OPENING THE DOOR TO OPEN SOURCE

Presented by
David Howes &
Matt Stevenson
Northwest GIS Conference
October 15, 2014

Who are We?

David Howes, Ph.D.

- David Howes, LLC
- GIS tools, processes and supporting infrastructure
- http://www.dhowes.com

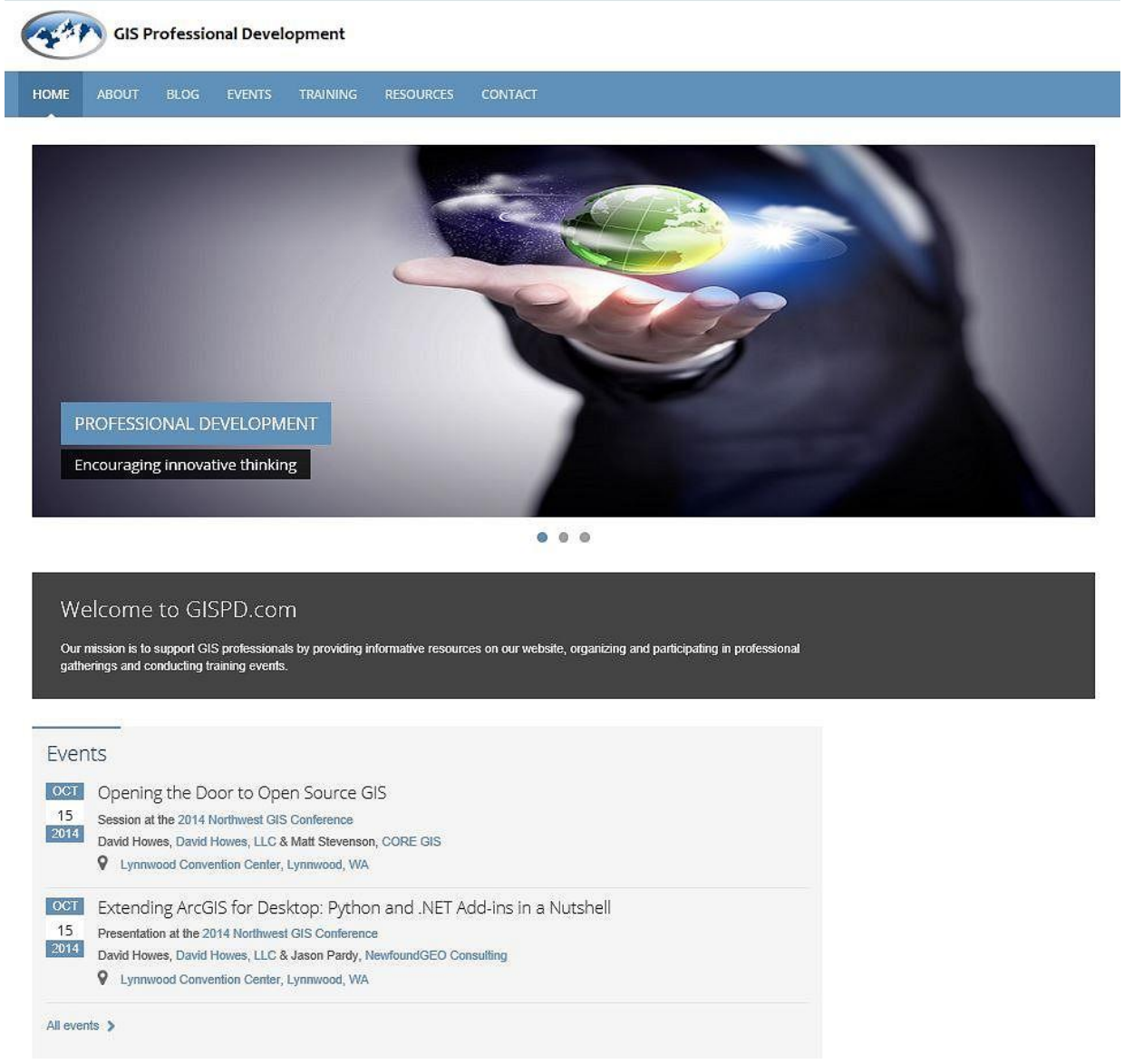
David Howes LLC
Geographic Information Systems Development Services

Matt Stevenson

- CORE GIS
- Cartography, spatial analysis, conservation planning, urban planning, and GIS project management
- http://www.coregis.net

core GIS
COMMUNITY, REGIONAL & ENVIRONMENTAL

gispd.com



Venturing Into Open Source GIS: A Global Conference Comes To Our Doorstep

The Summit

The Washington URISA Newsletter

Autumn 2014

Objectives

Explore and understand the individual, organizational and cultural facets related to open source GIS and proprietary GIS

Relate our findings and experiences with respect to each world

Promote consideration of the sorts of wider issues that can impact our effectiveness as GIS professionals in ways that are often profound and far-reaching

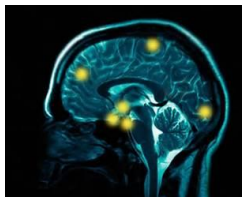
Above all else, help GIS professionals help each other.

Agenda

- Introduction
- Observations
- Matt's perspectives
- David's perspectives
- Audience engagement
- Closing thoughts

Observations

Typical Questions



Is it reasonable to characterize people as proprietary or open source?

Is there value in asking the question? If yes to both,

- What makes an open source person?
- What makes a proprietary person?

Should we coexist, conquer or merge?

Typical Questions

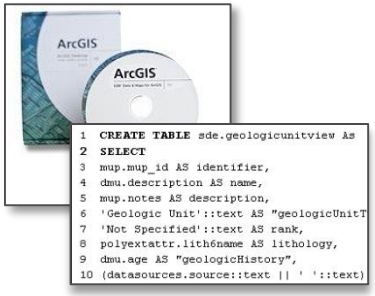
What are the best characteristics of each group?

Why would you switch in one direction or the other?

How well do the groups persuade each other of the relative benefits of their capabilities?

Individual Considerations

Rebellion against the wizard syndrome



Technological preference - pop in a disk and go vs. plug away for a month to get something working?

Desire for freedom and growth

I want to learn GIS, reading books and academic papers and articles about geospatial data, map projections, server-side technologies, databases, different geospatial standards and protocols and their implementations in available range of server and client software, perform analysis of my data and use cases, preferably involving other GIS specialists and do a lot of other research so that I can make sensible decisions about the required technology stack, adjust it to the needs of my application and finally **make a [redacted] map** (maybe in a couple years)

Organizational Considerations

What's the relationship between IT and GIS?

Do you have the financial certainty sufficient to support investment in proprietary technology?

Is the organization open to a sharing culture?

Cultural Considerations

Maybe you just don't like dealing with corporations (anti-establishment)?

Macs vs. Windows machines (which way does your slash lean?)

```
C:\>cd Temp
C:\Temp>cd "Another Dir"
C:\Temp\Another Dir>
```

```
David@Bajada /cygdrive/c/Temp
$ mkdir "Another Dir"

David@Bajada /cygdrive/c/Temp
$ cd Another\ Dir/

David@Bajada /cygdrive/c/Temp/Another Dir
$
```

Some people want complete control over their machines and everything on them

"I will share pretty much everything with you because we are all in this together and we are building something

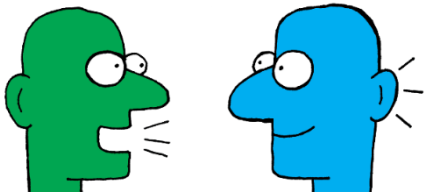
SUPER AWESOME AND FUN!"

