Thinking spatially at Bank of America

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Bank of America

Benefits of thinking Spatially ?

Complex Analysis Made Simple

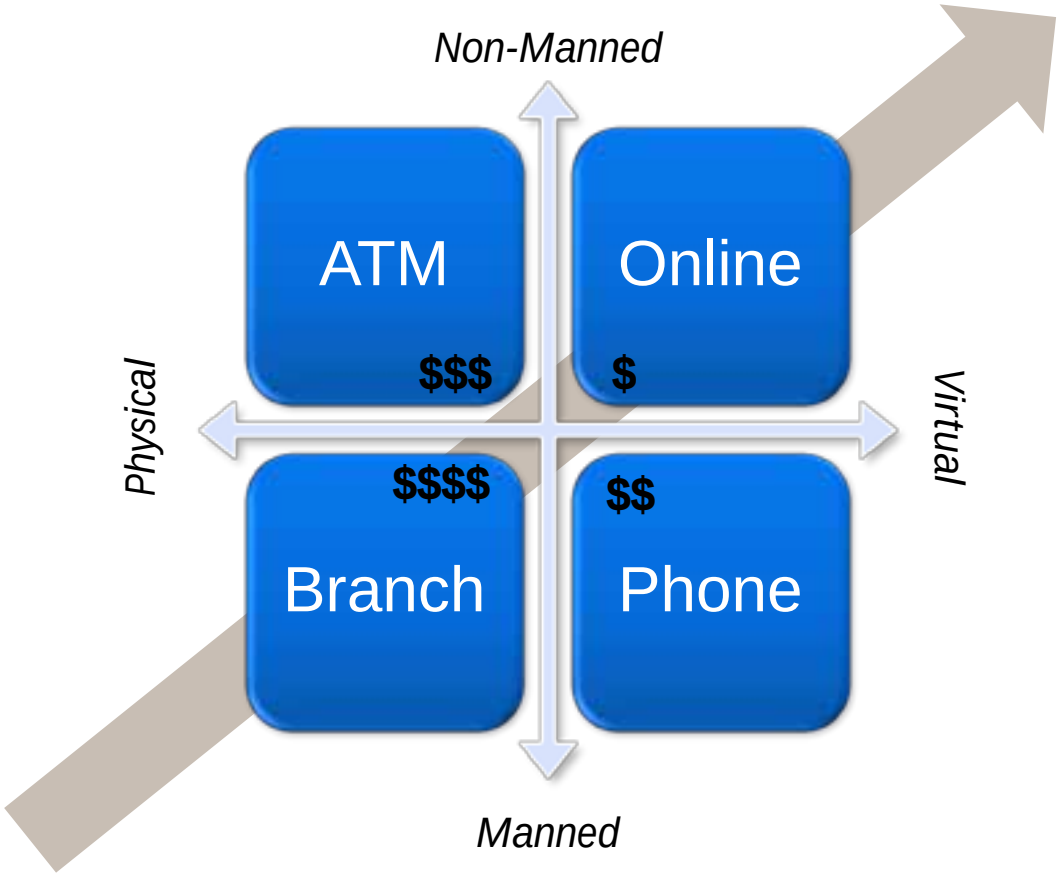
Reflection of the Real World

Share Analysis Across Lines of Business

It Impacts the Bottom Line $$

The evolving retail landscape

- Channel usage and preference are changing daily as technology improves, affecting overall cost to serve



The branch isn’t dead yet, but its different

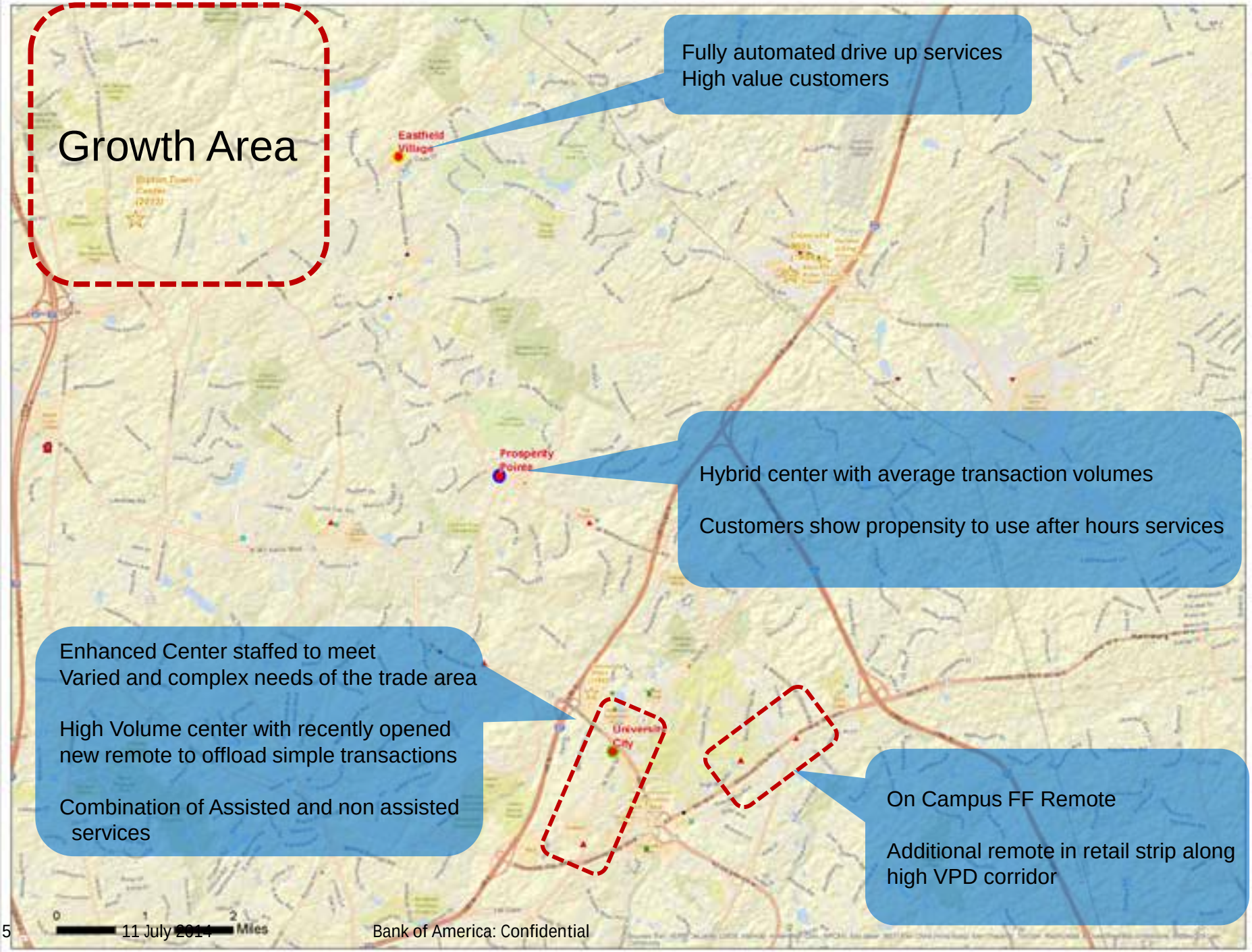
- Designed to fulfill a high volume of simple transactions
- Cashing checks, depositing cash
- Large downtown facilities

