



Insurance-Canada.ca

Predictive GeoAnalytics in Insurance

**A WEBINAR BROUGHT TO YOU BY:
PITNEY BOWES SOFTWARE**

December 6, 2012

“Predictive GeoAnalytics”

- Speaker: Berkley Charlton, Global Portfolio Director in Customer Data & Location Intelligence, Pitney Bowes Software
- David Crozier, Managing Director, .bcc Consulting Services
- Sponsor: Pitney Bowes Software
- Moderator: Doug Grant, Insurance-Canada.ca
- Technical Moderator: Joe Golobic, Insurance-Canada.ca

“Predictive GeoAnalytics”

David Crozier

- Managing Director, .bcc Consulting Services

Berkley Charlton

- Global Portfolio Director in Customer Data & Location Intelligence, Pitney Bowes Software

Predictive Geoanalytics In Insurance

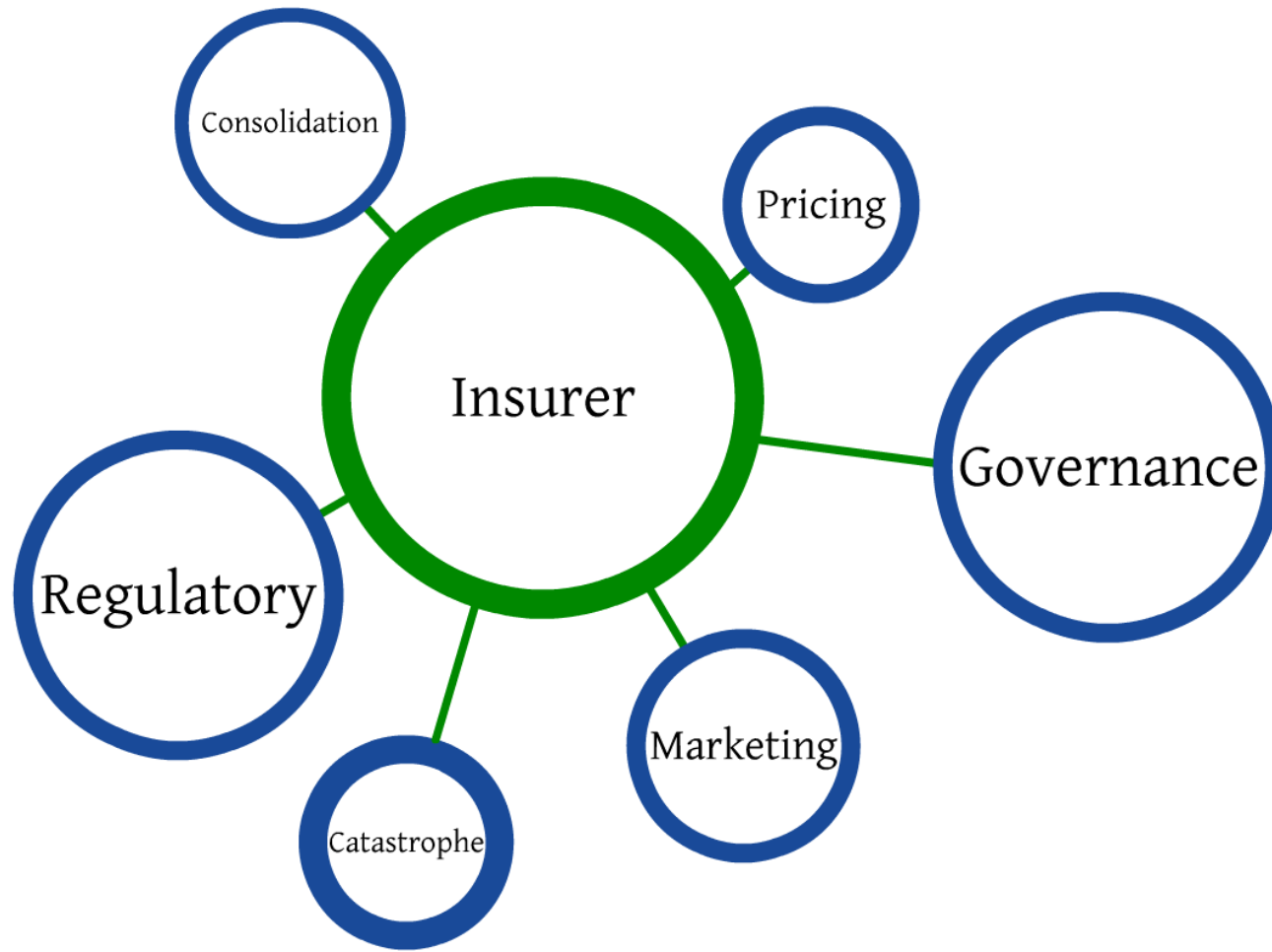
Agenda

- 1 Industry Overview and Analysis
- 2 Data Quality, Enrichment & Geocoding
- 3 Predictive GeoAnalytics and Real-Time Risk Aggregation
- 4 Q & A



Industry Overview and Analysis

Insurers face multiple challenges



Regulatory

- OSFI guidelines
 - Role of Board of Directors is changing
 - Onus on management to be proactive
- Canada-wide versus specified peril models
 - Effect of catastrophic risk aggregation
 - Need for dynamic modelling
- Own risk self assessment/Solvency II
- Governance