“I have developed a superior product and if you *pay me lots of money* I will help you leverage your data and create strategic synergies between your enterprise database solutions and customer-centric blah blah blah”
AGN

The Vibe - Which is Which?

The Value of the Conversation?

It can support decision-making, particularly regarding effort and expenditure



It aids communication

It can help drive technological innovation

Decision-Making

Understand the implications of moving to or introducing OS vs. proprietary

Assess the likelihood of success when adopting technology within one world or the other or both

Can we consider an OS or proprietary aptitude test?

Communication

OS world may learn from the proprietary world's marketing strategies

Proprietary world can learn from the OS culture of collaboration, agility and growth

Don't always say it's so easy, although things are getting easier

Technological Innovation

Increased understanding of the intended audience should, in theory, lead to better products

Growing need for focused and low-cost solutions that can be put in place relatively quickly

Thousands of people focusing on solving a problem vs. waiting for the next release cycle

Increasing Maturity of OS

Australian Federal government chief technology officer John Sheridan, in 2013:

"When people asked me why we were not using more open source I would say, imagine fronting Senate estimates to explain why your system failed and having to say:

'I was just relying on help by posting to the bulletin board on the internet and nobody came back to me fast enough.'

Now the development of companies that provide support to those open-source solutions changes what we can do."

Open-Source Platform Gains Popularity in Government - The Sydney Morning Herald September 24, 2013

http://www.smh.com.au/it-pro/government-it/opensource-platform-gains-popularity-in-government-20130924-hv1sj.html

From Andrew Dennison, FOSS4G 2014, http://vimeo.com/107478903

Service Providers

OPENSHIFT

CARTODB
Geospatial on the cloud

MapBox

GeoSolutions
Your one-stop-shop for geospatial open source software

Boundless

FOSS4G Attendance

Computer scientists vs. geo experts

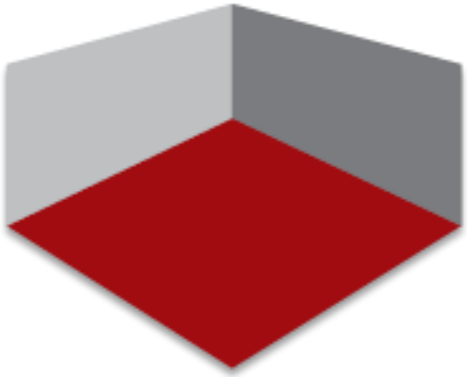
Techniques vs. practical applications

Truly international participation

Descriptive Dimensions

Extent of Adoption

OS/Proprietary Balance

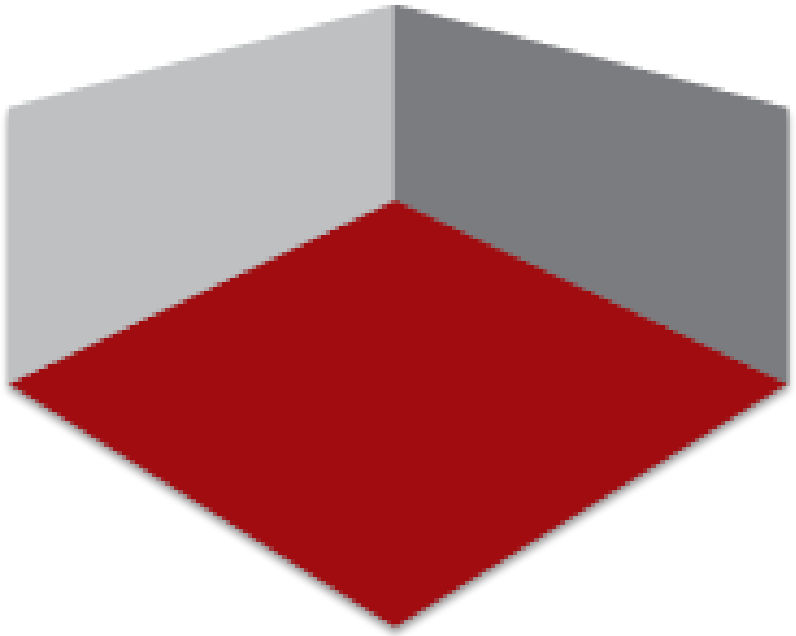


Setup/Installation

Dimensions - OS/Proprietary Balance

How much time do you spend in each world?

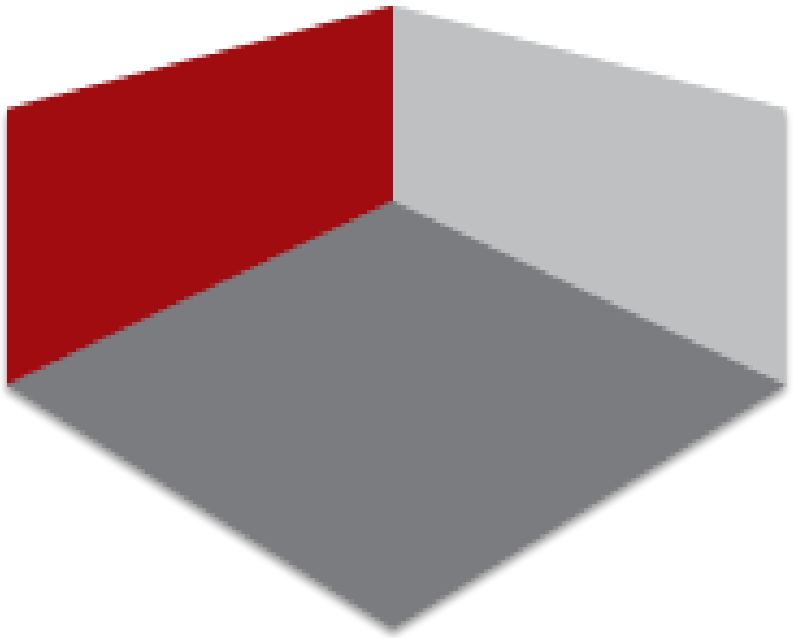
- Proprietary – do you worship Jack?
- OS – do you want to stick it to the man?



