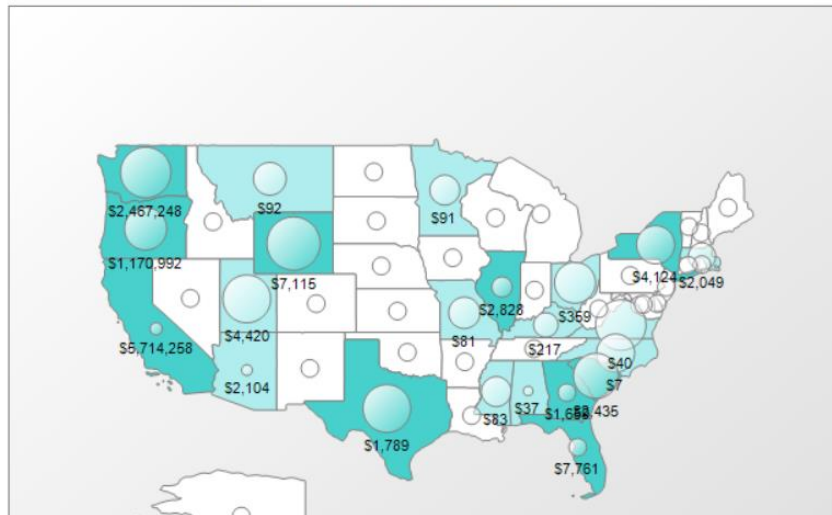
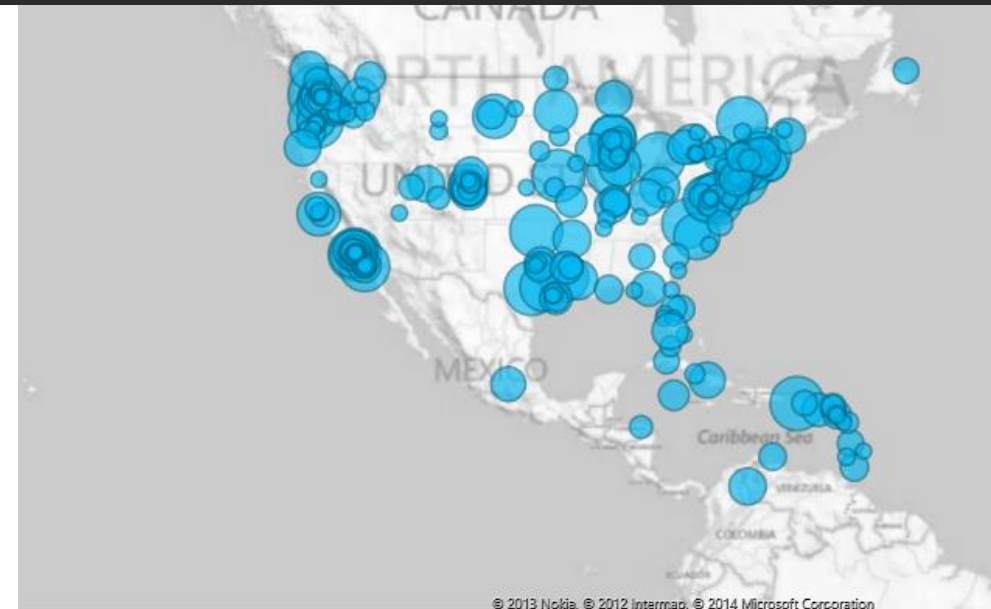


# CHOOSE YOUR GEOSPATIAL MAPPING ADVENTURE

Online Sales and Customer Count by State



Meagan Longoria  
Sept. 20, 2014  
SQL Saturday Denver



# GETTING STARTED

Slides are on the SQLSaturday website and on my blog

Questions and comments are welcome throughout the presentation

*Choose Your Own Adventure*



# WHO AM I?

- Business Intelligence Solutions Consultant with Valorem Consulting in Kansas City, MO
- Experience with various industries and business units including healthcare, government, education, marketing, sales, finance, HR
- Passionate about data visualization
- Significant experience guiding clients through early phases of maturity in business intelligence
- Blog: <http://datasavvy.wordpress.com>
- Twitter: [@mmarie](#)



# PART ONE

1. Monday morning, 9:30 AM. Half an hour into the working week. So far you've checked your email and filled your cup with coffee. Business as usual.

An IM window pops up. It's your boss.

"I think we need some geospatial stuff. Can you look into it and show us some examples tomorrow?"

You agree and decide to finish your coffee before digging in.

Decide the short deadline is too overwhelming and play 2048 instead.

Understand your options and identify which system requirements and features work best for you.