- Designed to meet sophisticated customer needs
- Provide access to specialists
- Problem resolution, complex transactions
- Conveniently located smaller facilities

- Continued transaction automation
- Sales focus on human interactions

- Result is fewer locations required but with greater access to specialists
  - High volume to high value
  - Current network needs to be retrofitted/downsized or relocated

- Spatial is key
  - Smaller physical footprint - Hub and spoke model to efficiently deploy resources


Growth Area
Fully automated drive up services
High value customers
Eastfield Village
Prosperity Point
Hybrid center with average transaction volumes
Customers show propensity to use after hours services
Enhanced Center staffed to meet
Varied and complex needs of the trade area
High Volume center with recently opened
new remote to offload simple transactions
Combination of Assisted and non assisted
services
University City
On Campus FF Remote
Additional remote in retail strip along
high VPD corridor
0
1
2
Miles

Our behaviors remain influenced by proximity – "How valuable is your time"

STARS CAN ALIGN

Customers find alternate channels economically superior…

Representative Channel Options for Routine Transactions

Channel	Wireless	Telephone AVRU	Internet	ATM	Branch
Distance to Location	6 inches	20 Feet	50 Feet	4 Miles	5 Miles
Time to Location (Round Trip)	5 seconds	1 Minute	2 Minutes	40 Minutes	50 Minutes
Cost of Personal Time @ $50 per Hour	$.07	$.83	$1.66	$33.33	$41.67
Representative Direct Cost	$.00	$.00	$0.00	$1.00	$2.00
Total Cost	$.07	$.83	$1.66	$34.33	$43.67

As access to providers becomes more convenient it also becomes cheaper for customers when considering their personal time.

…and so do financial institutions

Channel Transaction Costs, 2007

Channel	Cost per Transaction
Online	$0.01
ATM	$0.25
Telephone	$0.50
Branch	$1.00

CFC Research: Unlocking Branch Value: Essay II, 2009

Getting location specific

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GIS at Bank of America

- GIS has been in use at Bank of America for more than 10 years.
  - Products have ranged from MapInfo, Alteryx, Microsoft, Cognos and Esri
- Currently run Esri Business Analyst in a Citrix environment.
  - Citrix helps manage the software installations/ upgrades and improves processing speed.
  - A custom web based solution was designed by Esri which closely mirrors some of the functionality of Business Analyst Online.
  - Associates with smart phones may use BAO.
- The GIS user community consists of power users and casual users with support from data partners
- Users vary from classically trained geographers to senior executives with no formal background in geography/planning

From region to site

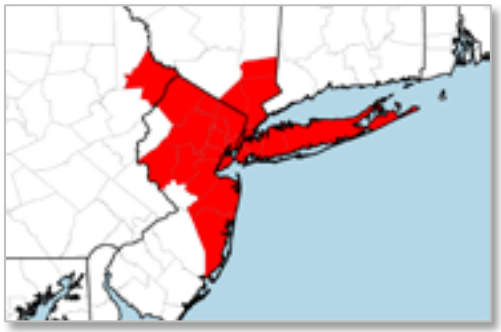
Regional Analysis: Step 1

"What Regions?"

Identify metropolitan areas with highest potential opportunity to build customer base and grow revenue

Top Markets, Build to Levels

Network Strategist



Target Zone Identification: Step 2

"What Micro Market?"

Identify which intersections/ destinations are best positioned to current and forecasted opportunity and develop list of target zones

New build, Optimization

Market Planner

Site Selection: Step 3

"What Site?"