Dimensions - Extent of Adoption

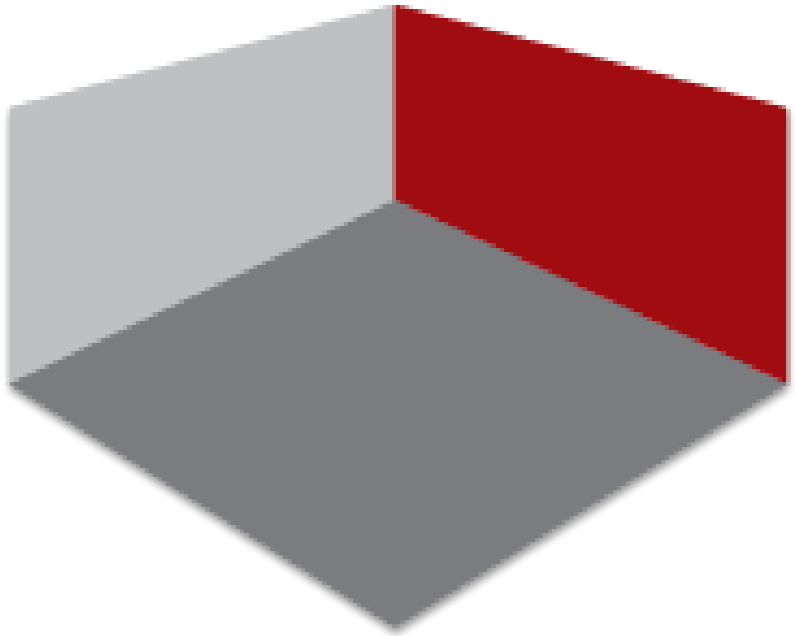
How many different flavors of software do you use?

- Proprietary - I only need two EXEs…
- OS - I use more libraries than you!



Dimensions - Setup/Installation

- How involved are you in the nitty gritty aspects of getting things working?
  - Proprietary - what's the installation investiture?
  - OS - what's your geek quotient?



Use Scenarios

Matt

- Use OS web apps for cartography and user interactivity
- Don't have to be concerned with local installation, functionality just has to work and be affordable

David

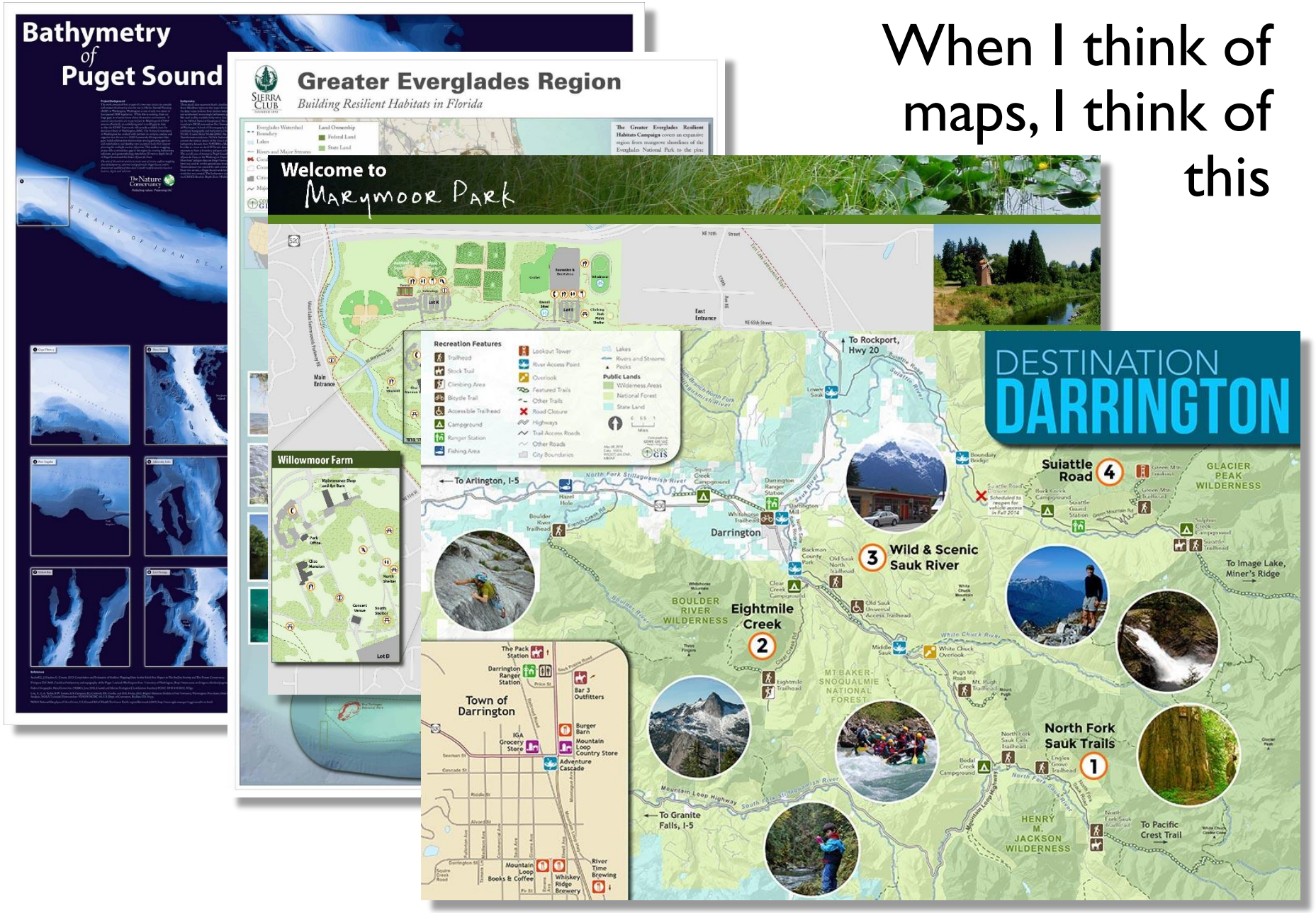
- Focus on desktop geoprocessing
- Need to deal with installation issues, getting things working locally

Matt's Perspectives

Matt's Perspectives

- I am a visual thinker, not a developer (not to suggest for a moment that those two traits are mutually exclusive)
- When I think of maps, I see pictures
- When I think of code, I get headaches
- OS is too complicated! Wait, proprietary software is too…
- But Esri is too expensive!
- Time to start hiking up the learning curve

When I think of maps, I think of this



…not this!

```
.leaflet-top .leaflet-control-zoom {
  top:20px;
  }
</style>

<div id='map'></div>
<input id='range' class='range' type='range' min='0' max='1.0' step='any' />

<script>
L.mapbox.accessToken = 'pk.eyJ1IjoiY29yZS1naXMiLCJhIjoiaUxqQS1zQSJ9.mDT5nb8l_dWIHzbnOTebcQ';
var map = L.mapbox.map('map');
L.mapbox.tileLayer('examples.map-i87786ca').addTo(map);

var overlay = L.mapbox.tileLayer('examples.map-i875mjb7').addTo(map);
var range = document.getElementById('range');

function clip() {
  var nw = map.containerPointToLayerPoint([0, 0]),
      se = map.containerPointToLayerPoint(map.getSize()),
      clipX = nw.x + (se.x - nw.x) * range.value;

  overlay.getContainer().style.clip = 'rect(' + [nw.y, clipX, se.y, nw.x].join('px,') + 'px)';
}

range['oninput' in range ? 'oninput' : 'onchange'] = clip;
map.on('move', clip);
map.setView([49.434,-123.272], 7);

clip();
</script>
```

Heartache and Brain Damage of OS

Desktop Applications

- Quantum GIS
- gvSIG
- Udig
- GRASS
- JOSM (OpenStreetMap editor)

Server Applications

- GeoExt (WebGIS framework)
- MapFish (WebGIS framework)
- GeoServer (WebGIS server)
- MapServer (WebGIS server)
- PostgreSQL, PostGIS (Geo-database)
- Magento* (Webshop framework)
- SilverStripe* (Content Management System)

Libraries and Tools

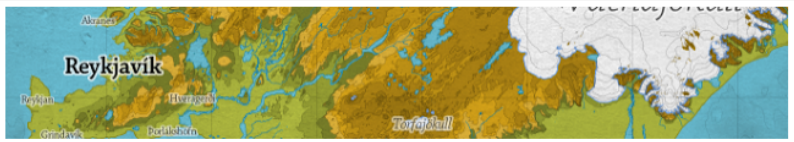
- OpenLayers (WebGIS framework)
- ExtJS*, jQuery* (JavaScript library)
- pgRouting (Routing module for PostgreSQL/PostGIS)
- GeoTools (Java GIS Toolkit)
- GDAL/OGR (Geospatial Data Abstraction library)

But proprietary software is complicated too

The Great Breakthrough!