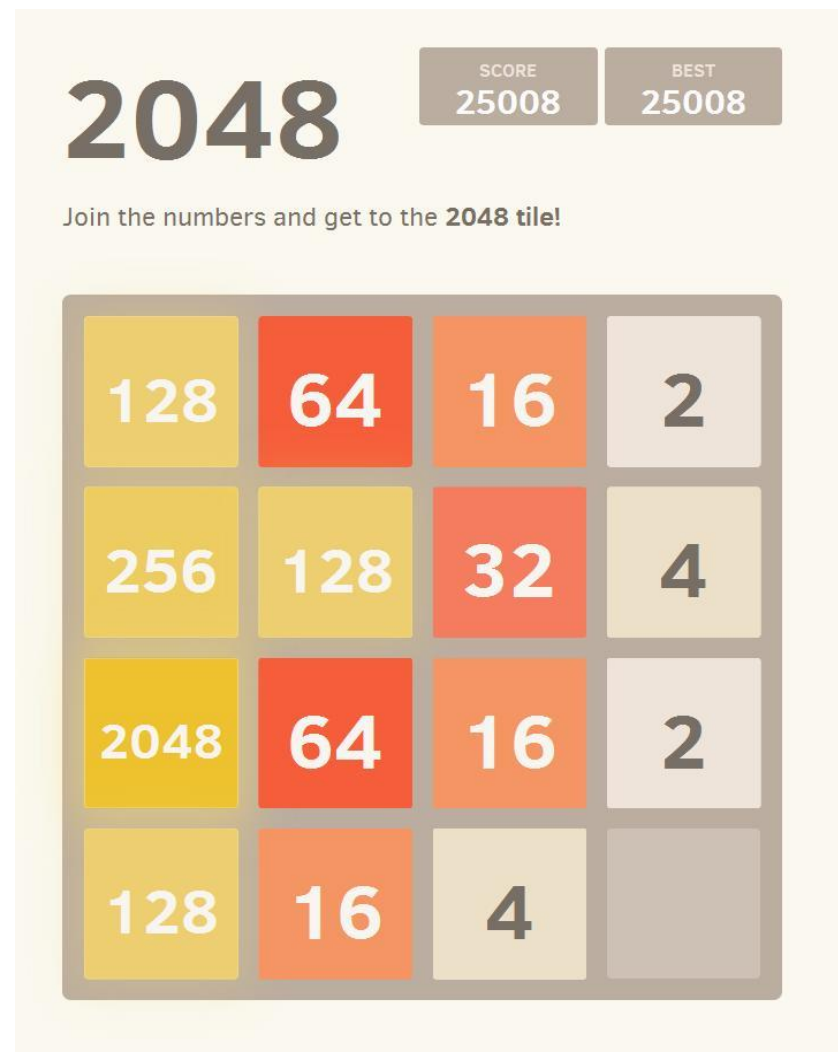
# PART ONE

2. You open up a web browser to 2048 and play for a few hours. Then you go to lunch. On your way back, you run into your boss who asks you how its going with gathering info about geospatial stuff. You respond that you are enjoying the project so far.

You get back to your desk and open a web browser to get started.

[Play some more 2048.](#)

[Get to work and learn what geospatial means.](#)



# PART ONE

7. You play 2048 until you are frustrated and you can't understand why you haven't beaten the game yet and now you just want to do anything but play 2048.

Get to work and learn what geospatial means.





# THE OPTIONS

3. You do some research and learn that geospatial really just means data associated with a specific location or relative position on the earth's surface, typically represented using maps.

There are 3 main tools in the SQL Server BI Stack that make maps:

- Power View
- Power Map
- SQL Server Reporting Services

You wonder how you should decide which tool is right for you.

Learn about each option so you can pick the best tool for the job.

Too many options. Just pick the first one in the list and roll with it.

# EVALUATION CRITERIA

4. Before you get into the details of each option, you define some criteria by which you can evaluate each solution. You set the following high level categories:

System Requirements

Data Source

Situation

Features

Consumption & Storage



# EVALUATION CRITERIA

## System Requirements

- System Requirements
- Internet Requirements

## Data Source

- Data sources
- Type of location data

## Situation

- Required technical understanding
- Time to deliver

## Features

- Type of visualization
- Level of customization

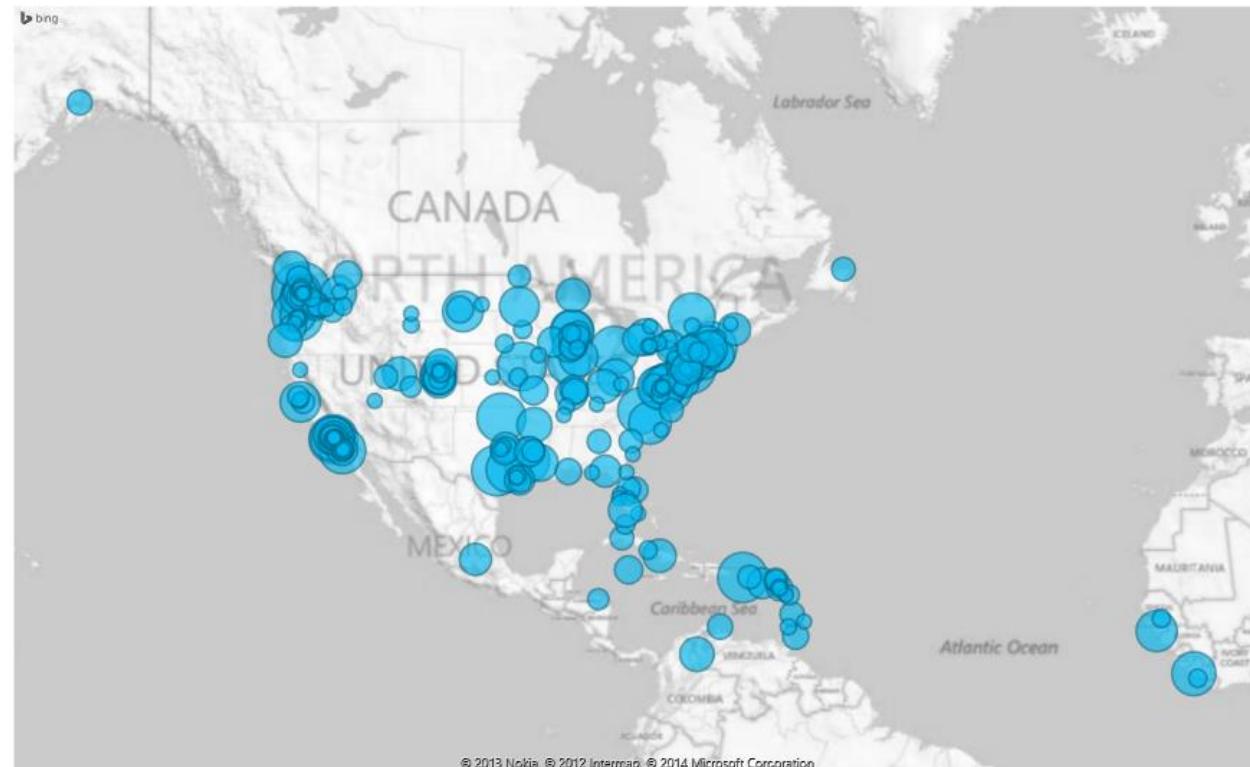
## Consumption & Storage

- Application/environment
- Formats

# POWER VIEW

- Power View reports can come from two different environments:
  - Power View in Excel
  - Power View in SharePoint Server (on-prem)
- Pros:
  - Quick and easy to build
  - Presentation ready
  - Interactive
- Cons
  - Limited to a single layer
  - Limited to bubbles/pies only
  - Limited customization (fonts/colors/branding)
  - Can't use SQL Server spatial data types

Sales Amount \$ by City



# POWER VIEW – SYSTEM REQUIREMENTS

## Power View for Excel

- Excel 2013 Professional Plus or O365 Pro Plus, Standalone Excel 2013
- Silverlight
- Power View add-in
- Power Pivot add-in
  - 500MHz processor
  - 2 – 4 GB RAM
  - 3.5GB hard disk space
  - .NET Framework 4.5
- Internet connection required to develop and consume



# POWER VIEW – SYSTEM REQUIREMENTS

## Power View for SharePoint

- Silverlight
  - SQL Server 2012 SP1 Enterprise or BI
  - SharePoint Server 2010 or 2013
  - Reporting Services Add-in for SharePoint Server
  - Power Pivot for SharePoint
- 
- Internet connection required to develop and consume



# POWER VIEW – DATA SOURCES

## Data Sources:

- Power Pivot
- SSAS Tabular
- SSAS Multidimensional (SharePoint only)

In effect, anything you can import into Power Pivot or SSAS: SQL Server, Access, Other RDBMSs, flat files, Excel, OData feeds...