 - Enterprise risk management and mitigation
 - Adequacy of processes and reporting
 - Audit

Competitive Forces

- Business development
 - Ease of doing business
 - Point-of-underwriting accuracy
 - Engaged and accurate claim service
 - Clarity of communication (appetite, underwriting, adjustment)
- Consolidation
 - Portfolio management
 - Dynamic book scenarios
 - Accurate prediction of book combinations

Competitive Forces

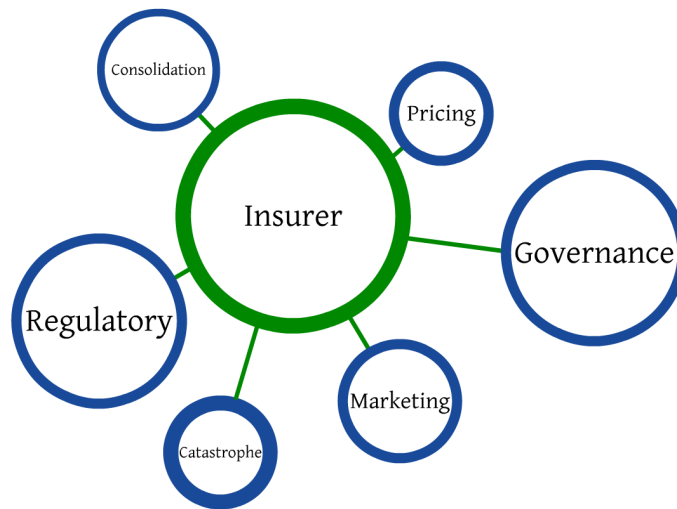
- Pricing
 - Ensuring adequate rate for risk
 - Price optimization
 - Impact of urbanization and customer demographics
 - Guard against anti-selection
 - Ensure compliance with filed rates

Catastrophe Management

- Aggregation of risk
- Pre-catastrophe risk mitigation and planning
- Post-catastrophe response
- Clarity, accuracy and timeliness of communication
 - Pre-catastrophe: Regulators, stakeholders
 - Post-catastrophe: Media, customers, regulators, stakeholders, investment community

Predictive GeoAnalytics

- A critical component of the underwriting, claim and risk management processes, predictive geoanalytics helps insurers address a number of business challenges in a comprehensive, cohesive and cost effective manner that enhances efficiency, service and the customer experience.