Browser Cartography: Some Safehouses for ESRI Refugees

Wednesday, May 30, 2012



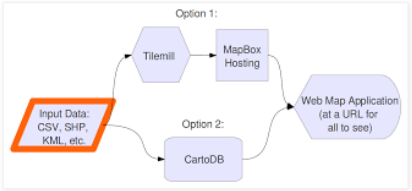
"Island" by Konstantin Kafer

A Primer for Getting Started With Open-Source Web Maps

Now that you know why I care about telling compelling stories with widely-distributed maps, let's look at a few of the many tools that are out there to help the process. I confess to narrow experience here; I use MapBox and CartoDB for the majority of my projects, and there are plenty of alternatives to those. But as a starting point I think that these open-source web map design platforms are perfect - they minimize the amount of code required, they use the best graphic rendering engine in the field, and they are extremely cheap (or free) to use, even in an enterprise or high-traffic environment. I'm avoiding ESRI's "ArcWhatever Online for Server" options because of a.) the high price tag, and b.) the actual user-facing sites are only as robust as the javascript or flash developer who builds them. My preferred options give you a lot more to work with out of the box, for free.

I am not going to walk you step-by-step through the process below - I'll point you to resources that will - but rather I mean to sketch the structure that can get your map applications up and running. If you're stumbling and need some help, drop me a line through the GeoSprocket contact page or on Twitter

