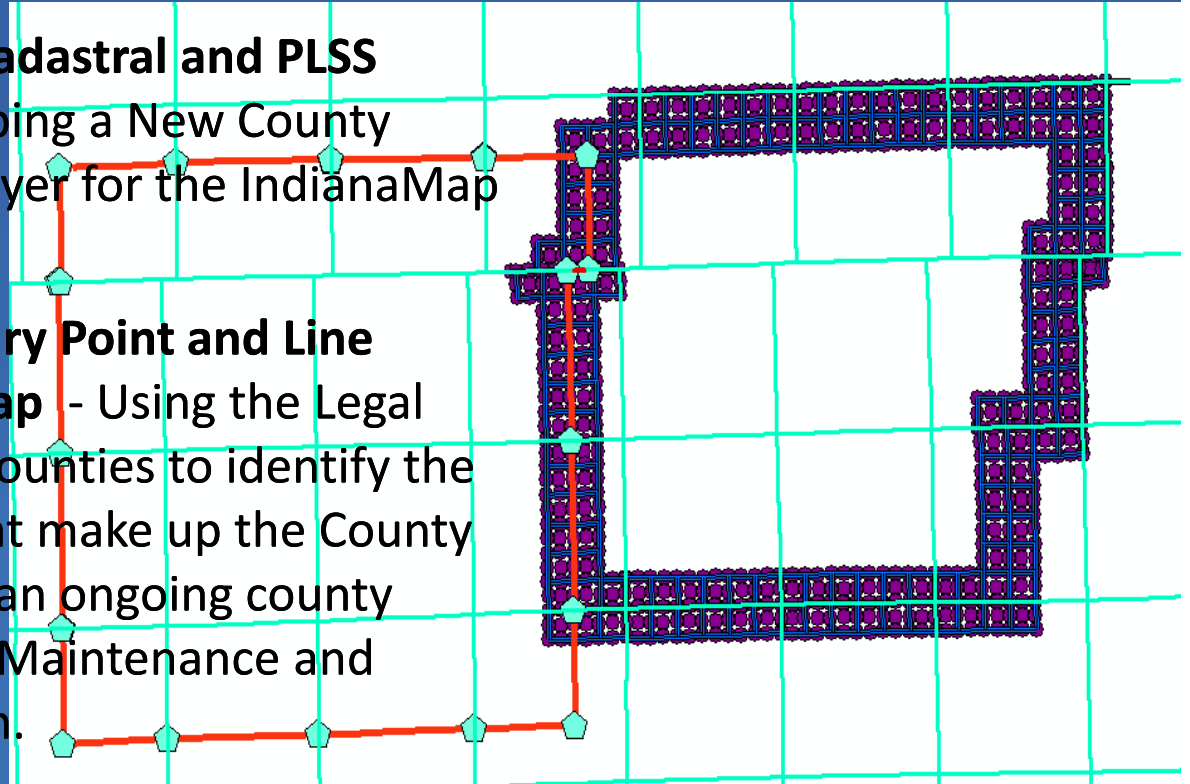
- No edge matching required or expected
- No recognized authoritative GIS County boundary for the State
- Report on harvesting results
 - Gaps in data
 - Errors in geometry
 - Errors in attribution
 - Errors in topology
 - Different capture rules (not necessarily errors)