Identify which target zones have available real estate that can be used to add a new location and meet the bank's internal financial hurdles

Developer site plan, real estate

Location Planner and ATM Relationship Manager

Key inputs when considering distribution

Controllable

- BAC Network
  - Where are our current locations?
  - Where are we currently looking?
  - Areas that are not currently part of a BC or remote
  - ATM trade area where we can fill a gap?
  - Areas to avoid because we already adequately serve population?

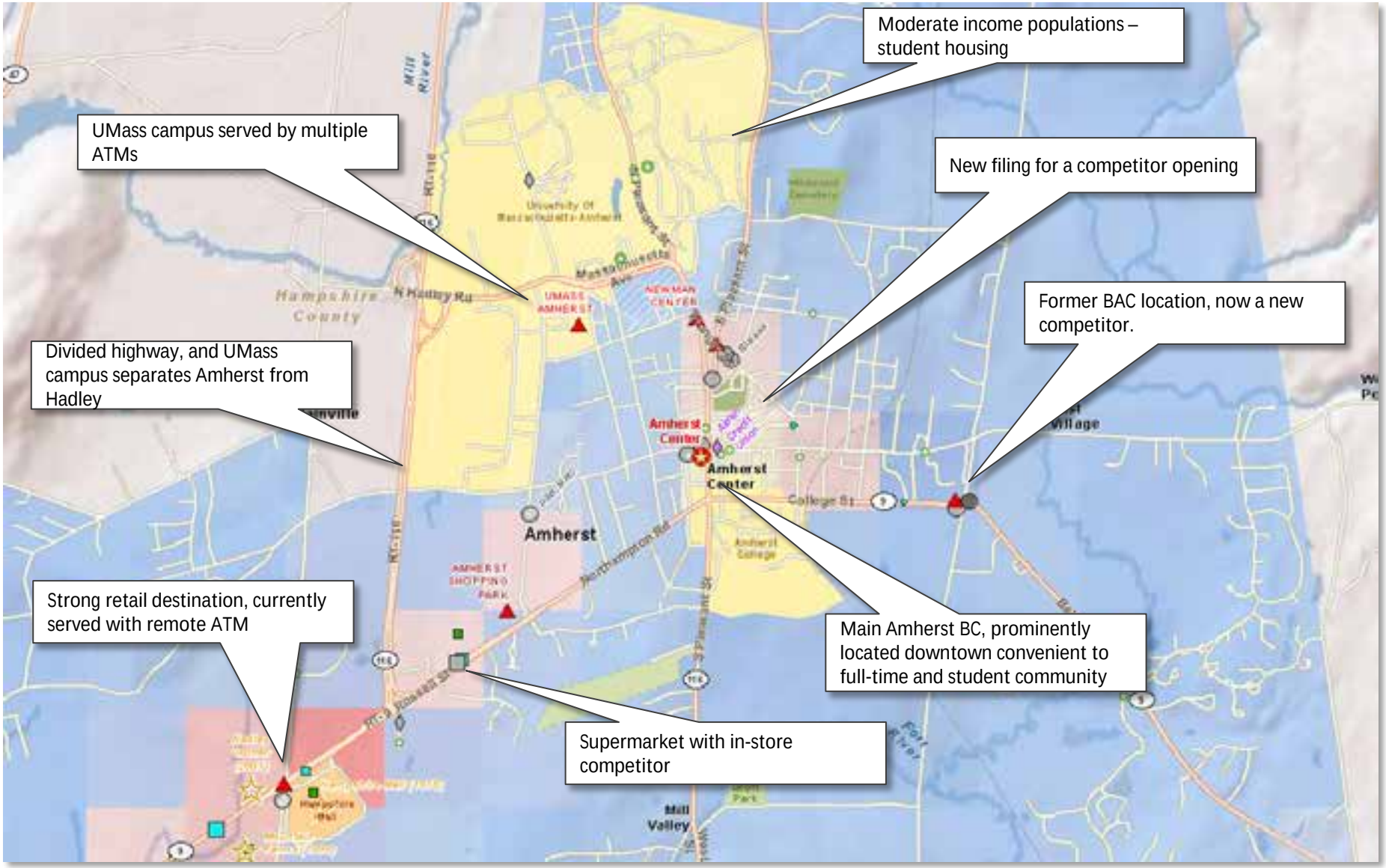
Not-Controllable

- Demographics
- Regulatory
- Competition Environment
- Retail
- Physical Geography

Key Data Inputs

- **Site specific** – *location, usage, profitability*
- **Demographics** (block group) – *Daytime population, HH growth rate, income levels*
- **Customer Locations** – *stripped of personal information*
- **Regulatory** – *Low and moderate income populations, and minority populations*
- **Competition** – *location, deposits, open date*
- **Retail** – *shopping centers, key retailers*
- **Physical geography** – *streets, rivers, railroads*

Business Analyst - Standard Basemap



Thinking spatially at Bank of America

- Spatial/GIS/location technology is one of the primary tools to manage the following processes:
  - Market investment prioritization
  - Branch and remote ATM planning
  - Regulatory compliance
  - New branch forecasting
  - Customer spotting
  - Attrition modeling
  - Merger and Acquisitions
  - Risk mitigation
  - Asset management
  - Logistics
  - Real estate appraisal
  - Commercial RFPs
  - Investor relations materials

Questions?

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Thank you!