Step 1: Data

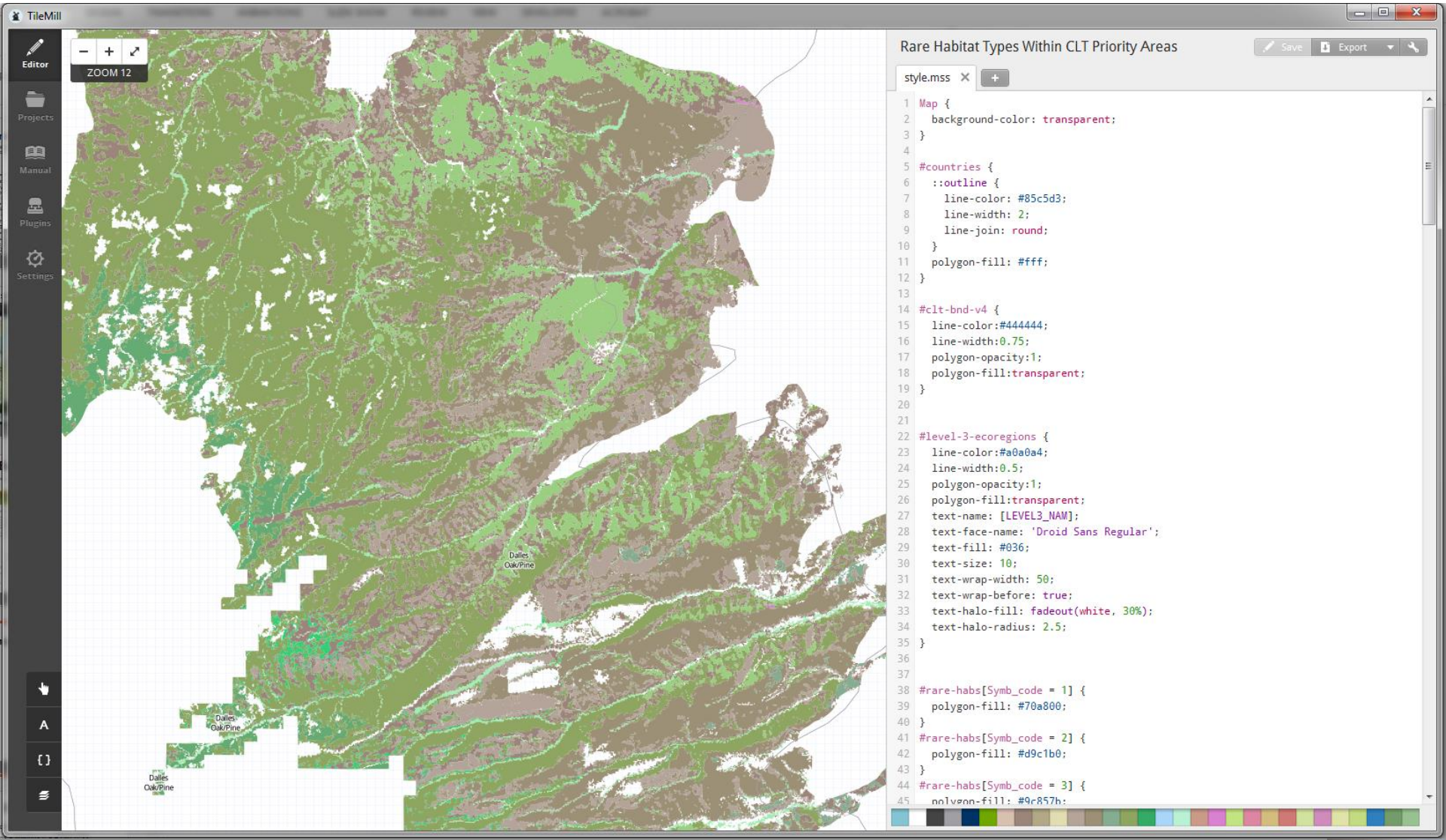


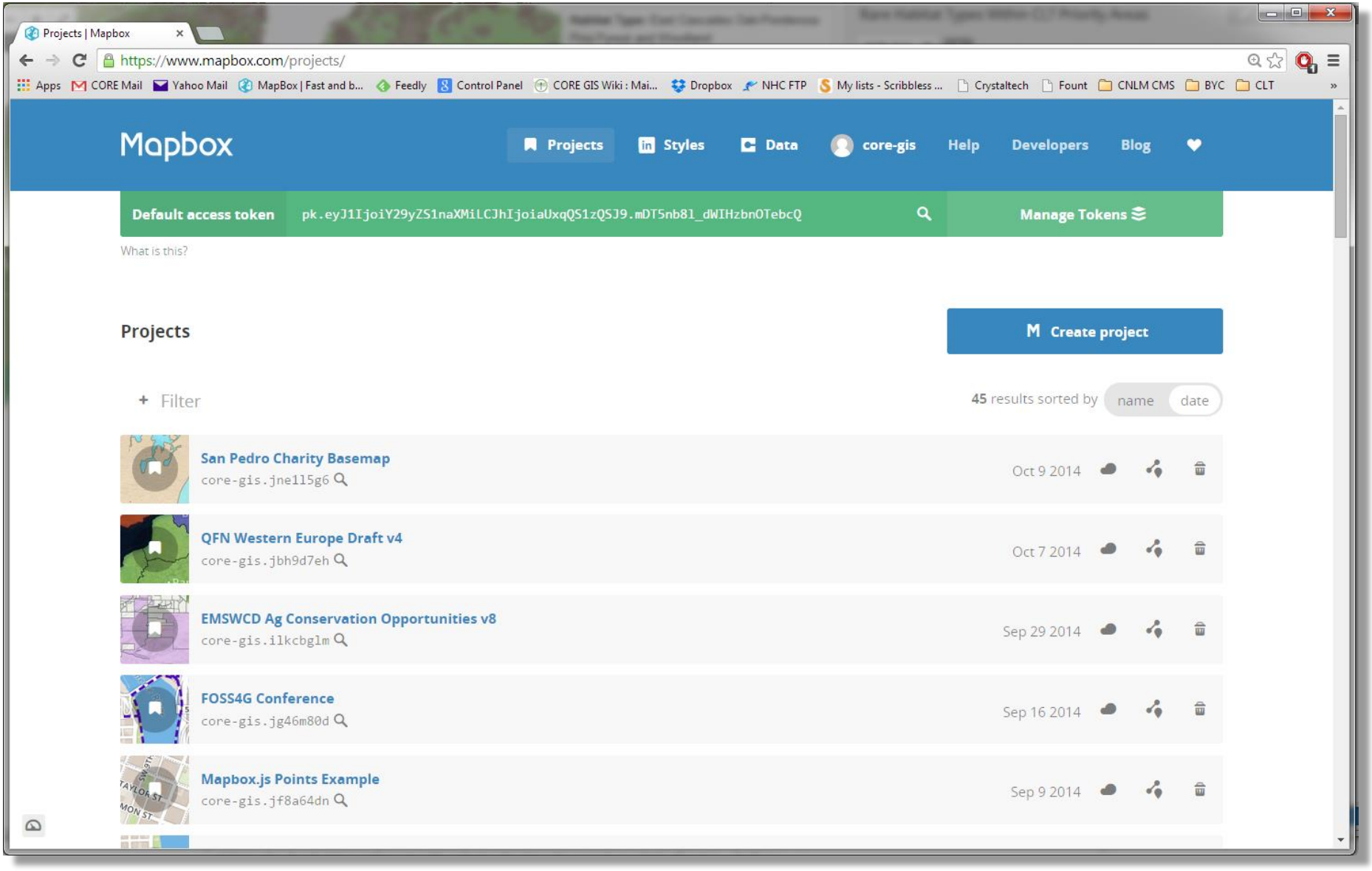
Data in this context can mean a lot of different things. The tools we're using aren't picky, so this includes:

- Shapefiles (but this will need to be in a compressed folder)
- Spreadsheets (CSV, XLS, DBF, you name it)
- KML or KMZ
- GPX or in many cases raw text from various GPS units

geosprocket.blogspot.com

Combining the visual with a bit of code




Projects | Mapbox
https://www.mapbox.com/projects/
Apps
CORE Mail
Yahoo Mail
MapBox | Fast and b...
Feedly
Control Panel
CORE GIS Wiki : Mai...
Dropbox
NHC FTP
My lists - Scribbless ...
Crystaltech
Fount
CNLM CMS
BYC
CLT
Mapbox
Projects
Styles
Data
core-gis
Help
Developers
Blog
Default access token
pk.eyJ1IjoiY29yZS1naXMiLCJhIjoiaUxqQS1zQSJ9.mDT5nb81_dWIHzbnOTebcQ
Manage Tokens
What is this?
Projects
Create project
+ Filter
45 results sorted by
name
date
San Pedro Charity Basemap
core-gis.jne115g6
Oct 9 2014
QFN Western Europe Draft v4
core-gis.jbh9d7eh
Oct 7 2014
EMSWCD Ag Conservation Opportunities v8
core-gis.ilkcbglm
Sep 29 2014
FOSS4G Conference
core-gis.jg46m80d
Sep 16 2014
Mapbox.js Points Example
core-gis.jf8a64dn
Sep 9 2014

