Collaboration and Coordination

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

Philip Worrall, Executive Director
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**
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The Overall Process

Collaborators:
- United States Geological Survey (USGS)
- State GIS Center of Excellence (CoE)
- Indiana Department of Transportation (INDOT)
- Department of Local Government Finance (DLGF)
- Indiana Geological Survey (IGS)
- State Data Center, State Library
- Indiana Business Research Center (IBRC)
- IndianaView Consortium
- University Information Technology Services, Indiana University
- Coalition of Universities for Spatial Information Sciences (CUSIS)
- Indiana Department of Homeland Security (DHS)
- Indiana Geographic Information Council (IGIC)
- Geographic Information Office (GIO), Indiana Office of Technology

Direct Connect Users
State Apps
IDHS Apps

State Image Library
State Work Areas
State SDE Library

FME Translator to IndianaMap Schema
State SDE-Raw

Assessor File Upload & Verification System
IndianaMap IFI Public Access Point

IBRC
State Data Center

UIOTS State Library Replication

Indiana Map Cache
WMS Services
Indiana Map Viewer
Public Download
Direct Connect Users
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.

In order to increase the benefits of the IndianaMap, the Indiana Geographic Information Office, the Department of Local Government Finance (DLGF), the Indiana Department of Homeland Security (IDHS) and the Indiana Geographic Information Council are requesting your support. In particular, we are asking that you make available to the IndianaMap a minimum subset of first GIS data layers, land parcels, point addresses, local roads and jurisdiction boundaries, of available. These data sets are, appropriately, created and maintained by counties but have great value to many other organizations around the state and beyond, especially when integrated into a seamless statewide map.
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**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
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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.
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Technology Used - OGC Web Feature Services (WFS)
# The IndianaMap Data Sharing Initiative

## Technology Used - OGC Web Feature Services (WFS)

<table>
<thead>
<tr>
<th>Technology Used</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OGC Web Feature Services (WFS)</td>
<td></td>
</tr>
</tbody>
</table>

## Feature Types

### Incorporated Areas

- **Type Name**: MadisonWFS: Incorporated Areas
- **Default SRS**: urn:ogc:def:crs:EPSG:6.9.2965
- **Available SRSs**: 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_2065_Pop: int
  - PCI_2000: double
  - Mod_Km_Vol: double
  - Pop_2010: double
  - Pop_1990: double
  - Med_Ha_In: double
  - Per_Ferm_20: double
  - Pop_1000: double
  - Mod_Ha_L_1: double
  - Pop_90: double
  - Av_HH_Sz_9: double
  - OBJECTID_1: int
  - GlobalID: string
  - Shape_Leng: double
  - Pop_1000: double

### School Districts

- **Type Name**: MadisonWFS: School Districts
- **Default SRS**: urn:ogc:def:crs:EPSG:6.9.2965
- **Available SRSs**: urn:ogc:def:crs:EPSG:6.9.2965
- **Number of Features**: 16
- **Attributes**:
  - Pop_School_Age_Children: double
  - District_Pop: double
  - OBJECTID: int
  - Est_Child_Pow: double
  - Shape_Leng: double
  - Shape_Area: double
  - Shape: MultiSurfacePropertyType
  - GlobalID: string
  - Est_Child_Pow_Percent: double

### Emergency Service Areas

- **Type Name**: MadisonWFS: Emergency Service Areas
- **Default SRS**: urn:ogc:def:crs:EPSG:6.9.2965
- **Available SRSs**: urn:ogc:def:crs:EPSG:6.9.2965
- **Number of Features**: 13
- **Attributes**:
  - OBJECTID: int
  - SHAPE: MultiSurfacePropertyType
  - GlobalID: string
  - Shape_Leng: double
  - SHAPE: double

### Commissioners

- **Type Name**: MadisonWFS: Commissioners
- **Default SRS**: urn:ogc:def:crs:EPSG:6.9.2965
- **Available SRSs**: urn:ogc:def:crs:EPSG:6.9.2965
- **Number of Features**: 15
- **Attributes**:
  - Shape_Leng: double
  - OBJECTID: int
  - SHAPE: MultiSurfacePropertyType
  - GlobalID: string
  - SHAPE: double