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Process Automation at Bank of America

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Vice President, Market Strategy

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Process Automation and GIS at Bank of America

Real Estate Applications

"Where to Invest"

-Hotspot Analysis
-Invest/Divest Geographies
-Customer Spotting*
-Household Penetration Rates
-Comparables Modeling*
-Consolidation Modeling
-Competitive Analysis

Operational Applications

"How to Invest"

-Channel Usage Analysis
-Product Adoption Analysis*
-Specialty Customer Analysis
-Language Analysis
-BAC Customer Segmentation
-Specialist Placement
-Human Resource Applications

**Example in Presentation*

Commonly Used ArcGIS Tools

Business Analyst Applications

-Trade Area Analysis
-Spatial Overlay (Custom .bds)

Model Builder

-Setup Store using XY data
-Buffer
-Drive Times
-Remove TA Overlap
-Repair Geometry
-Merge
-Copy Features

General Tools

-Join
-Spatial Join
-Dissolve
-Feature to Point

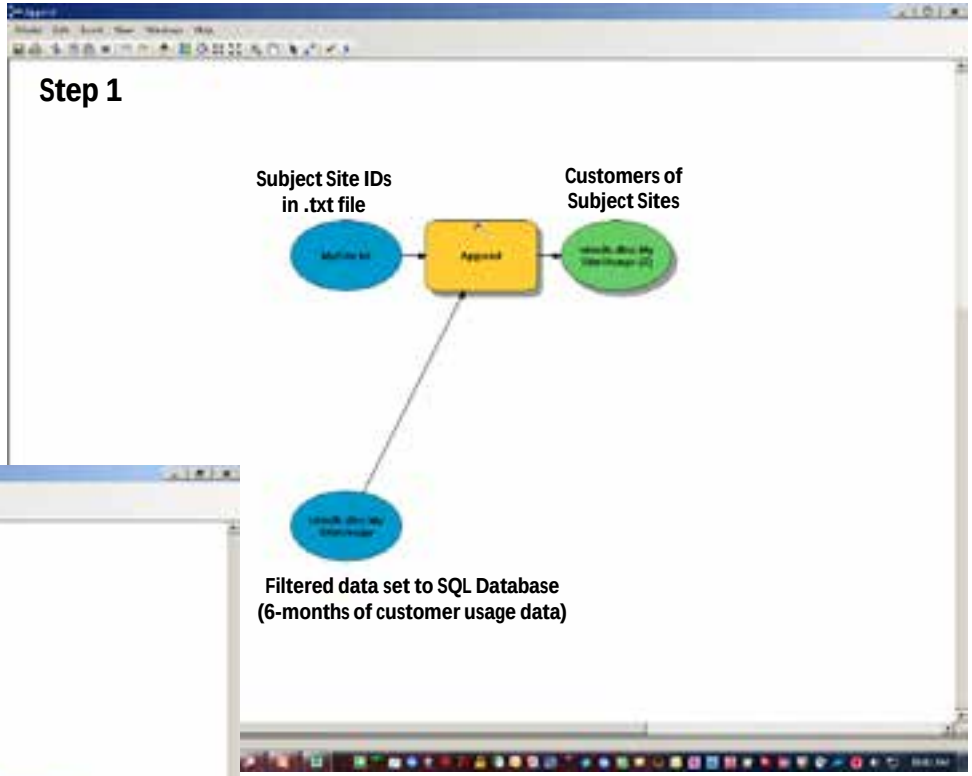
Network Analyst

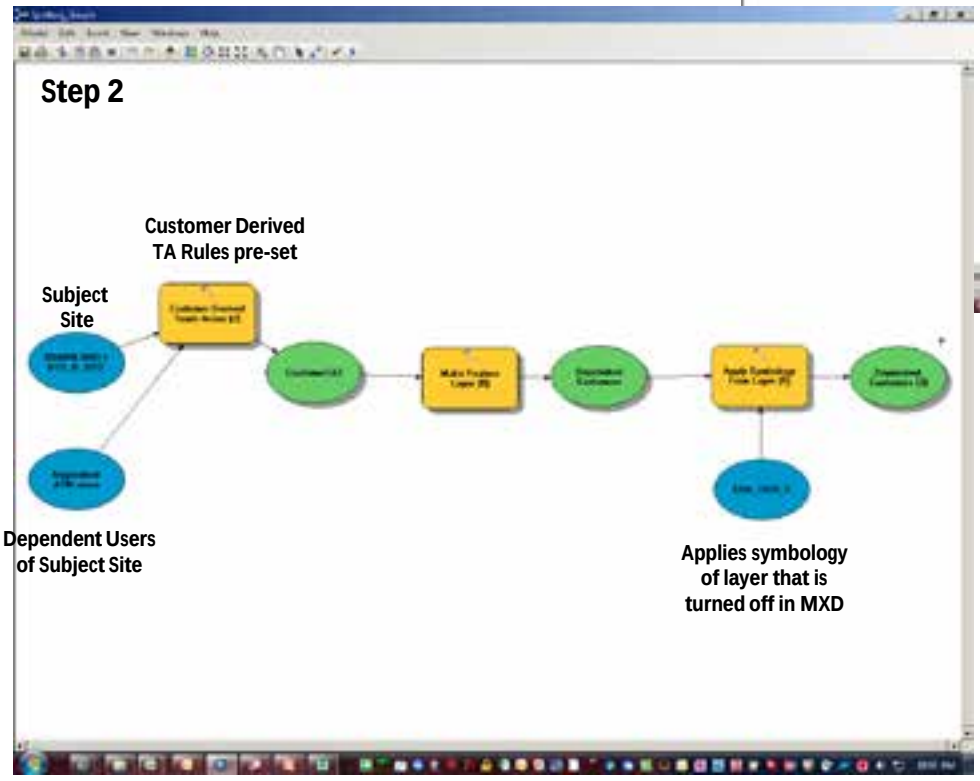
-OD Cost Matrix
-Location Allocation

*Time Slider**

Customer Spotting-Model Builder

- SQL Database enabled
- Load customer data points
  - Filters 100+ million records (hhlds x sites)
- Data organization allows us to spot:
  - Users by Dependency
    - § All Users, Teller Users, ATM Users
- Customer derived trade areas
  - Business Analyst: 40-60-80% rings
  - Model Builder: Automates process



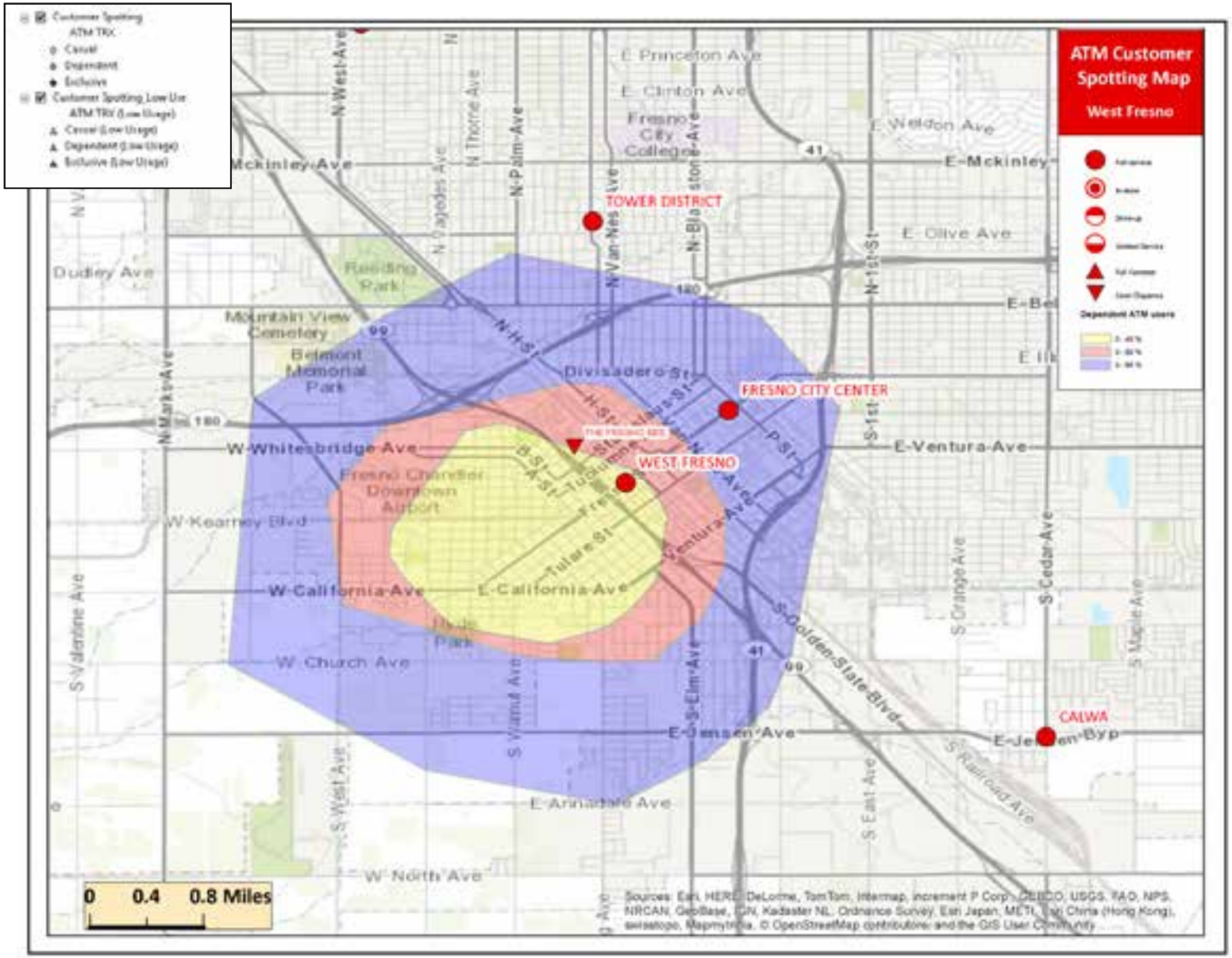


- Repeatability: I get the same answer at 9am or 5pm
- Reproducibility: Carlous will get the same answer as me
- Much Faster:
  - ODBC > Access > MapInfo: 30 Minutes
  - SQL > ArcGIS > Model Builder: 5 Minutes

Customer Spotting: West Fresno BC

-Customer Centered (Not Store Centered)
-Weighted by transaction volumes (Max-limits)
-Outlying Customers excluded (> 50-Miles)
-Simple Trade Areas