How I Use FOSS4G

TileMill→Mapbox

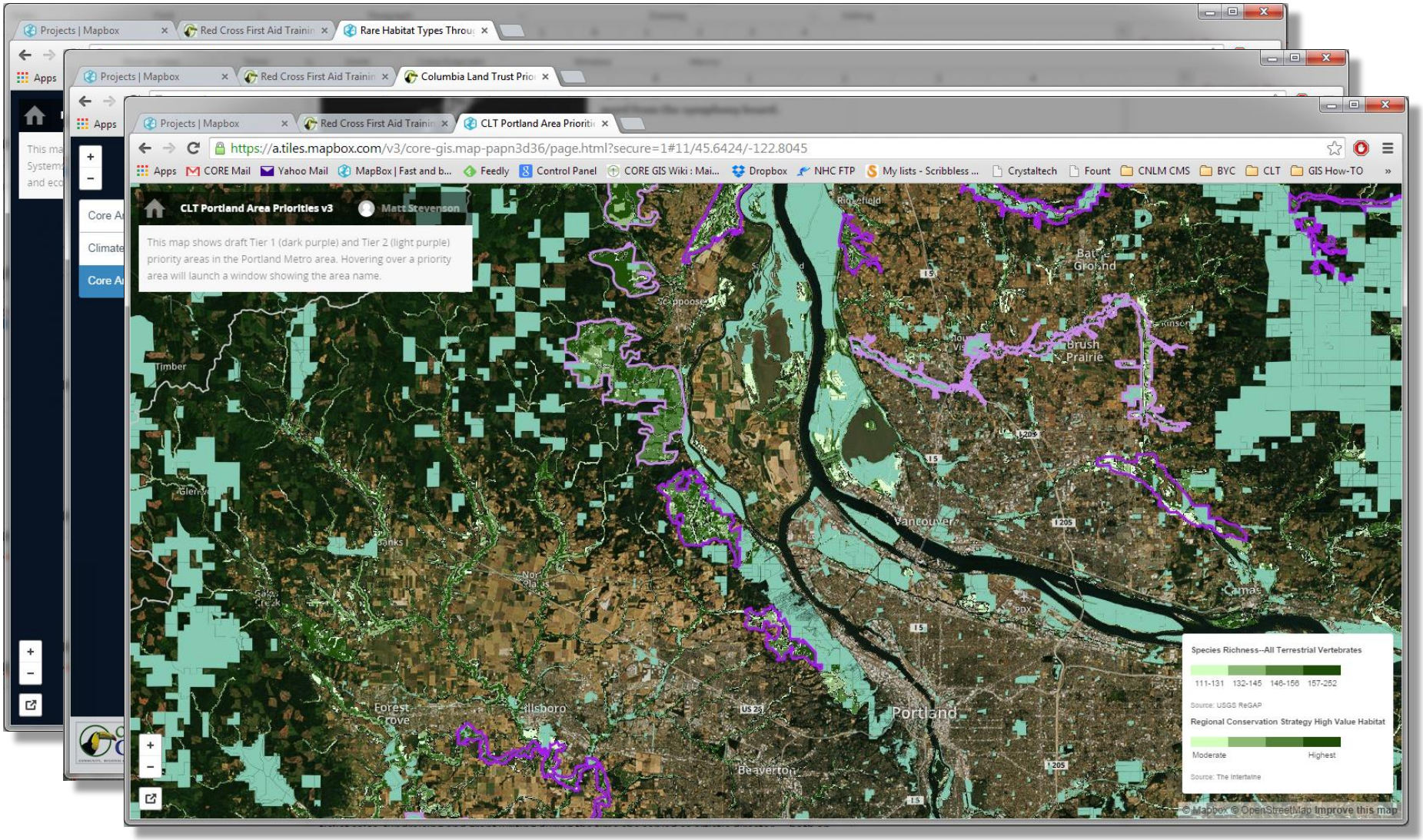
Tilemill→Mapbox + Mapbox.js +

HTML/CSS

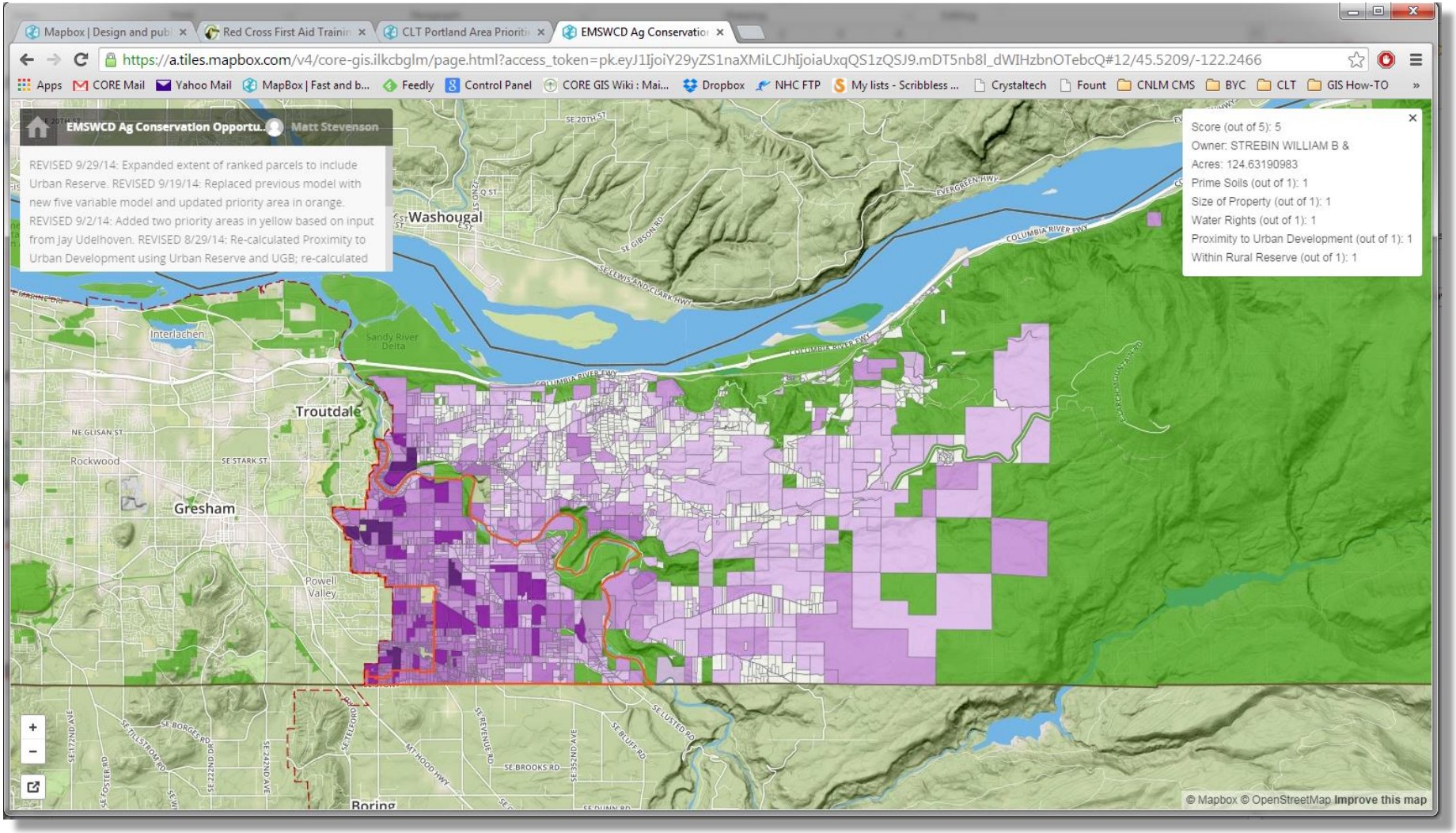
Tilemill→Mapbox + Leaflet.js + HTML/CSS

Leaflet.js/Mapbox.js + HTML/CSS

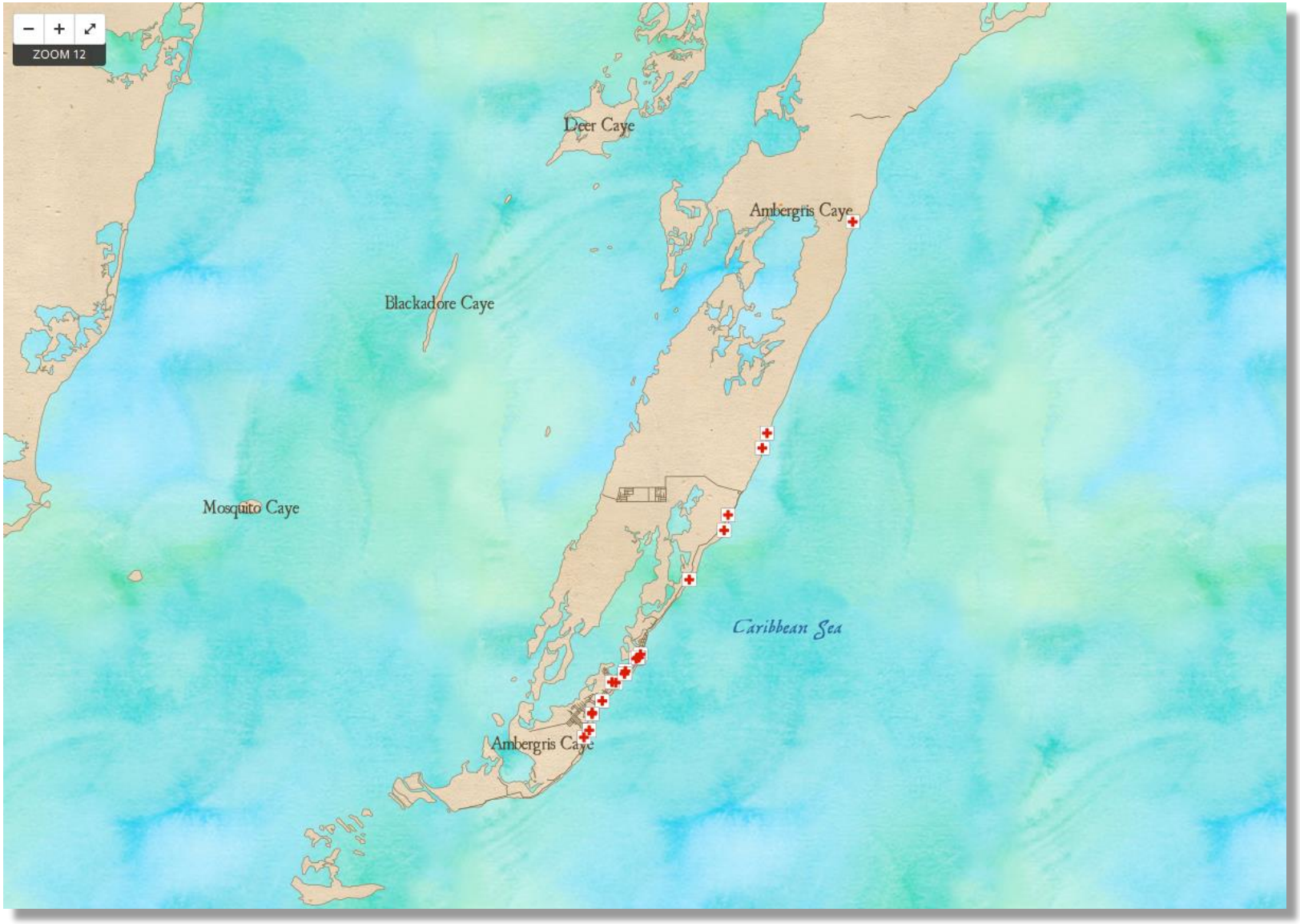
Examples: Columbia Land Trust



Examples: EMSWCD



Examples: Belize Red Cross

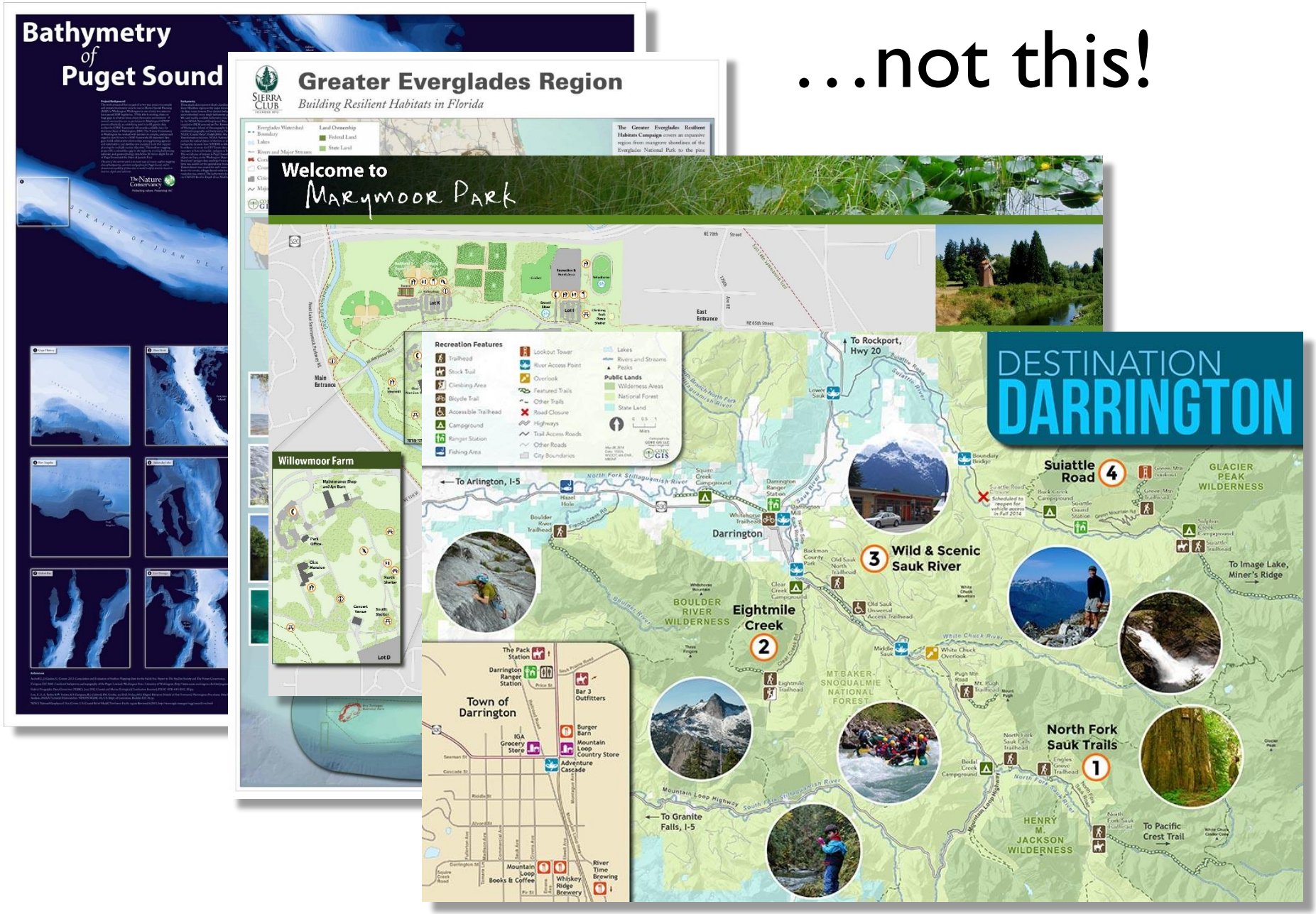


David's Perspectives

```
public IFeatureClass FeatureClass(string fileGDBPath, string featureClassName, ISpatialReference spatialReference,
    esriGeometryType geometryType, List<libUtils.FieldDefinition> fieldDefinitions)
{
    //9/12/13

    IFeatureClass featureClass = null;

    try
    {
        //Build fields from field definitions
        IFields userDefinedFields = new FieldsClass();
        IFieldsEdit fieldsEdit = (IFieldsEdit)userDefinedFields;
        fieldsEdit.FieldCount_2 = fieldDefinitions.Count;

        int i = 0;
        foreach (libUtils.FieldDefinition fieldDefinition in fieldDefinitions)
        {
            IField field = new Field();
