

Can WordPress and



+



GIS Be Friends?



Hi I'm Michael Moore. My goal today is to give you an idea to show that GIS is possible with in WordPress.

Basically, I work for a company that does a lot of WordPress consulting and some of our clients have spatial needs.

WordPress

- PHP Content Management System (CMS)
- >25% of websites use WordPress
- 47,000 free plugins + many commercial and custom plugins
- Very easy for admins and users

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What's WordPress?

In the plugin repository there are about 700 mapping related plugins. Approximately 695 seem to be Google Maps plugins.

Technical Challenges

- MySQL versions galore
- WordPress uses MySQL
- WordPress uses an EAV Database Model

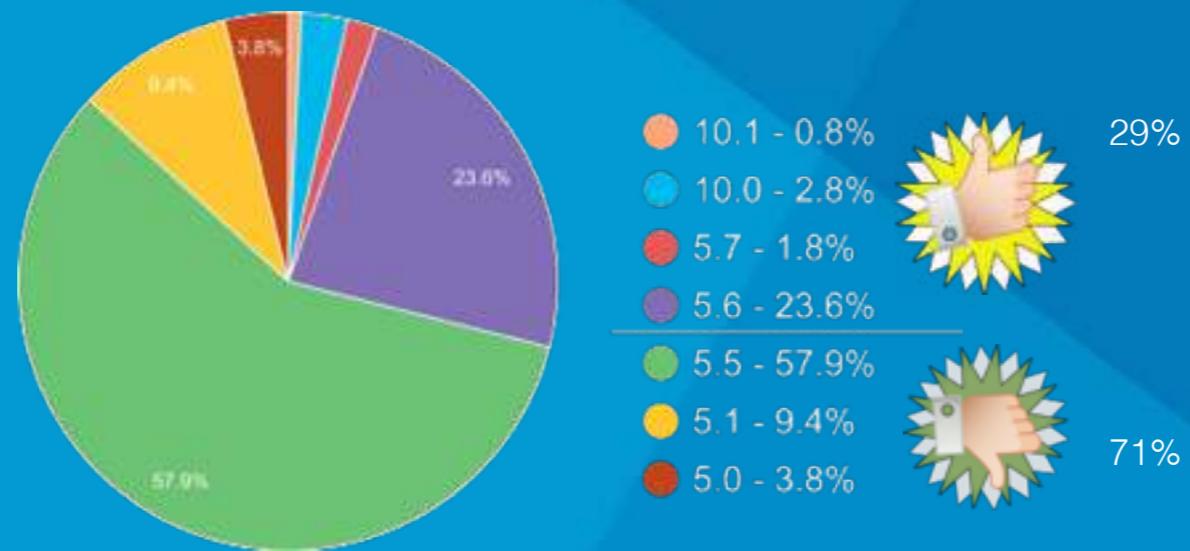
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Main reason for lack of GIS in WordPress is probably technical.

There are three technical challenges you're going to need to face somehow when doing GIS in WP.

Versions Galore!



Ok, so a whopping 29% of WordPress sites have good spatial support. What's wrong with the other 71%?

Bad MySQL Uses only BBOX



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Do these two shapes intersect?

Bad MySQL Uses only BBOX



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Yes, if you're using BBOX functions.

Older MySQL only had BBOX functions. Newer MySQL (5.6 and up) supports real spatial queries.

The Not-EAV Model

id	Name	Birthdate	Address	City	State
	3 Steve	01/01/80	123 Main St.	Duluth	MN
	4 Frank	02/02/90	321 1st Ave	Superior	WI

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This is a pretty typical database table. It's in what's known as First Normal Form. That basically means that each row relates to a single thing, columns are attributes relating to the thing and the fields are values.

Since this is a typical table structure, databases like MySQL are highly optimized for this type of work.

The EAV Model

id	entity_id	Key	Value
17	3	Name	Steve
18	3	Birthdate	01/01/80
19	3	Address	123 Main St.
20	3	City	Duluth
21	3	State	MN
22	4	Name	Frank
23	4	Birthdate	02/02/90
24	4	Address	321 1st Ave
25	4	City	Superior
26	4	State	WI

EAV stands for Entity - Attribute - Value. In the EAV model you store everything you want in a very narrow table with the entity ID, the attribute name and the value.

This is great for a situation like WordPress where the developers have no idea what attributes or columns users are going to want to use but it means that database indexes aren't nearly as efficient, queries are more complicated, and everything gets stored as text.

Pros and cons of EAV: <https://www.percona.com/live/mysql-conference-2013/sessions/extensible-data-modeling-mysql>

Some Reasonable Approaches

- **Idea #1** — Make custom spatial tables
- **Idea #2** — Link to external service (Carto, GeoServer, anything else)
- **Idea #3** — Working Within WordPress

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I call these reasonable because I thought of them, not because they're the best way to do things.

These are 3 options for bringing spatial data into WordPress.