- Customer points removed



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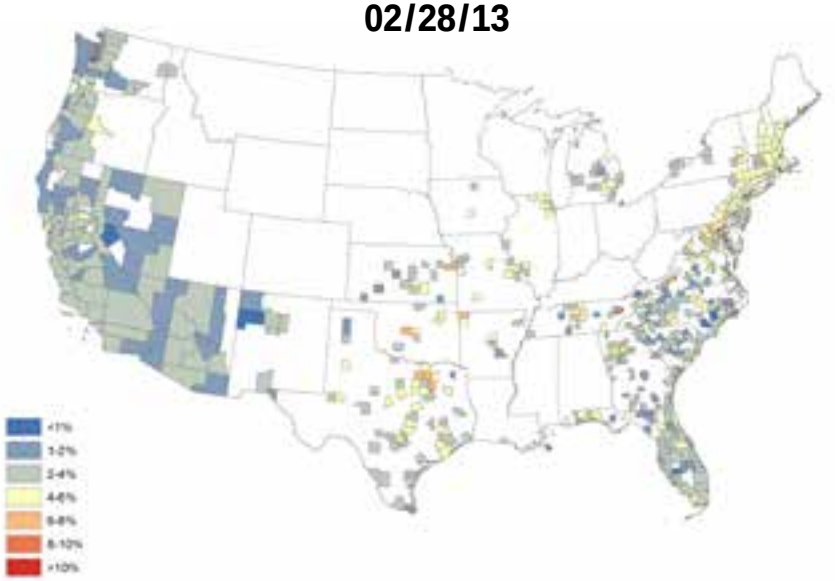
Adoption of Product Offering: Time Series

10/31/12

02/28/13



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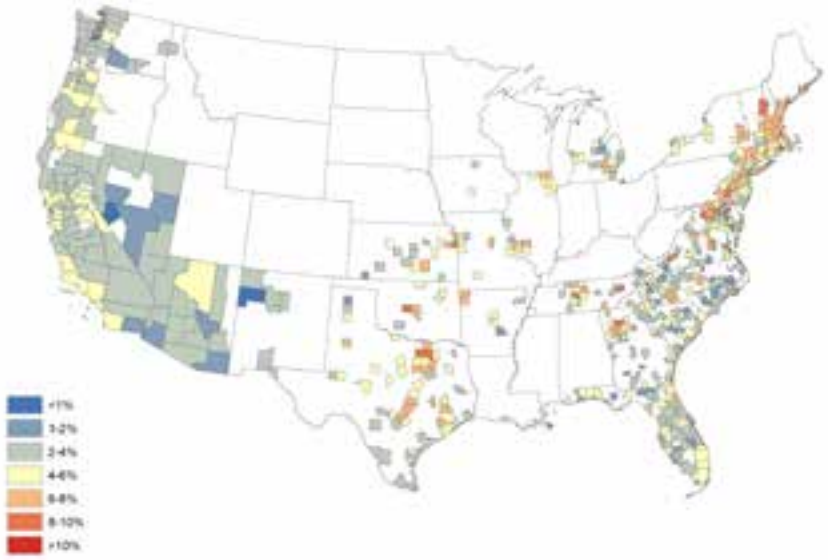

