Zenful Maps with SQL

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Get out your smartphone

http://goo.gl/LvNQL

Just go to the website, don't do anything yet

Introductions

- Matthew Basanta
- Paul Vidal
Overview

- Designing for Simplicity
- ArcGIS for Server
- Alternative GIS servers
- Intro to the SQL spatial standards
- A Few Examples
Frustrations

- GIS is data
- A map is part of the answer but it is not the answer
- Maps are charts. Charts are simply ways of displaying data. Maps are just one of those ways.
- We need to step out of our boxes and focus on results
Solutions

● Better, Simpler Design
● Re-focus Products on Users
● User Interface and Experience That Functions as People Really Use Them
● More Accessible Infrastructure
Simple

http://twitter.com/
http://pintrest.com/
http://craigslist.com/
http://wikipedia.org/
http://www.messagesforjapan.com/messages/map/
Data

http://www.digitalpodge.co.uk/2009/
Terms

Usability
User Experience
Choice Architects
Temptation

We must have more..
- One more button
- One more layer
- "It would be perfect if.."

Data Collection
- More data isn't necessarily better
Evolution

IMS Sites ➔ WebADF ➔ Flex ➔ JavaScript (Widgets)
Simplicity

Steve Krug
Don't Make Me Think
Simplicity
Barry Schwartz
The Paradox of Choice
Simplicity

Cass Sunstein and Richard Thaler

Nudge
Simplicity

Gerald Edelman
Wider than the Sky
Familiar

Familiar Design is Smart Design

- Imitation is Good for Everyone
  - Also known as, it's ok to steal.. a little bit.
Concepts

Simple
Intuitive
Logical
Practical
Focused
Call to Action
Provides Feedback
Forgiving
Take Home's

1. Focus on Purpose
   a. Navigation
   b. Spatial Relationships
   c. Points of Interest
2. Drop the Legend
3. Show Temporal Data (when possible)
How

Web Application's Goals and Purpose
● This should drive everything

Barriers to Production
● Cost
● Effort
● Time
ArcGIS for Server

● PROs
  ○ Highly abstracted
  ○ Ubiquitous
  ○ Easy to use for basic application
  ○ Powerful
  ○ Interface with ArcGIS for desktop
  ○ Paid support

● CONs
  ○ Resource intensive
  ○ Expensive
  ○ Difficult to customize
  ○ Slow
  ○ Use restricted
  ○ Must use with ArcGIS products
Alternatives

- Database server
  - Microsoft SQL Server (Free -- $$$$$)
    - Simple
  - PostgreSQL with PostGIS (Free)
    - Very Powerful
    - Complex
  - MySQL Spatial (Free)
    - Simple
    - Low featured (data collection/display only)
  - Many others
So what can we do?

- **Shapes**
  - Point
  - LineString
  - Polygon
  - MultiPoint
  - MultiLineString
  - MultiPolygon
  - GeometryCollection

- **Actions**
  - Intersect
  - Union
  - Difference
  - Buffer
  - Distance
  - Count
  - Measure
  - Envelope
How can we do it?

- Requires a little more thinking
- Not as abstracted
  - Stored as binary
  - Manipulated as text
- All the tools are there
  - Just takes a little more thought
- May take more than one function
Well known text

POINT(-83.39 38.19)
LINESTRING(-88.63 37.23, -82.41 37.34, -82.18 37.65)
POLYGON((-84.64 38.59, -84.09 38.99, -84.12 39.36, -83.41 38.91,
-84.64 38.59))
MULTIPOINT((-88.63 37.23)(-82.41 37.34))
MULTILINESTRING((-88.63 37.23, -82.41 37.34), (-82.18 37.65,
-83.41 38.91))
MULTIPOLYGON((-84.64 38.59, -84.09 38.99, -84.12 39.36, -83.41
38.91, -84.64 38.59))
Identify example

- Create temporary point at selected lat/long
- Measure distance from point to features
- If distance equals zero, that's the one!

```sql
CREATE PROCEDURE [dbo].[identify] (  
    @lat float,  
    @lng float  
)  
AS  
BEGIN  
    DECLARE @g GEOGRAPHY;  
    SET @g = geography::STGeomFromText('POINT(' + @lng + ', ' + @lat + ')', 4326);  
    SELECT * FROM geotest  
    WHERE [dbo].[geotest].[geo].STDistance(@g) = 0;  
END
```
SQL is not scary

Definition query
Select by attributes

Both use SQL
What does it look like?

<table>
<thead>
<tr>
<th>Shape</th>
<th>GeoText</th>
<th>Major</th>
<th>Acres</th>
<th>Name</th>
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<td>POLYGON ((-84.412756526842713 37...</td>
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<td>Man O War PS</td>
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<td>North Elkhorn</td>
<td>4834.55478451</td>
<td>North Elkhorn PS</td>
</tr>
</tbody>
</table>
Examples

- Microsoft SQL Server 2010 Express (free)
  ○ Open source alternative -- PostgreSQL/PostGIS
- Google Maps Javascript API
  ○ Open source alternative -- Open Street Maps
- Microsoft IIS/.NET (server)
  ○ Open source alternative -- Apache/PHP
Data display/Identification

Kentucky Counties
Draw shapes
Who didn't follow directions?
Let's go to this website

http://goo.gl/LvNQL

- Click or tap the screen to add points
- Add two or three points around Kentucky
View our crowdsourced data
A working example
Wrapping up

- We hope this has created interest in alternatives for web based mapping applications
- Any Questions?