The IndianaMap Data Sharing Initiative

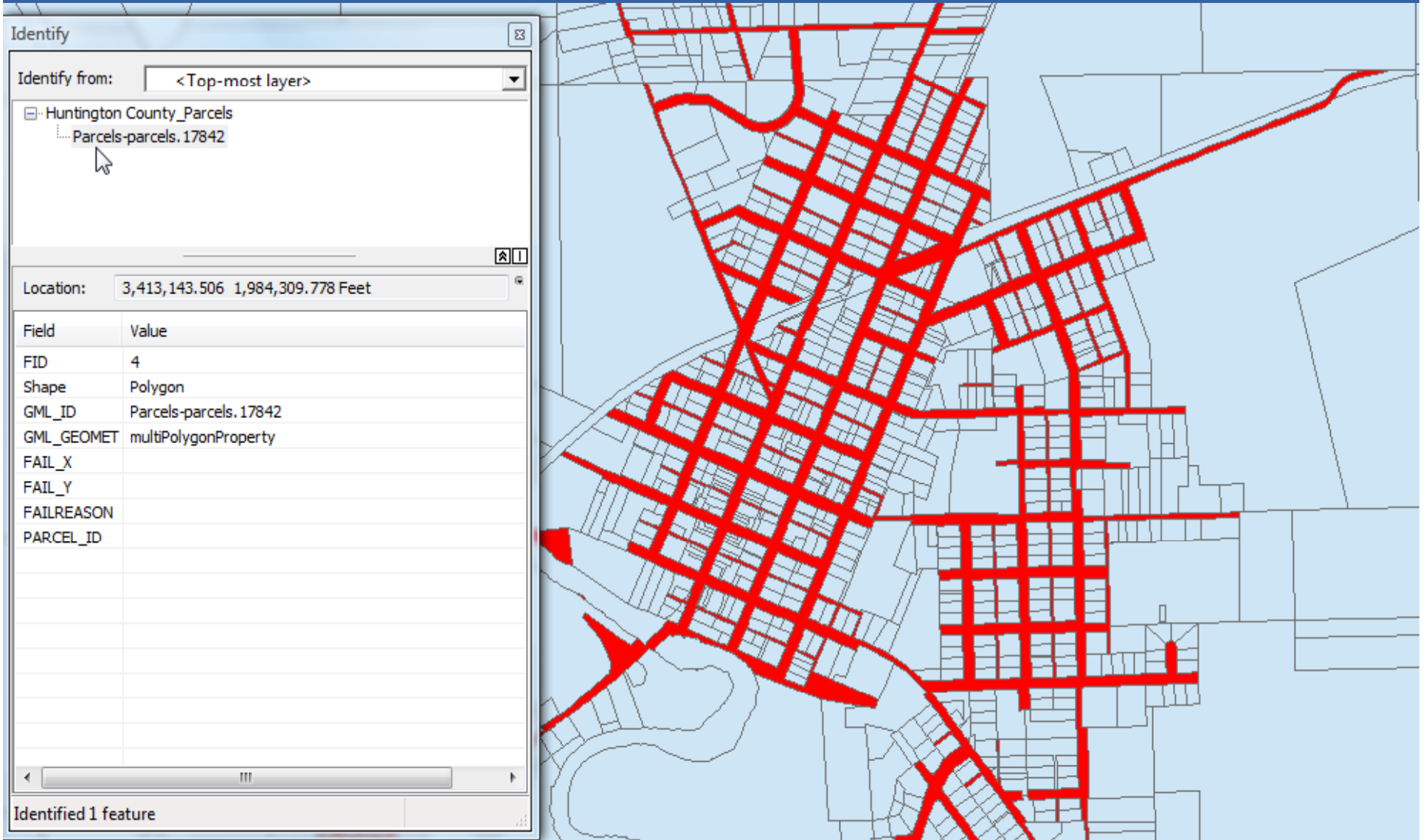
QA/QC

- **IGIC's Boundaries, Cadastral and PLSS Workgroup** - developing a New County Boundary Polygon Layer for the IndianaMap
- **New County Boundary Point and Line Layers for IndianaMap** - Using the Legal descriptions of the Counties to identify the Corners and lines that make up the County Boundary. Develop an ongoing county boundary point/line Maintenance and Stewardship program.
- **New County Boundary Polygon Layer for the IndianaMap** - the county boundary polygon file will be re-generated from the county line layer when updated.