## Location Data:

- Address
- City
- Continent
- Country/Region
- County
- Postal Code
- State or Province
- Place
- Latitude – Longitude



# POWER VIEW – SITUATION

- Time to Deliver
  - Power View Maps are quick to build. Drag the data fields into the fields box, choose map, and customize the layout and theme.
- Technical Understanding Required
  - Very low





# POWER VIEW – FEATURES

- Types of Data Visualization
  - Bubble or pie only
  - Single layer only
- Level of Customization
  - Very low: Theme (color, font), data labels (location name only), map background
- Filters
  - Slicers
  - Tiles
  - Power View filters (chart & view)
- Interactive crossfiltering
- Drill-down





# POWER VIEW - FEATURES

## Smart Phone Sales Quantity

Calendar Qtr Year Name

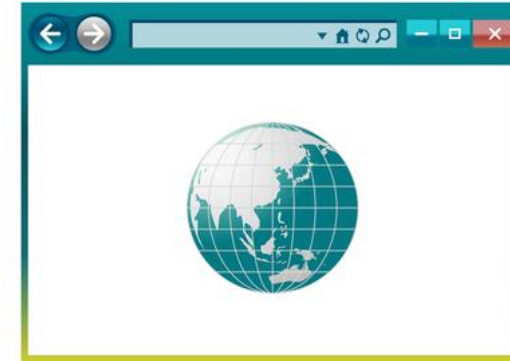
- Q1-2009
- Q1-2010
- Q1-2011
- Q1-2012
- Q1-2013
- Q1-2014
- Q2-2009
- Q2-2010
- Q2-2011
- Q2-2012
- Q2-2013
- Q2-2014
- Q3-2009
- Q3-2010
- Q3-2011
- Q3-2012
- Q3-2013
- Q3-2014
- Q4-2009
- Q4-2010
- Q4-2011
- Q4-2012
- Q4-2013
- Q4-2014

Quantity by State - Province, and Model



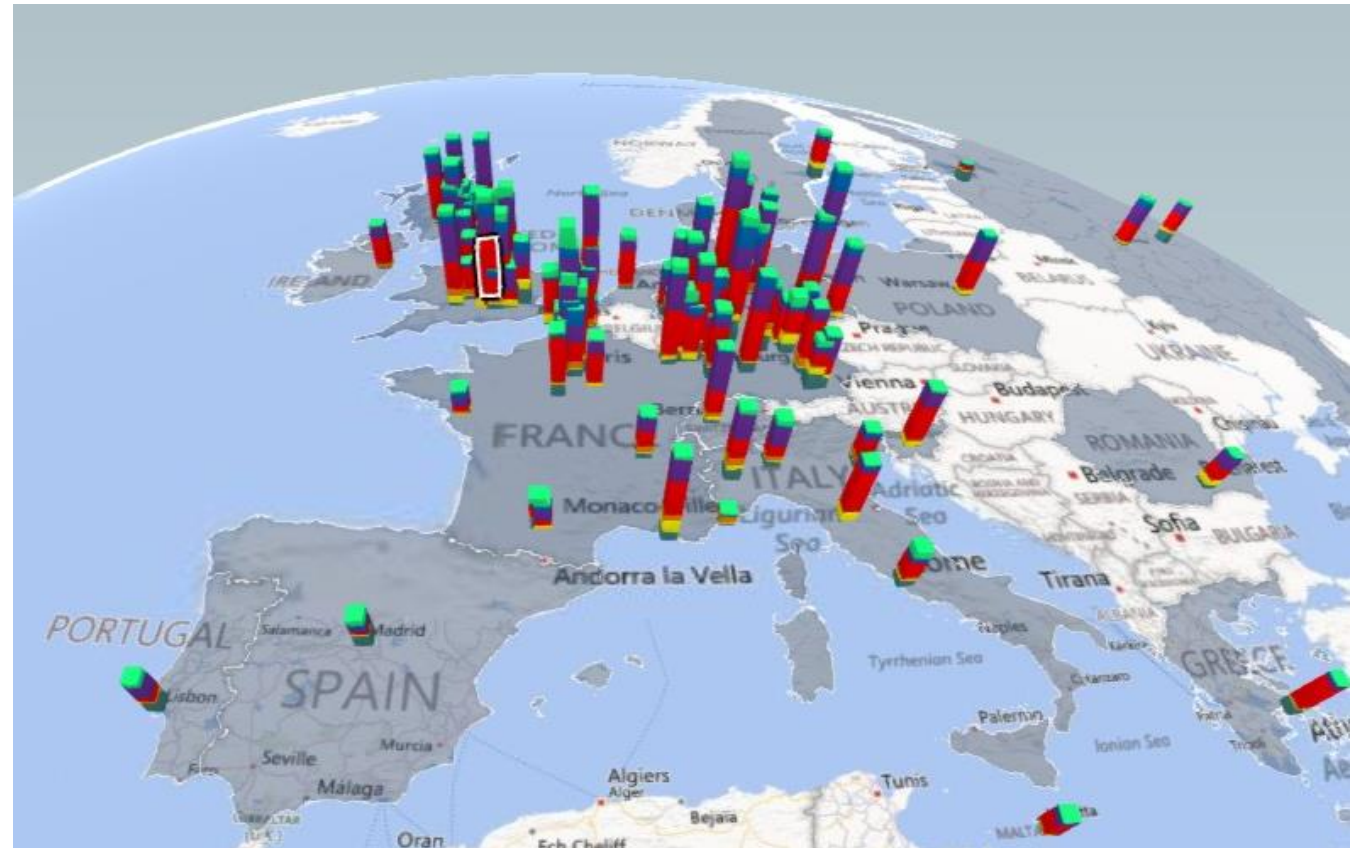
# POWER VIEW – CONSUMPTION & STORAGE

- Methods of Consumption
  - Excel desktop application (requires Power View add-in)
  - SharePoint – web browser (requires Silverlight and SharePoint access)
  - O365 – web browser (requires Silverlight and O365 access)
  - O365 with HTML5 (requires O365 access)
  - Power BI app (requires Windows 8 app and SharePoint/O365 access)
  - Power Point (SharePoint only)
- Storage/Sharing
  - SharePoint
  - O365
  - Anywhere you store an Excel file



