SDI AND SOUTH DAKOTA: THE DIGITAL TRANSFORMATION

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**ABOUT ME**

- **BS Political Science**
  - Political systems and policy
  - Unintended consequences
- **MS Geography**
  - Political, Economic, and Cultural
  - Land Use, Economic Development, and Rhetoric
- **BIT GIS Software Engineer**
  - Application Development for State Agencies
  - Implemented GIS technology into State Agency work flows
- **BIT GIS Analyst**
  - Manage/Acquire Spatial Data on a statewide level
  - Provide GIS technical assistance to State Agencies and Developers
  - Assist in infrastructure maintenance
OUTLINE

• Definitions
• South Dakota State Gov. and SDI
• Data Validation and Data entry
• User experiences
• State Government Transparency
• Data Accessibility
• Review
• Ideas to take away
State Government and GIS

They are a perfect fit!

• Spatial area
  • Smallest scale preset
  • Data is always spatial

• Not a quick conversion
  • Time
  • Money
DEFINITIONS

The teacher gave definitions of the new words.
What is SDI (Spatial Data Infrastructure)?

“the technology, policies, standards, and human resources necessary to acquire, process, store, distribute, and improve utilization of geospatial data.”

- Description of the National Spatial Data Infrastructure (NSDI) by Executive Order 12906
DEFINITION

Understructure

Technology/Infrastructure

Human Resources

Policies

Standards

Need

Procedure

Acquire

Process

Store

Improve Utilization
DEFINITION

WHAT IS SDI (SPATIAL DATA INFRASTRUCTURE)?

"An SDI is a coordinated series of agreements on technology standards, institutional arrangements, and policies that enable the discovery and use of geospatial information by users and for purposes other than those it was created for."

- Kuhn W (2005) Introduction to Spatial Data Infrastructures
DEFINITION

State of South Dakota: Address Verification

Selected Point’s Address:
500 E CAPITOL AVE, PIERRE SD 57501-5007

Add Rooftop Address
- Click “Add Address” button
- Click on the map to create a new rooftop address point

Select an address point to edit or delete.
DEFINITION

South Dakota: Sales Tax Rates by Address

Search Tax Rate

Search:

Single Address

Street Address: 
City: 
Zip: 

Search For Tax Rate  Reset

Results:

Multiple Addresses

Choose File  No file chosen

Submit file

Note: Files containing thousands of addresses may take several minutes to return.

Download example file

File format:

- File type: .xlsx (Excel) or .xls (97-2003 Excel)
- Required fields:

Map Information

So What does the South Dakota’s State Government SDI Look like?
South Dakota State Government and SDI: Needs

Mapping & Visualization: Understand locations and relationships with maps and visual representations.

Data Management: Collect, organize, and maintain accurate locations and details about assets and resources.

Field Mobility: Manage and enable a mobile workforce to collect and access information in the field.

Monitoring: Track, manage, and monitor assets and resources in real-time.

Analytics: Discover, quantify, and predict trends and patterns to improve outcomes.

Design & Planning: Evaluate alternative solutions and create optimal designs.

Decision Support: Gain situational awareness, and enable information-driven decision making.

Constituent Engagement: Communicate and collaborate with citizens and external communities of interest.

Sharing & Collaboration: Empower everyone to easily discover, use, make, and share geographic information.
South Dakota State Government and SDI

Understructure

Technology/Infrastructure

Need

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Improve Utilization
SOUTH DAKOTA STATE GOVERNMENT AND SDI: INFRASTRUCTURE, SOFTWARE, AND PROCEDURE
SOUTH DAKOTA STATE GOVERNMENT AND SDI

Understructure

Technology/Infrastructure

Human Resources

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Improve Utilization
South Dakota State Government and SDI: Human Resources

BIT
(GIS professionals, programmers, infrastructure specialist, etc.)

State Agencies
(GFP, DENR, DOT, DOH, DSS, DOE, SDDA, DOR, etc.)