Predictive GeoAnalytics In Insurance

Agenda

- 1 Industry Overview and Analysis
- 2 Data Quality, Enrichment & Geocoding
- 3 Predictive GeoAnalytics and its Roll in Risk Aggregation
- 4 Q & A



Data Quality, Data Enrichment and Geocoding

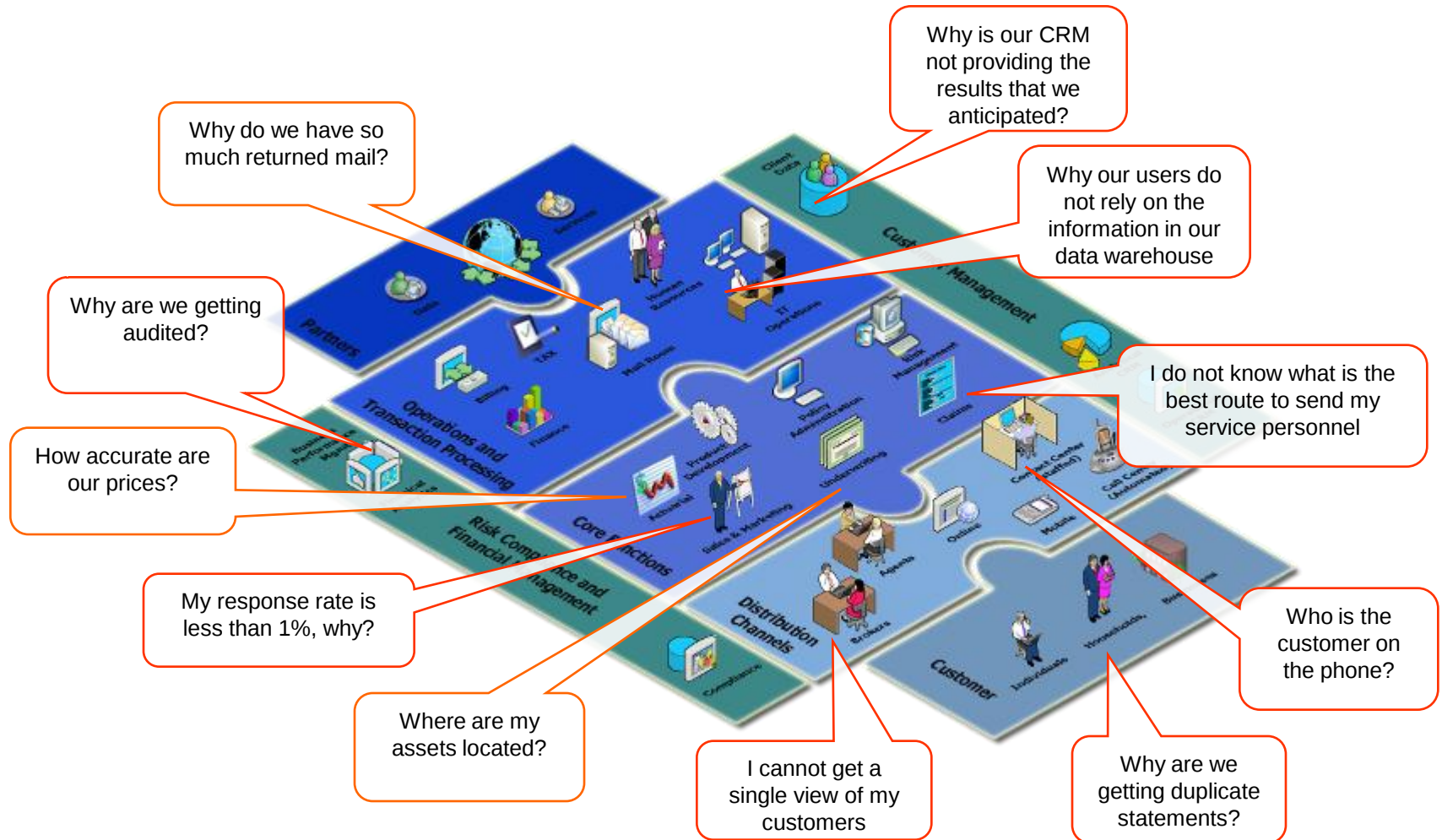
Business Data Challenges

» BAD DATA BEHAVES LIKE A VIRUS

Star



Bad Data Can Affect Every Department in an Organization



Data Challenges

Example of Data Quality Issues: A Simple Table

Matching
Records

Incorrect
addresses

Non Standard
formats

Name	Address	City	State	Zip	Phone	Email
Bob Williams	36 Jones Avenue	Newton	MA	02106	617 555 0000	bob.williams@yahoo.com
Robert Williams	36 Jones Av.		MA	02106	617555000	
Burkes, Mike and Ilda	38 Jones av.	Nweton	MA	02106	617-532-9550	mburkes@gmail.com
Jason Bourne, Bourne & Cie.	76 East 51 st	Newton	MA		617-536-5480	6175541329
...	...	...	...	...	...	...