The IndianaMap Data Sharing Initiative

QA/QC



The screenshot displays a GIS application interface. On the right, a map shows a grid of parcel boundaries. One parcel is highlighted in red, indicating it is the selected feature. On the left, an 'Identify' window is open, showing the following information:

Identify from: <Top-most layer>

- Huntington County_Parcels
 - Parcels-parcels.17842

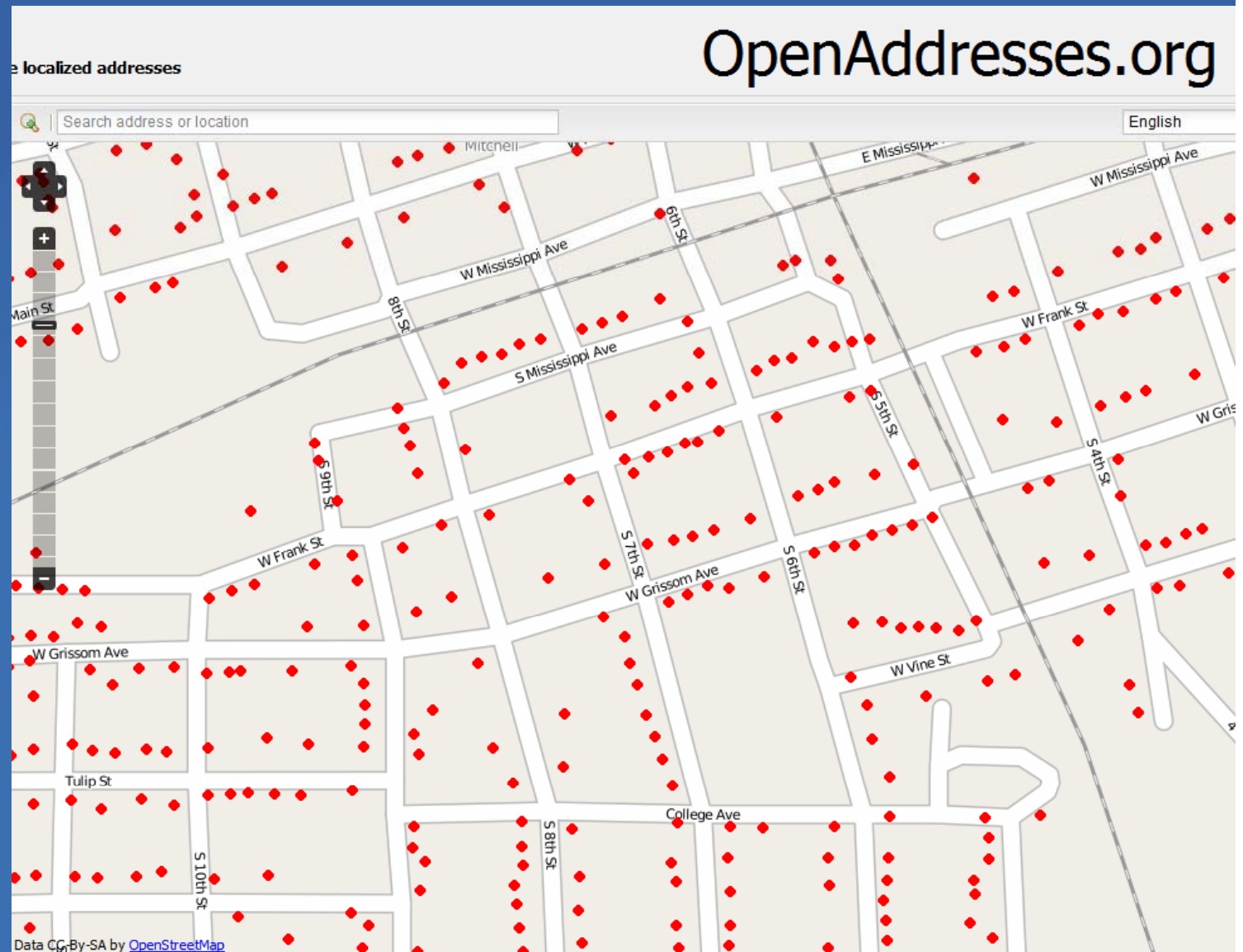
Location: 3,413,143.506 1,984,309.778 Feet

Field	Value
FID	4
Shape	Polygon
GML_ID	Parcels-parcels.17842
GML_GEOMET	multiPolygonProperty
FAIL_X	
FAIL_Y	
FAILREASON	
PARCEL_ID	

Identified 1 feature

The IndianaMap Data Sharing Initiative

OpenAddresses.org



The IndianaMap Data Sharing Initiative

The screenshot displays the IndianaMap web application interface. At the top, the logo features a blue stylized map icon and the text "IndianaMap" with the tagline "It's statewide, it's regional, it's local - it's yours!". Below the logo is a navigation menu with the following items: Map, Search/Query, Draw, Map Output, Download, and Help.