Public
SOUTH DAKOTA STATE GOVERNMENT AND SDI: POLICIES AND STANDARDS

 Other Governing Bodies (EPA, IRS, etc.)

 Agency TAG

 DEV TAG

 TAG: Technology Advisory Group
SOUTH DAKOTA STATE GOVERNMENT AND SDI

Understructure

- Technology/Infrastructure
- Policies
- Standards
- Human Resources

Procedure

1. Acquire
2. Process
3. Store
4. Improve Utilization

Need
IMPROVE UTILIZATION
IMPROVE UTILIZATION: EVOLUTION OF THE DATA

WHAT IS SDI (SPATIAL DATA INFRASTRUCTURE) ?

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In order to evolve the data we must improve the data
DATA VALIDATION AND DATA ENTRY EXPERIENCES

While updating applications:

- Latitude and Longitude in the wrong columns or set to 0
- Missing zip codes, counties, etc.
- Typos, multiple spelling variations, non standardized abbreviations, etc.
How to improve accuracy and decrease human error?
DATA VALIDATION AND DATA ENTRY EXPERIENCES

- Auto population
- Spatial query

- Dropdown boxes
- domains
DATA VALIDATION AND DATA ENTRY EXPERIENCES

- New Addressing Application
  - State’s geocoder
  - Streamline Sales Tax
- Update an existing point’s location, update data, or add a point
- Several fields are auto populated based on map click (X,Y)
DATA VALIDATION AND DATA ENTRY EXPERIENCES
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DATA VALIDATION AND DATA ENTRY EXPERIENCES

Improvements with GIS:

• Latitude and Longitude from click event

• Use x,y to perform a spatial queries on rest services

• Utilize State, Census, USGS, etc. data for data validation and data entry

• Think “Lean”, Every time our agencies create a layer there is the potential to increase accuracy and speed
A user interface is like a joke. If you have to explain it, it is not that good.
USER EXPERIENCES

• DENR Measured Lakes
• Lake level information
• Outlets Locations
• Some data complex and extensive
• Visually display data related to a spatial location

**USER EXPERIENCES**

- DOR Tax Match
  - Sales tax rates by location
  - Helps users visualize boundaries and how they relate to them personally
  - Use GIS technology without a map
**USER EXPERIENCES**

- Stakeholders help improve data
  - Point in wrong location
  - City boundaries incorrect
- Updates are linked to two other applications
USER EXPERIENCES

- Address application
- Update points and add missing points
**USER EXPERIENCES**

- Edit official State City boundary layer
  - Receive updates from local governments
  - Statewide layer pushed out quarterly
Increasing Government Transparency

- Public Facing Applications
- Publically Available Layers
  - Filtered Datasets
  - Several formats:
    - Shapefiles
    - KML
    - Spread Sheet
    - Rest Service
- Continuous improvement
INCREASING DATA ACCESSIBILITY

https://denr.sd.gov/datagis.aspx
INCREASING DATA ACCESSIBILITY

South Dakota GIS Data

This is the State's public platform for exploring and downloading publicly available Geographic Information Systems (GIS) data.

https://opendata2017-09-18t192802468zsdbit.opendata.arcgis.com/
Recap

• With digital mapping the State of South Dakota is:
  • Improving data accuracy
  • Improving data entry
  • Improving user experiences
  • Decreasing duplicate data, reusing layers
  • Creating a more transparent Government

• Current road blocks
  • Time
    • It takes time to implement new technology on a state wide level
  • Money
    • States have budgets
Recap

Continually Improve
Ideas to Take Away

• Think outside the box
• Limited by your own imagination
• Living in an exciting historic time, embrace it!

“Maps codify the miracle of existence.”
— Nicholas Crane, Mercator: The Man Who Mapped the Planet
Any Questions

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Links


https://denr.sd.gov/datagis.aspx

http://arcgis.sd.gov/server/sdGIS/

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