            IFieldEdit fieldEdit = (IFieldEdit)field;
            fieldEdit.Name_2 = fieldDefinition.Name;
            fieldEdit.Editable_2 = true;
            fieldEdit.IsNullable_2 = false;
            fieldEdit.Type_2 = fieldDefinition.Type;

            if (fieldDefinition.Type == esriFieldType.esriFieldTypeString)
            {
                fieldEdit.Length_2 = fieldDefinition.Length;
            }

            fieldsEdit.set_Field(i, field);
            i++;
        }

        featureClass = CreateFeatureClass(fileGDBPath, featureClassName, spatialReference, geometryType, userDefinedFields);
        if (libContext.MessageHandler.StopForMessage())
        {
            throw new System.InvalidOperationException();
        }
    }
    catch (Exception exception)
    {
        string methodName = System.Reflection.MethodBase.GetCurrentMethod().Name;
        int messageCode = 0;
        libContext.MessageHandler.CreateMessageDetails(methodName, messageCode, exception);
    }

    return featureClass;
}
```

When I think of GIS, I think of this

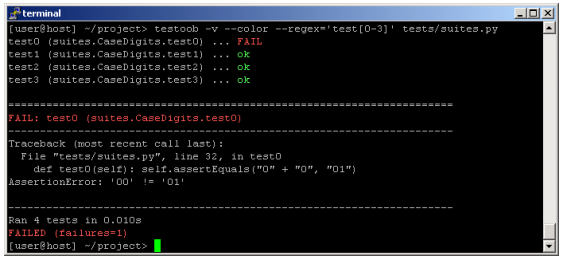
…not this!