The main map area shows a detailed view of street centerlines in red. A mouse cursor is visible over the map. In the top-left corner, there is an inset map of the state of Indiana with a red square indicating the current map's location. In the bottom-right corner of the map area, there is a scale bar showing 0, 1.5, and 3 miles.

At the bottom of the interface, there is a status bar with the following information:
Tool Mode: Zoom In Active Layer: Street Centerlines (IDHS)
Scale 1: 97258 Zoom

At the very bottom, the map coordinates are displayed: Map Coordinates: 564614 m E, 4386777 m N (UTM Zone 16 NAD83) -- 86°14'49.5" W, 39°37'42.0" N

The IndianaMap Data Sharing Initiative

[Back to IndianaMap](#)

The screenshot displays the IndianaMap web application interface. At the top, the logo for IndianaMap is shown with the tagline "It's statewide, it's regional, it's local - it's yours!". Below the logo is a navigation menu with options: Map, Search/Query, Draw, Map Output, Download, and Help. The main map area shows a street network with a red line selected. A scale bar at the bottom of the map indicates 0, 100, and 200 feet. The bottom status bar shows "Tool Mode: Identify", "Active Layer: Street Centerlines (IDHS)", and "Scale 1: 1005".

Active Layer: Street Centerlines (IDHS)

Feature 1

ZIPLEFT	
ZIPRIGHT	
STATUS	1
len	310.571451896565

Feature 2

SOURCEID	
ORIGIN	Marion County
LOADDATE	Tue, 09 Mar 2010 00:00:00
ADMIN_L	2
ADDMAX_L	178
ADMIN_R	1
ADDMAX_R	179
STREET	COUNTY LINE RD
ZIPLEFT	
ZIPRIGHT	
STATUS	1
len	310.571451896565

Feature 3

SOURCEID	Roads-roads.8663
ORIGIN	Johnson County
LOADDATE	Tue, 30 Mar 2010 00:00:00
ADMIN_L	
ADDMAX_L	
ADMIN_R	
ADDMAX_R	
STREET	W COUNTY LINE RD
ZIPLEFT	46142
ZIPRIGHT	46142
STATUS	1
len	90.7127590454617

Map Coordinates: 572095 m E, 4387590 m N (UTM Zone 16 NAD83) -- 86°09'35.4" W, 39°38'06.2" N

The IndianaMap Data Sharing Initiative

IndianaMap
It's statewide, it's regional, it's local - it's yours!

Map Search/Query Draw Map Output Download Help

Back to Indiana Map

Active Layer:

Feature 1

SOURCEID	Streets-streets,8663
ORIGIN	Marion County
LOADDATE	Tue, 09 Mar 2010 00:00:00
ADMIN_L	2
ADMIN_R	1
ADDMAX_L	178
ADDMAX_R	179
STREET	COUNTY LINE RD
ZIPLEFT	
ZIPRIGHT	
STATUS	1
len	310.571451896565

Feature 2

SOURCEID	Roads-roads,8663
ORIGIN	Johnson County
LOADDATE	Tue, 30 Mar 2010 00:00:00
ADMIN_L	
ADMIN_R	
ADDMAX_L	
ADDMAX_R	
STREET	W COUNTY LINE RD
ZIPLEFT	46142
ZIPRIGHT	46142
STATUS	1
len	90.7127590454617

Tool Mode: Identify Active Layer: Street Centerlines (IDHS) Scale 1: 1005 Zoom

Map Coordinates: 572267 m E, 4387599 m N (UTM Zone 16 NAD83) -- 86°09'28.2" W, 39°38'06.4" N

The IndianaMap Data Sharing Initiative

Thank You!

pworrall@igic.org

317.504.4389