# POWER MAP

- Power Map is an add-in for Excel (GA in O365 Pro Plus only – for now)
- 3-D data visualization tool which plots geographic and temporal data using maps and a time axis
- Pros
  - Allows multiple layers of different map types
  - Time axis shows changes over time
  - Great storytelling with scenes and tours
  - New: Ability to filter data
  - New: Custom shapes
- Cons
  - No drill-down
  - No spatial data types



# POWER MAP – SYSTEM REQUIREMENTS

- Excel - Office 365 Pro Plus
  - Power Pivot add-in
  - Power Map add-in
  - 1 Ghz or greater x86/x64 Processor (x64 recommended)
  - 2 – 4 GB RAM
  - 3.5GB hard disk space
  - .NET Framework 4.5
- 
- Internet connection required to develop and consume



# POWER MAP – DATA SOURCES

## Data Sources:

- Power Pivot

In effect, anything you can import into Power Pivot: SQL Server, Access, Other RDBMSs, flat files, Excel, OData feeds...

## Location Data:

- Latitude
- Longitude
- City
- Country/Region
- County
- State/Province
- Street
- Zip
- Full Address





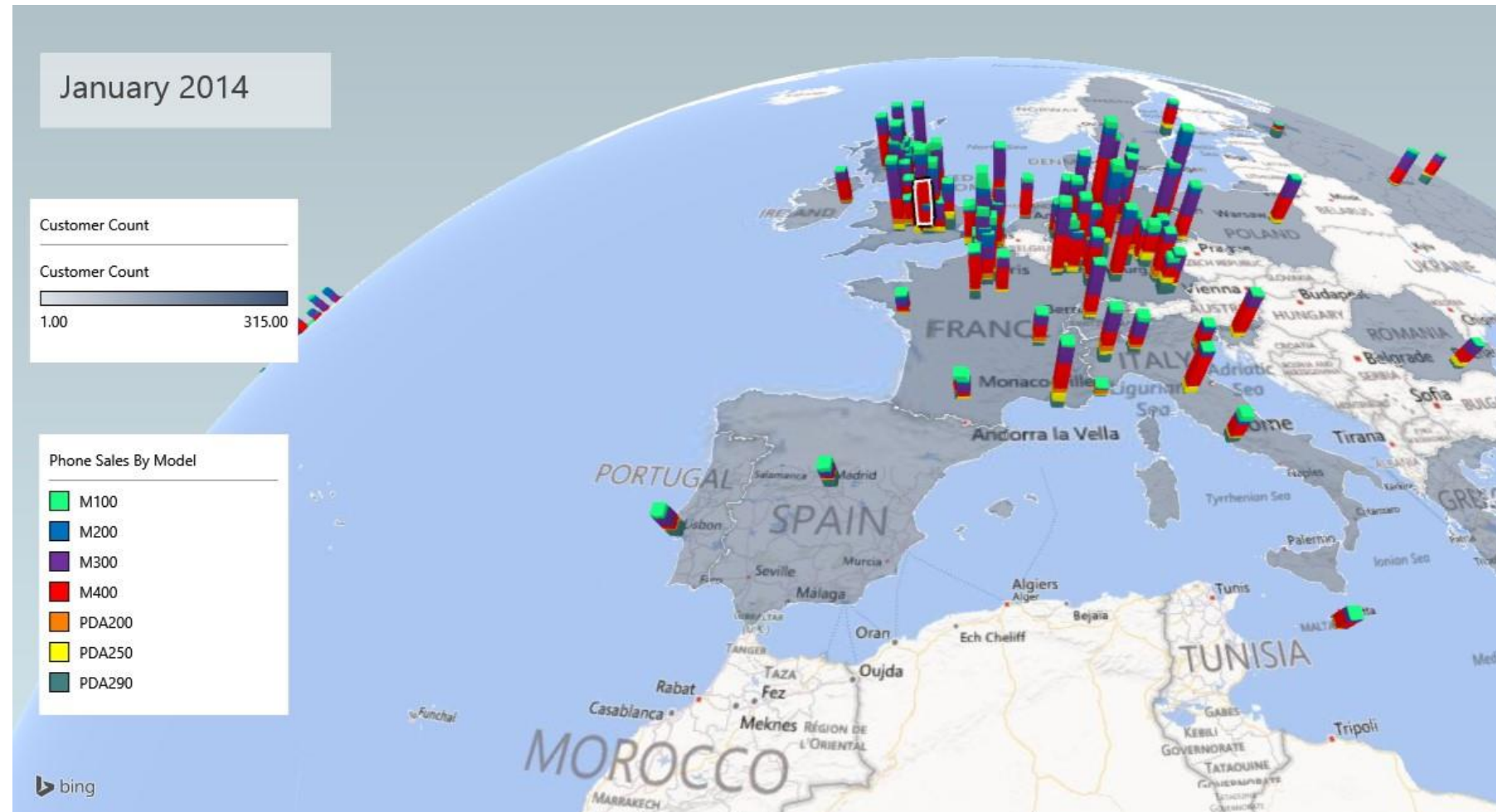
# POWER MAP – SITUATION

- Time to Deliver
  - Fairly quick – Add a layer, choose fields, choose chart types and formatting; create scenes; customize with themes, textboxes, charts, annotations
- Technical Understanding Required
  - Medium-Low
  - May require more complex DAX calculations to work around the lack of filter capabilities