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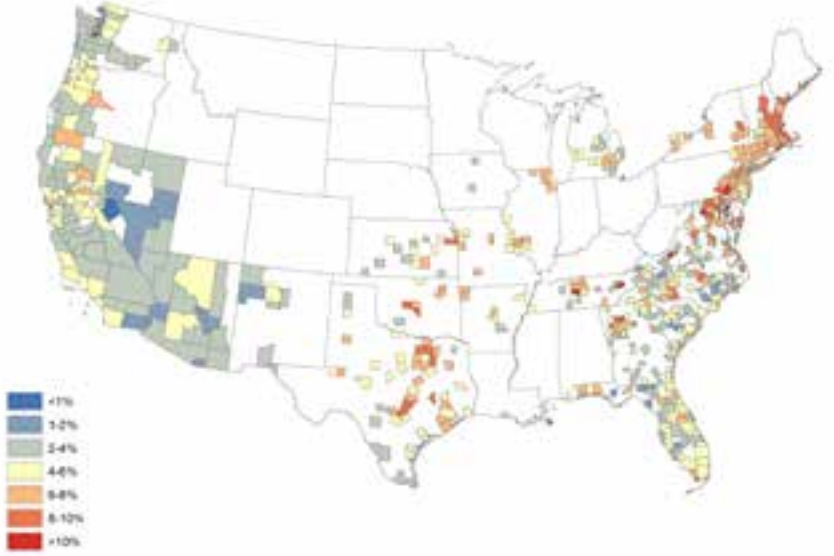
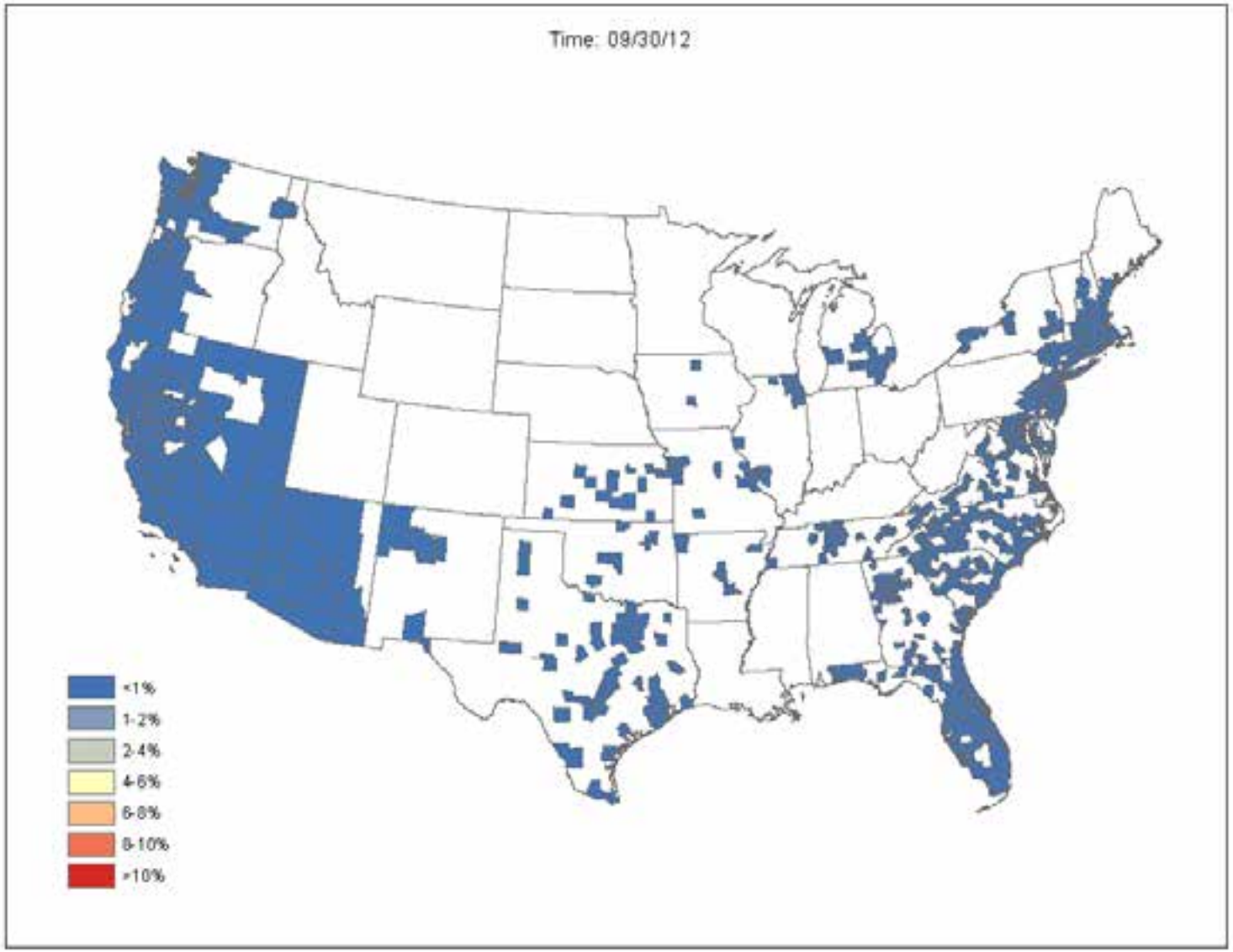
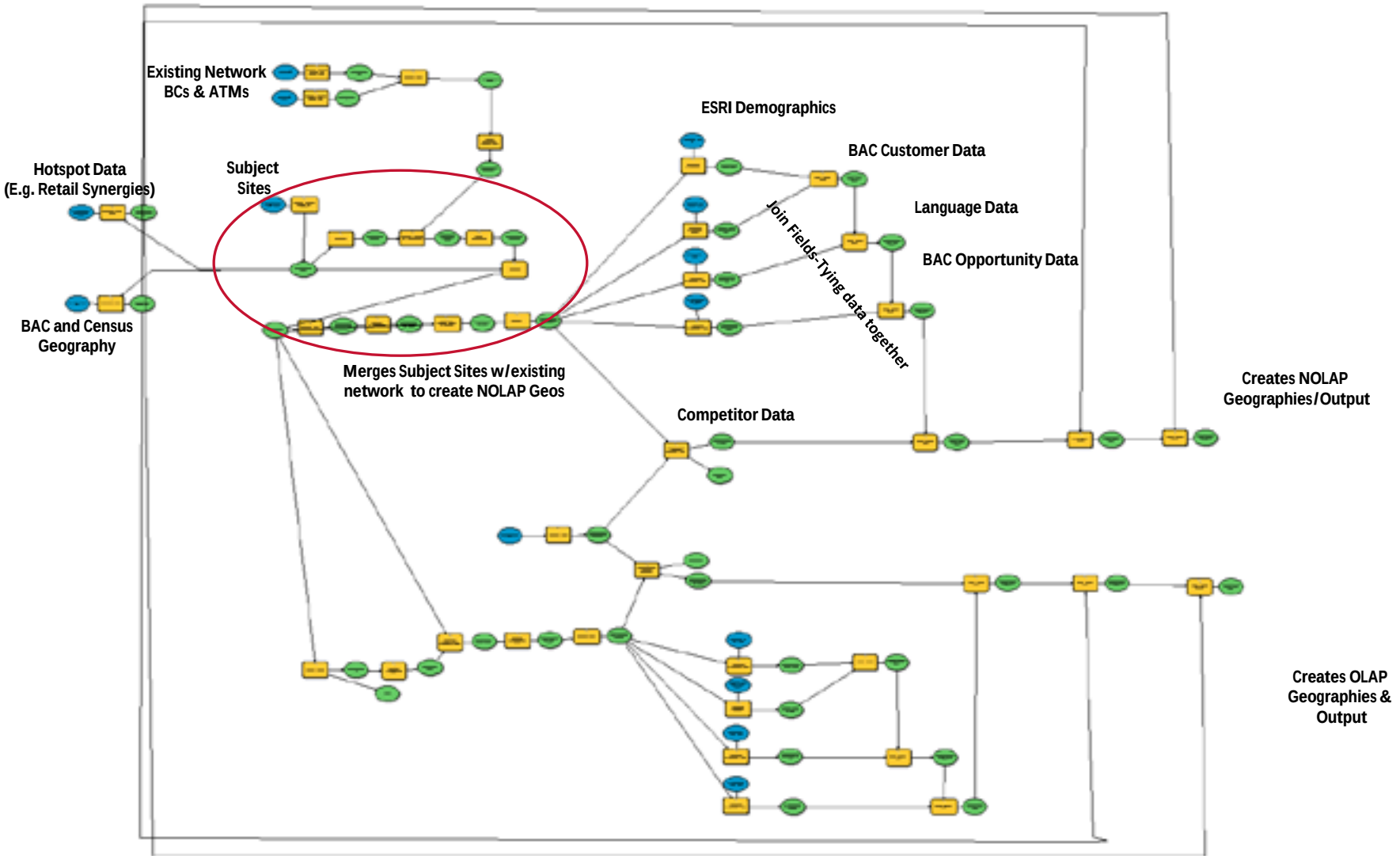