### Stream Double Line 2009

- **Type Name**: MadisonWFS: Stream Double Line 2009
- **Default SRS**: urn:ogc:def:crs:EPSG:6.9.2965
- **Available SRSs**: urn:ogc:def:crs:EPSG:6.9.2965
- **Number of Features**: 1272
- **Attributes**:
  - OBJECTID: int
  - SHAPE: MultiSurfacePropertyType
  - GlobalID: string
  - SHAPE: double

### State Taxing Units

- **Type Name**: MadisonWFS: State Taxing Units
- **Default SRS**: urn:ogc:def:crs:EPSG:6.9.2965
- **Available SRSs**: urn:ogc:def:crs:EPSG:6.9.2965
- **Number of Features**: 113
- **Attributes**:
  - OBJECTID: int
  - SHAPE: double
  - SHAPE: double
  - SHAPE: MultiSurfacePropertyType
  - GlobalID: string

### Precincts

- **Type Name**: MadisonWFS: Precincts
- **Default SRS**: urn:ogc:def:crs:EPSG:6.9.2965
- **Available SRSs**: urn:ogc:def:crs:EPSG:6.9.2965
- **Number of Features**: 112
- **Attributes**:
  - New_Name: double
  - OBJECTID: int
  - Old_Name: int

### County Parcels

- **Type Name**: MadisonWFS: County Parcels
- **Default SRS**: urn:ogc:def:crs:EPSG:6.9.2965
- **Available SRSs**: urn:ogc:def:crs:EPSG:6.9.2965
- **Number of Features**: 85920
- **Attributes**:
  - OBJECTID: int
  - SHAPE: double
  - SHAPE: 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 SRSs**: 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

### Stream Double Line 2009

- **Type Name**: MadisonWFS: Stream Double Line 2009
- **Default SRS**: urn:ogc:def:crs:EPSG:6.9.2965
- **Available SRSs**: urn:ogc:def:crs:EPSG:6.9.2965
- **Number of Features**: 1272
- **Attributes**:
  - OBJECTID: int
  - SHAPE: double
  - SHAPE: double
  - SHAPE: MultiSurfacePropertyType
  - GlobalID: string
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Technology Used

Safe Software – Feature Manipulation Engine (FME)
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Technology Used

Safe Software – Feature Manipulation Engine (FME)
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Technology Used
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Harvesting Results

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Owner</th>
<th>Server</th>
<th>User</th>
<th>User ID</th>
<th>Feature Manipulation Engine 2009 (20090505 - build 5676)</th>
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</tbody>
</table>

Count Domain Summary

- Counter_counter (range was 1 to 53022) : 1
-GeomReport_2.Counter_2.Counter (range was 1 to 53014) : 1
- MissingAttributes_4.Counter_8.Counter (range was 1 to 53019) : 1

Total %Count Invocations: 159057

Final transaction (transaction # 531) successfully committed!

Feature output statistics for 'SDE30' writer using keyword 'SDE30_1':

- COUNTY_PARCEL (COUNTY_PARCEL) : 53013
- Total Features Written: 53013
- GeometryErrors_Parcel (GeometryErrors_Parcel) : 2
- Total Features Written: 2
- MissingAttributes_Parcel (MissingAttributes_Parcel) : 1
- Total Features Written: 1
- MULTI_WRITER: multi_writer_id '2'; done writing 1 feature(s)

Features Read Summary

- AddressPoints-AddPoint (WFS_1) : 44
- ENZones-Enzzones (WFS_1) : 44
- Townships-townships (WFS_1) : 15
- Total Features Read: 105

Features Skipped

Features written summary

- COUNTY_PARCEL : 53013
- GeometryErrors_Parcel : 2
- MissingAttributes_Parcel : 1

Total Features Written: 53016
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**Harvesting Results**

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

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Number of Records</th>
<th>Number of Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parcels</td>
<td>2,741,120</td>
<td>76</td>
</tr>
<tr>
<td>Address Points</td>
<td>2,052,079</td>
<td>75</td>
</tr>
<tr>
<td>Centerline Segments</td>
<td>446,433</td>
<td>75</td>
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<tr>
<td>Admin Boundaries</td>
<td>3,205</td>
<td>73</td>
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</table>
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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

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
The IndianaMap Data Sharing Initiative

OpenAddresses.org
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)
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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.
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Thank You!

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