# POWER MAP – FEATURES

- Types of Data Visualization
  - Column
  - Bubble/pie
  - Heat map
  - Region Shading
- Level of Customization - Medium
  - Theme
  - Flat/round map
  - Bar shape
  - Annotations
  - Text boxes
  - Chart colors and formatting
  - Supplementary charts
  - Scenes and transitions
- Multiple layers
- Play Axis
- Tours (now with music)





# POWER MAP - FEATURES

January 2014

## Phone Model Releases

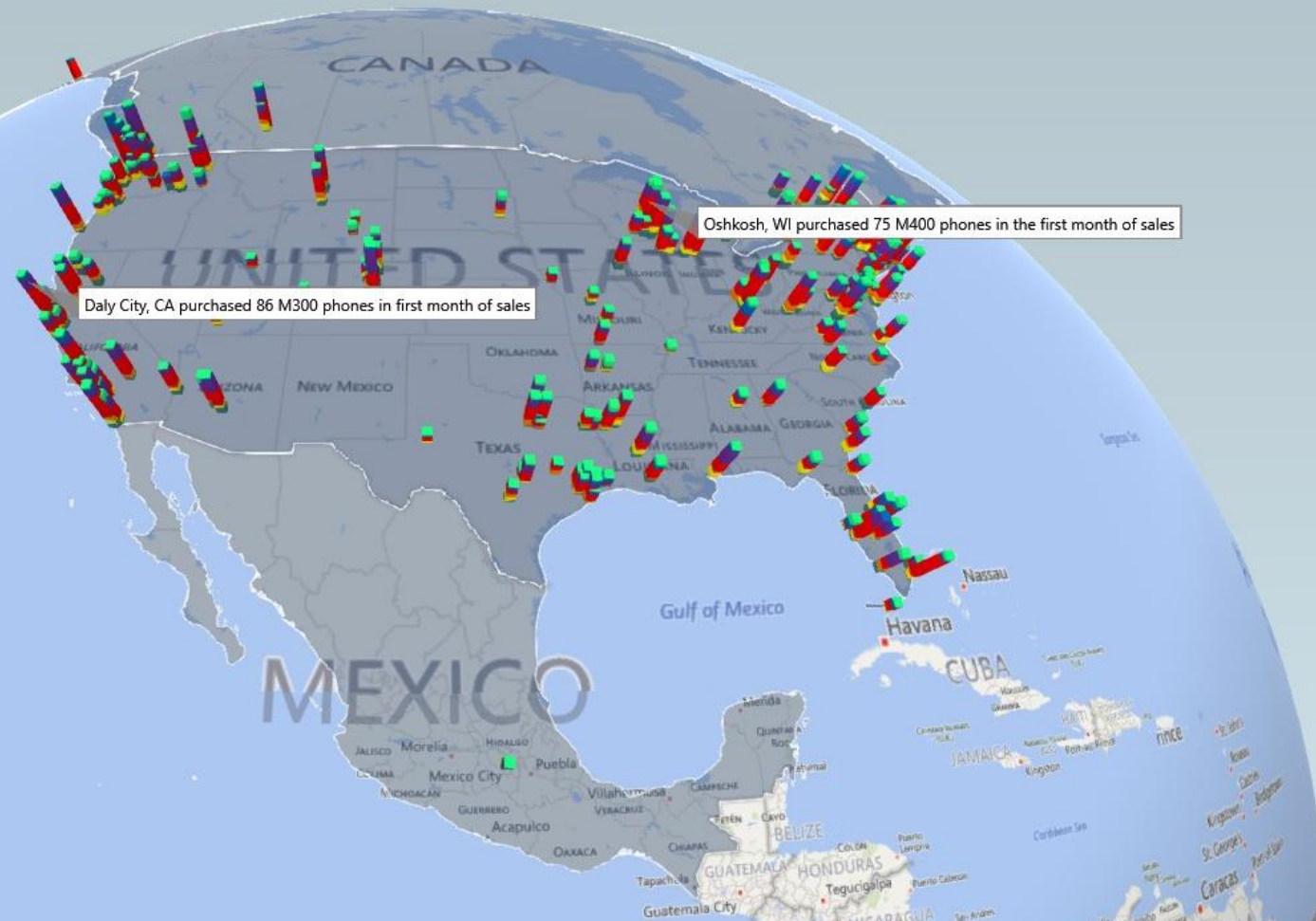
M300: June 2011  