Comparables Data Pull Process



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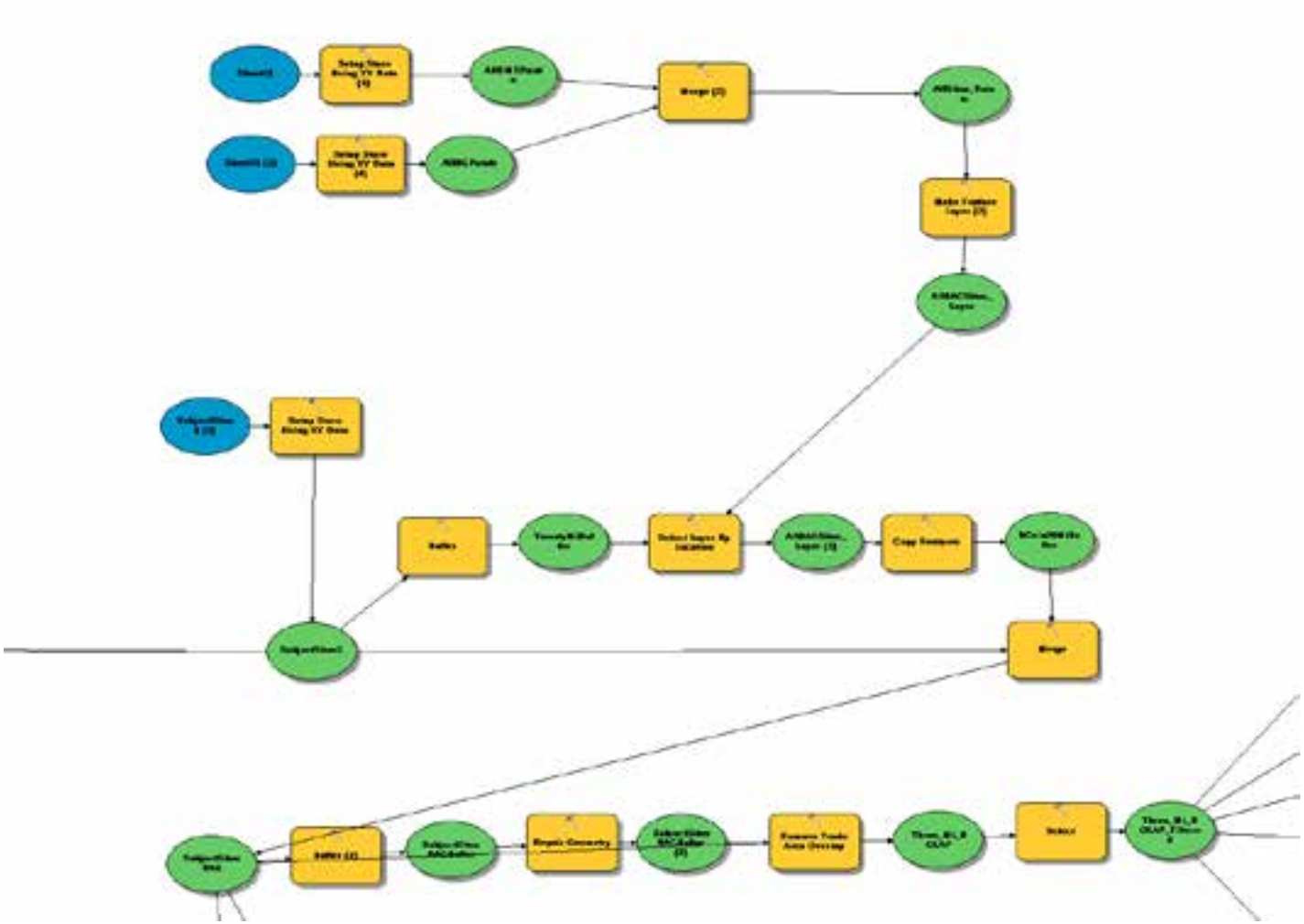
Zoom of Store Setup Process



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