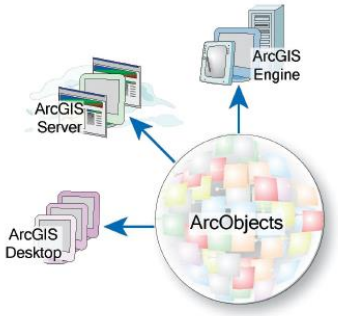


Bathymetry of Puget Sound
Greater Everglades Region
Building Resilient Habitats in Florida
Welcome to Marymoor Park
Willowmoor Farm
DESTINATION DARRINGTON
Suiattle Road 4
GLACIER PEAK WILDERNESS
3 Wild & Scenic Sauk River
Darrington
Eightmile Creek 2
BOULDER RIVER WILDERNESS
MT BAKER-SNOQUALMIE NATIONAL FOREST
North Fork Sauk Trails 1
HENRY M. JACKSON WILDERNESS
To Rockport, Hwy 20
To Arlington, I-5
To Granite Falls, I-5
To Image Lake, Miner's Ridge
To Pacific Crest Trail
Town of Darrington

Likelihood of Success?

Command-line background

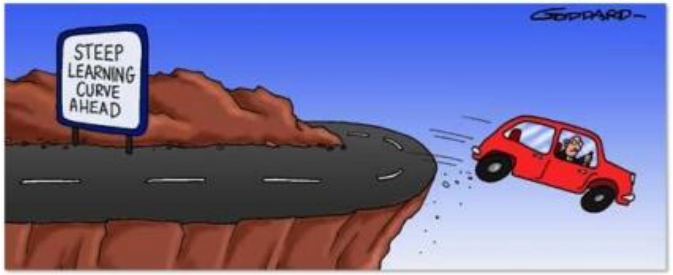




If you can work with ArcObjects, well, you know…

OS GIS is not a trivial undertaking

- Need to be able to program
- Many steep learning curves
- OS experts appear to constantly seek to challenge themselves



Personal Development

Enabling factor for
OS = freedom

Personal growth

Become less stubborn, be open to criticism

Getting Used to the OS Community

Initial pain - need to learn how to deal with responses on forums, chatrooms etc.

Strong egos and trolls – need to have a thick skin

Help others in whatever ways you can

The Nature of a FOSS4G Project

FOSS4G 2014 Day 2 Keynote - Sarah Novotny, NGINX:

Source Code

+

License

+

Humility, Respect & Trust

= FOSS4G project

Appealing Characteristics of OS

- No lock-in
- Easier integration
- A-la-carte approach

Adherence to standards

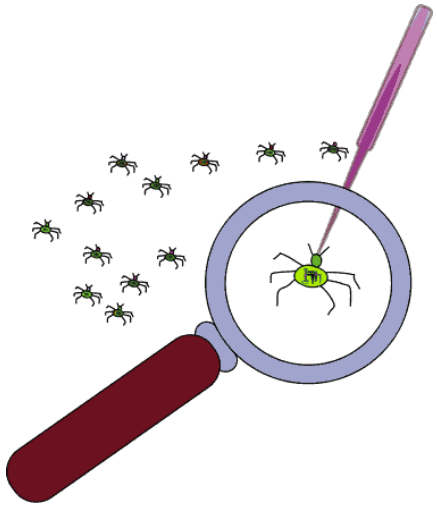
Developing a greater understanding of what's happening 'under the hood'

Confidence vs Control

"Either you have to have full confidence in a software platform or you have to have full control"

Ben Sainsbury, Oregon Metro
FOSS4G 2014

Participation and Contribution



Debugging: Why should I fix something when I'm paying for the software?

I made something great, it's free and please help me make it better

Lessons So Far

OS experts often tend to suggest that things are really easy

- Sometimes they are
- Generally, they're not
- Need to adjust the marketing message

Library shock

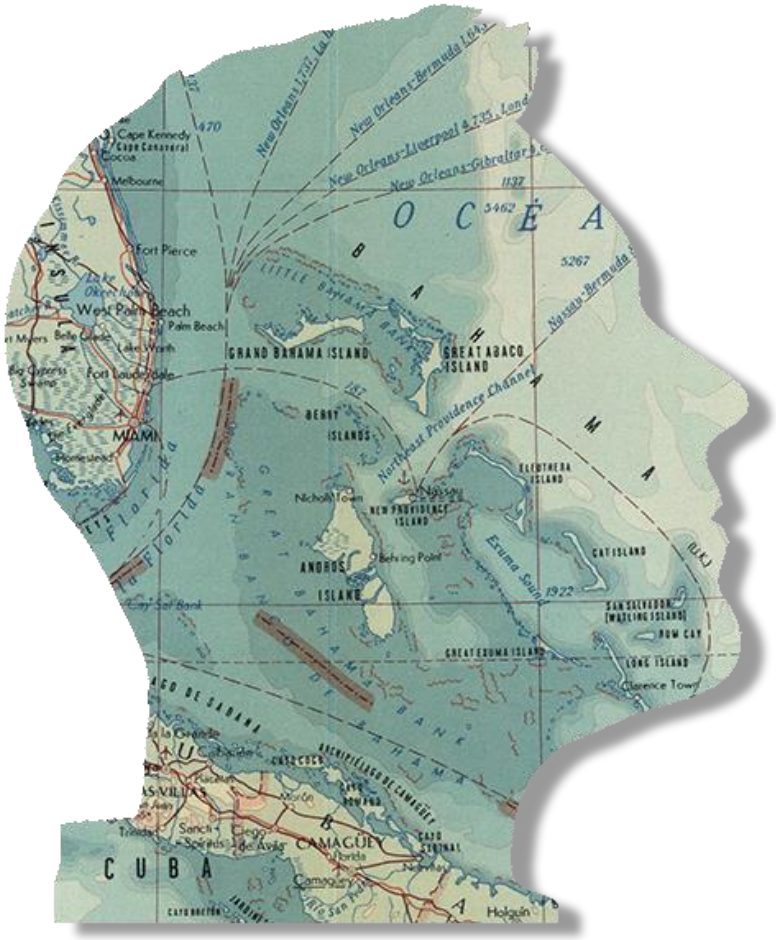
- Many options can be great
- Too many options can be paralyzing
- Geekdom doesn't always sell well

Audience Engagement

Guidelines

- Who are you?
- Where are you from?
- Why are you interested in proprietary GIS or OS GIS or both?

Closing Thoughts



Ending Option 1 - Wedding

Ending Option 2 – Civil War

Thanks for coming!