M400: June 2013

Customer Count

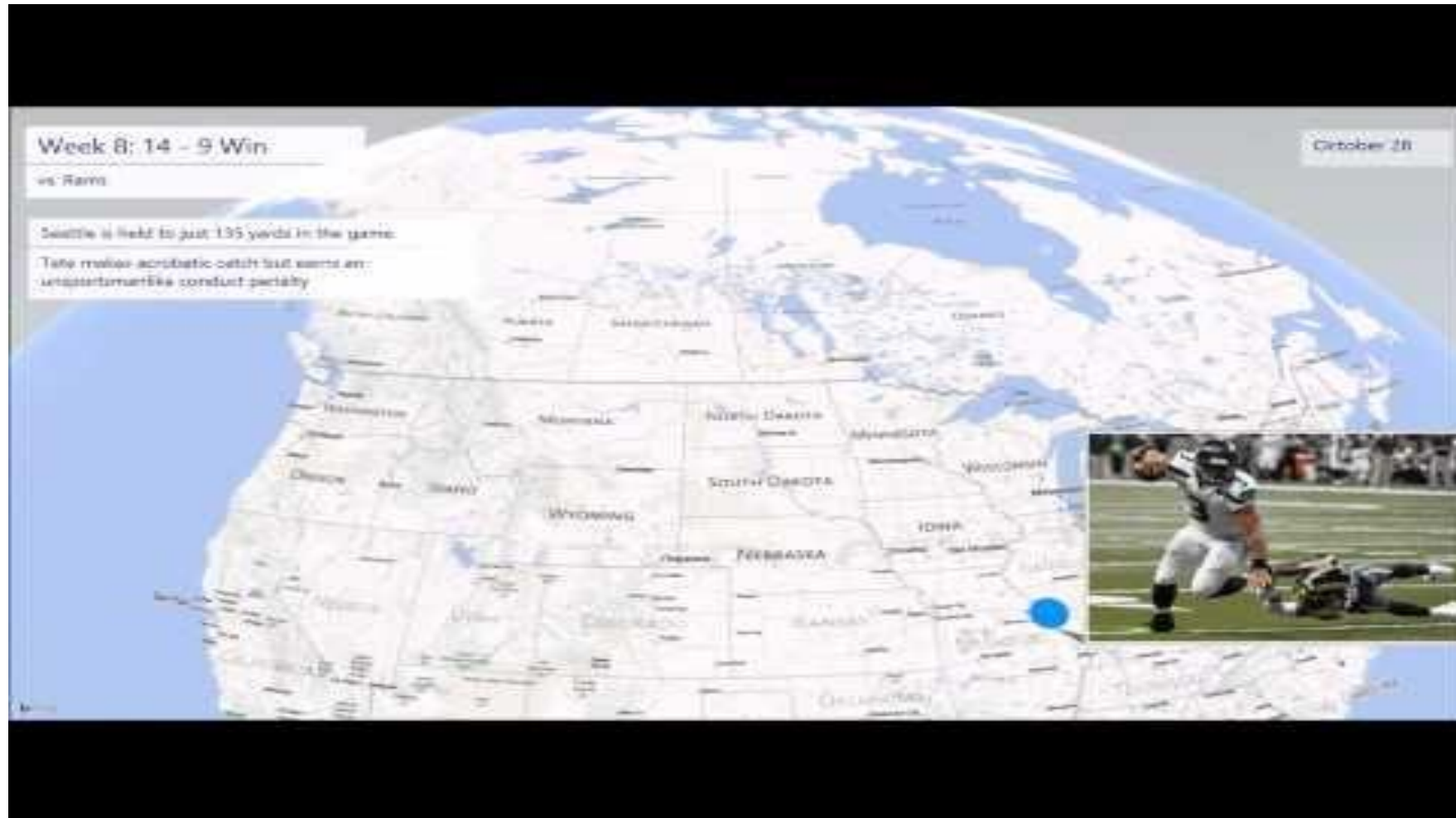
Customer Count



### Phone Sales By Model



# POWER MAP - FEATURES

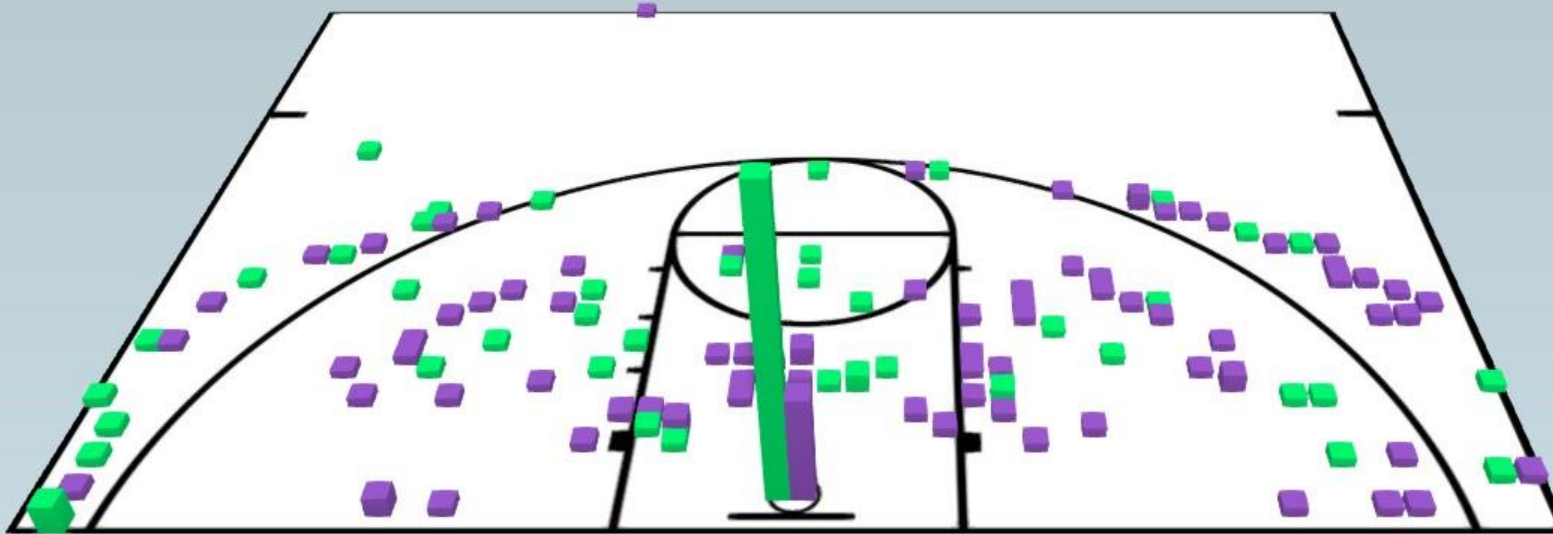


# POWER MAP - FEATURES

12:47:58 AM

Shots Taken

made  
missed



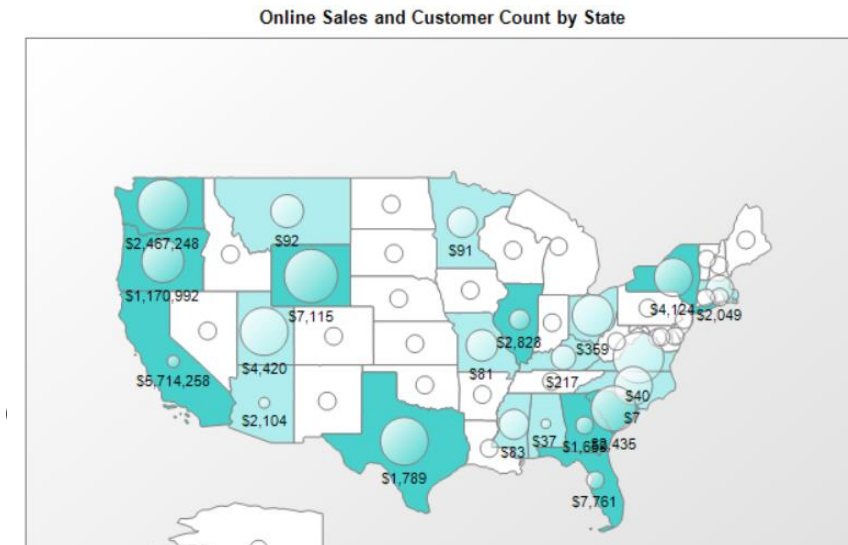
# POWER MAP – CONSUMPTION & STORAGE

- Methods of Consumption
  - Excel desktop application (requires Power Map add-in)
  - MP4 video file
- Storage/Sharing
  - Anywhere you store an Excel file