Custom Tables

- Great for custom projects
- Harder for plugins
- Exact data model you want
- Not how most WP devs would do it



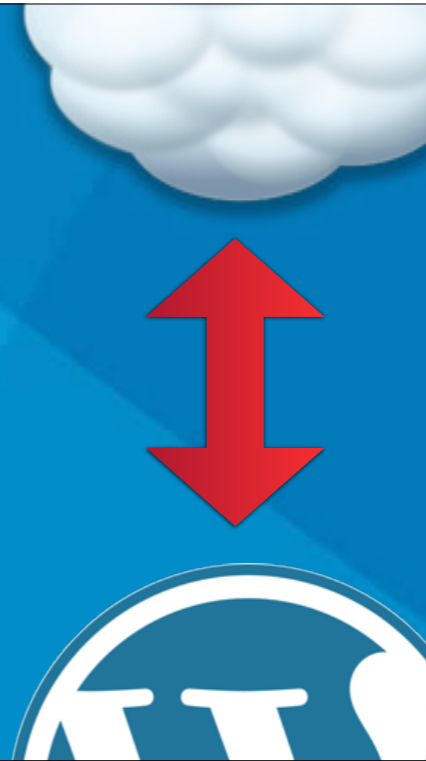
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Creating custom tables isn't necessarily bad, but it's not generic. I'd like to provide a generic method of storing and querying spatial data.

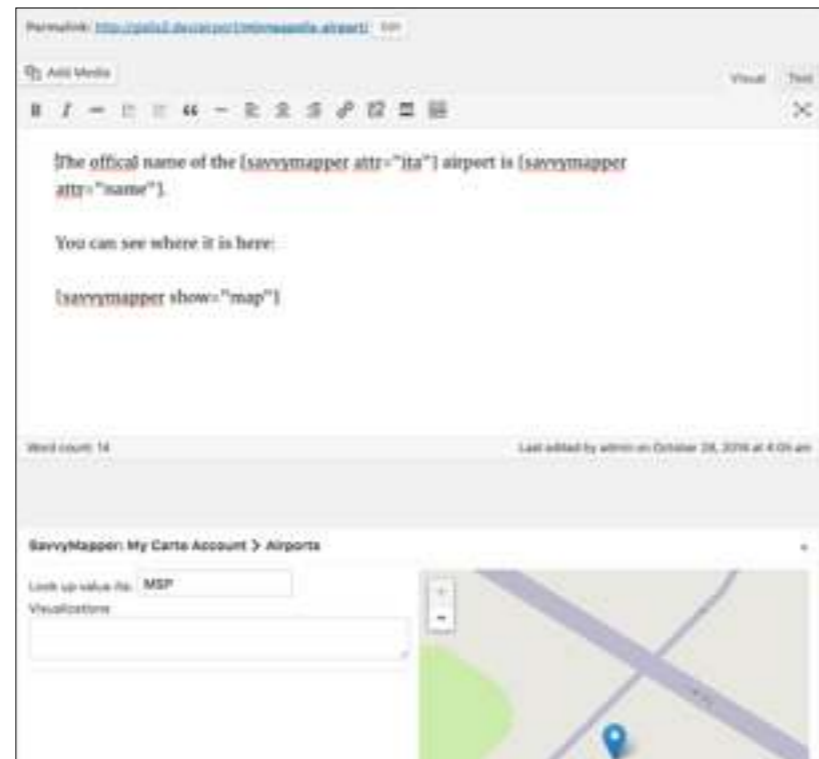
External Services

- Any service with an API
- Store the corresponding service ID in WP
- Make API calls using the ID as needed

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Services such as CartoDB, ArcGIS Server, GeoServer, any other web service that has unique ids.



SavvyMapper

- “Look up value by *ita*”
- Unique key
- [savvymapper attr=“name”]
- Expands to show value when displayed

ita is a unique key in my Carto table. I’ve associated the its *MSP* with this particular page.

When the page is shown to users, the [savvymapper] *short codes* will be replaced with content from Carto.

Working Within WordPress

- Use WP's extensive API to:
 - Re-route storing spatial values
 - Re-route spatial queries

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This is the 3rd option, and the one I'm currently pursuing. Working within the WP environment.

WP-GeoMeta: Storing Data

`update_post_meta(`  `)`

- Do GIS the **WordPress** Way
- Detect GeoJSON metadata and store spatially
- Web friendly for web devs

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It's familiar to WP devs.
It lower the bar to entry.

When a user/developer stores spatial data, such as GeoJSON, we turn a copy of the spatial data into geometry and store it in a parallel spatial metadata table.

This works because WP developers rarely run bare SQL queries. It all goes through an API. We hook into the API and modify the query before it's executed.

WP-GeoMeta: Querying Data

WP_Query(meta_value => ST_Intersect())



SELECT * FROM 



SELECT * FROM 

- Still the **WordPress Way!**
- Detect spatial queries and modify them
- Developer doesn't have to WKT

Querying data works similarly.

When a query is run that involves a spatial function we re-route that part of the query to the spatial metadata table.



Questions



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