# REPORTING SERVICES

- SSRS maps can be created in Report Builder or SSDT
- SSRS comes in two flavors: native mode and SharePoint integrated mode
- Several types of maps can be created and customized to fit your needs
- Pros
  - Custom shapes
  - Subscriptions
  - Highly customizable
  - Spatial data types
- Cons
  - Requires more technical expertise, possibly longer time to d
  - Must have a Report server or SharePoint server to share



# REPORTING SERVICES – SYSTEM REQUIREMENTS

- SQL Server 2012 (Standard, BI, Enterprise for SharePoint integrated; Web or Express with Advanced Services for Native)
- Report Server or Reporting Services Add-in for SharePoint
- Internet connection required for Bing Maps layer





# REPORTING SERVICES– DATA SOURCES

## Data Sources:

- SQL Server
- SSAS Tabular
- SSAS Multidimensional
- Other RDBMSs
- SharePoint list
- OLE DB
- ODBC
- XML

## Location Data:

- Spatial data types
- Country/Region
- County
- State/Province
- Depends on your shapes





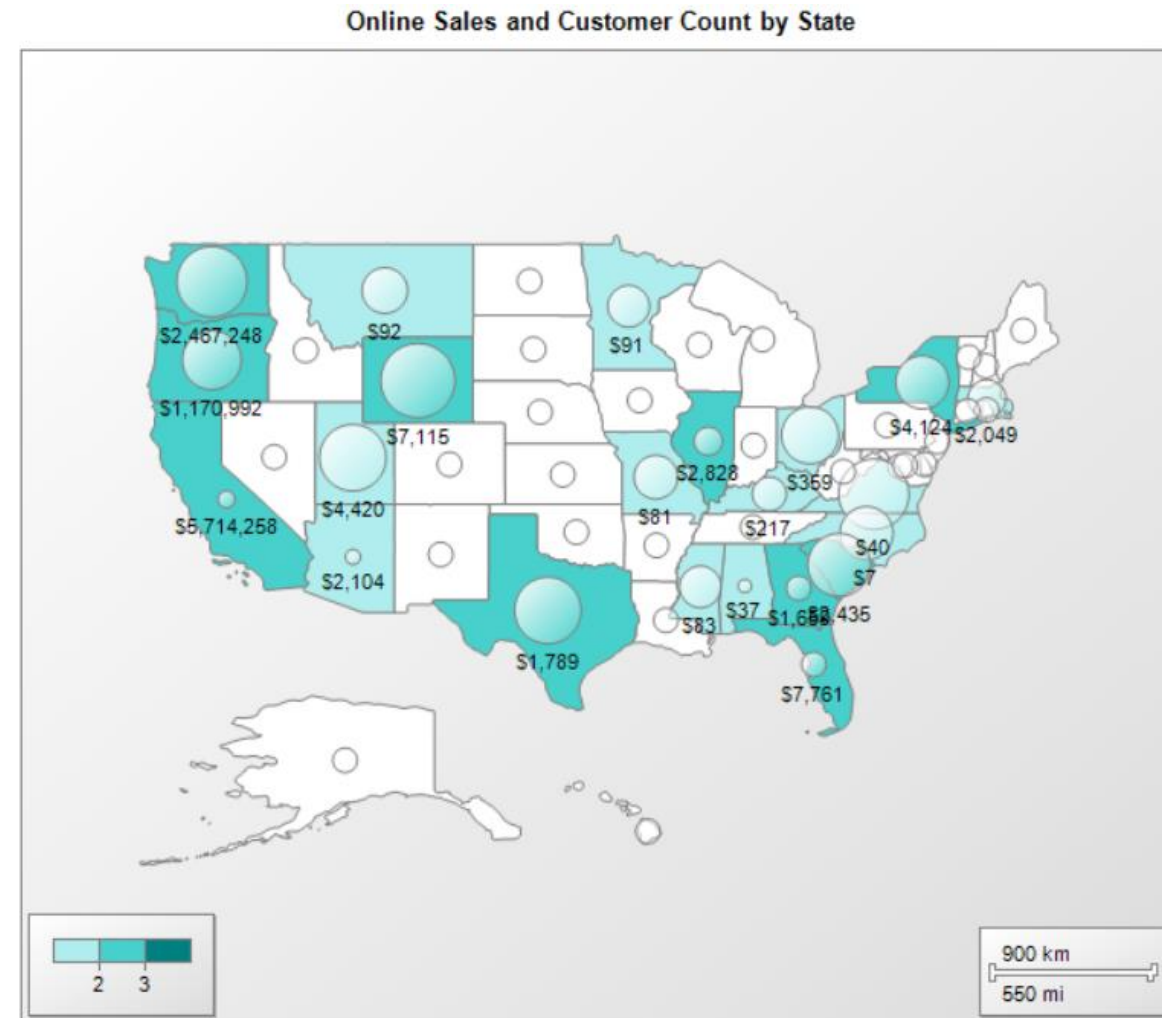
# REPORTING SERVICES– SITUATION

- Time to Deliver
  - It depends...
- Technical Understanding Required
  - Medium-High



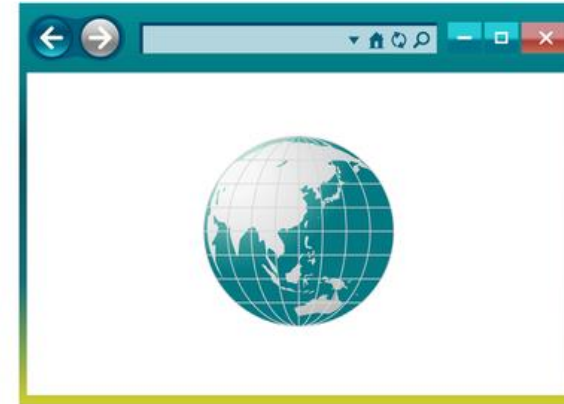
# REPORTING SERVICES– FEATURES

- Types of Data Visualization
  - Region shading
  - Bubbles
  - Pinpoints
  - Lines
- Level of Customization – High
  - Just about everything!
- Custom shapes – think outside the globe
- Subscriptions
- Export formats



# REPORTING SERVICES–CONSUMPTION & STORAGE

- Methods of Consumption
  - Web browser (Report Server or SharePoint)
  - Application (.rdlc)
  - Render as Excel, Word, PDF, TIFF
  - Export to Excel, Word, PDF, TIFF
- Storage/Sharing
  - Report Server
  - SharePoint report/document library



# RECAP

## Power View

- Quick and easy to build
- Presentation ready
- Interactive
- Limited to a single layer
- Limited to bubbles/pies only
- Limited customization (fonts/colors/branding)

## Power Map

- Allows multiple layers of different map types
- Time axis shows changes over time
- Great storytelling with scenes and tours
- New ability to filter data
- No drill-down
- New custom shapes

## SSRS

- Custom shapes
- Subscriptions
- Highly customizable
- Requires more technical expertise, longer time to delivery
- Must have a Report Server or SharePoint Server to share
- Geospatial data type

# SUMMARY

Development Environment	Power View – Excel	Power View – SharePoint	Power Map (Excel)	SSRS (Report Builder/ SSDT)
System Requirements	Excel 2013 Professional Plus/O365 Pro Plus/Standalone 2013 Silverlight Power View add-in Power Pivot add-in Internet Connection	Silverlight SQL Server 2012 SP1 Enterprise or BI SharePoint Server 2010/2013 Reporting Services Add-in for SharePoint Server Power Pivot for SharePoint Internet Connection	Excel - O365 Pro Plus Power Pivot add-in Power Map add-in Internet Connection x64 Processor recommended	SharePoint: SQL Server 2012 (Standard, BI, Enterprise for SharePoint integrated; Web or Express with Advanced Services for Native)  Report Server or Reporting Services Add-in for SharePoint
Data Source	Power Pivot SSAS Tabular  Geography data: Anything Bing can map	Power Pivot SSAS Tabular SSAS Multidimensional  Geography data: Anything Bing can map	Power Pivot   Geography data: Anything Bing can map	SQL Server SSAS Tabular SSAS Multidimensional Other RDBMSs SharePoint list OLE DB ODBC XML

# SUMMARY

Development Environment	Power View – Excel	Power View – SharePoint	Power Map (Excel)	SSRS (Report Builder/ SSDT)
Situation	Quick to deliver Low technical skills	Quick to deliver Low technical skills	Fairly quick to deliver Fairly low technical skills	It depends... Med-high technical skills
Features	Bubble/pie only, single layer Low customization Filters Interactive crossfiltering Drilldown	Bubble/pie only, single layer Low customization Filters Interactive crossfiltering Drilldown	Column, bubble/pie, heat map, region shading Multiple layers Medium customization Play axis Tours	Bubble/pie, region shading, pinpoints, lines Multiple layers High customization Custom Shapes Subscriptions Export Formats
Consumption & Storage	Excel SharePoint O365 Power BI app	Excel SharePoint O365 Power BI app Power Point	Excel Mp4 Video	web browser application (embedded) Excel, Word, PDF, TIFF  Stored on Report Server or SharePoint

# CHOOSE YOUR MAPPING ADVENTURE

There is an executive meeting in an hour and the VP of sales has a last minute request. You need to make a map that compares the sales revenue for each state in the US for the current quarter. If possible, the VP would like to integrate the map into his presentation rather than opening a new file to show it. If possible, a second map with key states or the ability to drilldown to city on the top 5 states would be great.

All employees at your company have Office 365 Pro Plus and access to SharePoint 2013 on prem. The sales data has the following fields: Country, City, State, Product Sold, Sales Date, Sales Revenue \$.

Make a Map with Power Map Bar Charts and add a great soundtrack to it

Make a Bubble Map with Power View in Excel and send it over as quickly as possible

Make a Bubble Map with Power View in SharePoint



YOU LOSE



# CHOOSE YOUR MAPPING ADVENTURE - 3

You work for an insurance company. You get a request for a US map that shows number of cars insured in each MSA in each customer region for the prior quarter. Customer regions should be clearly delineated in the map. The report will be viewed on a quarterly basis and included in the quarterly review materials for the meeting next week. All reports must have corporate branding and be exportable to PDF.

You will have the following data fields: Date, Customer Region, MSA, City, State, Customer ID, # Cars. Customer regions do not follow state lines.

[Use Power View in Excel](#)

[Use Power Map in Excel](#)

[Use Reporting Services](#)

# YOU WIN THE PRIZE



# ENDING

You make a map with SSRS that is exactly what was requested. It is included in the quarterly review materials. You receive great feedback on the map. You receive many more requests to make various types of maps.

Your knowledge of mapping tools in the SQL Server stack and which tool is appropriate for each situation makes you very valuable. You soon receive a nice raise and the award for Most Valuable Employee.

# QUESTIONS AND FINAL COMMENTS

Please feel free to contact me with questions or feedback.

Meagan Longoria

BI Solutions Consultant

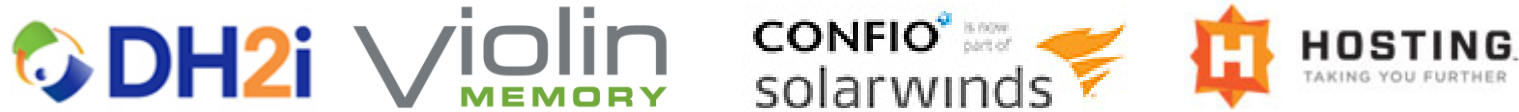
Twitter: [@mmarioe](https://twitter.com/mmarioe)

Blog: [DataSavvy.wordpress.com](http://DataSavvy.wordpress.com)



# THANK YOU TO ALL OF OUR SPONSORS!

- Platinum Sponsors



- Gold Sponsors



- Marquee Sponsor





# THANK YOU TO ALL OF OUR SPONSORS!

- Silver Sponsors



- Bronze Sponsors



# THANK YOU TO ALL OF OUR SPONSORS!

- SWAG Sponsors