Multiple Names

Mixed business
and contact
names

Typos

Mis-fielded
data

Missing Data

Data Challenges

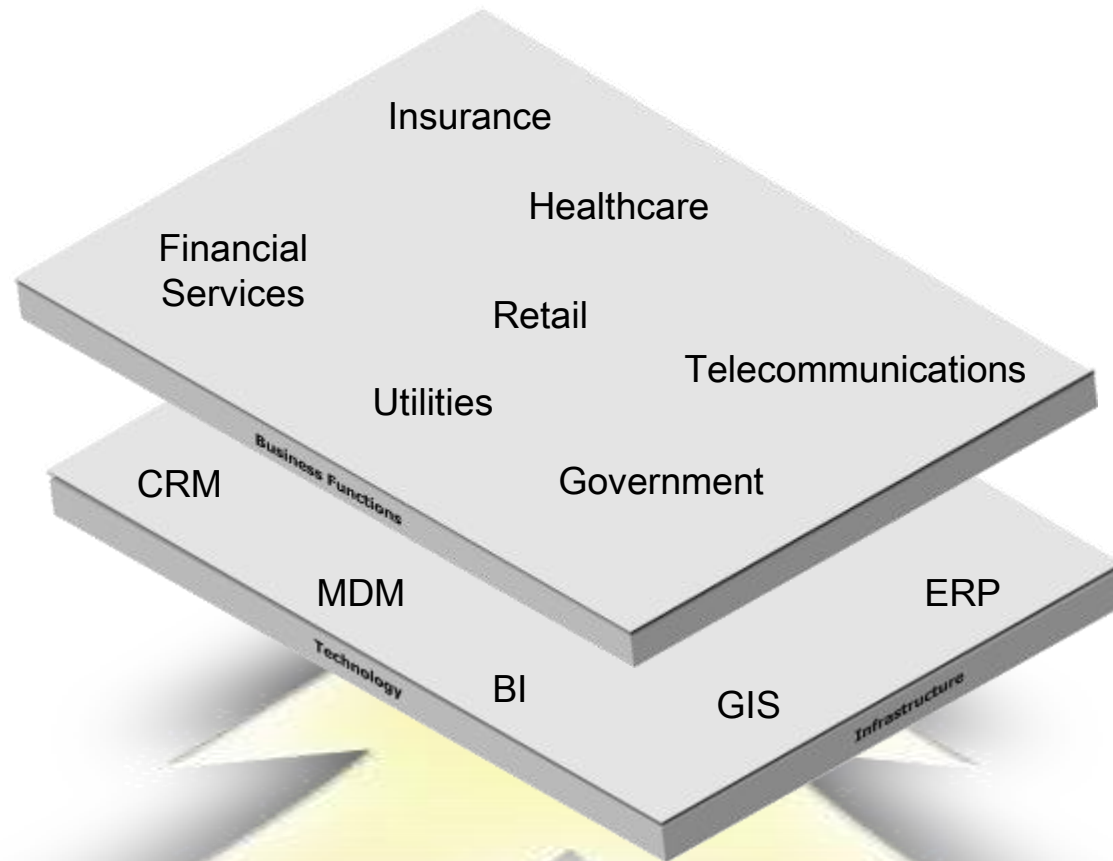
The image illustrates a data challenge in a call center environment. Two overlapping web browser windows display customer information. The front window shows data for **ROBERT SMITH**, and the back window shows data for **BOB SMITH**. Both customers have identical personal details (First Name, Last Name, Address, City, ZIP Code, Phone Number) but different policy amounts (Auto Policy, Home Policy, Boat Policy, Life Policy). A call center agent is shown on the right, with a callout bubble asking, "Who is the customer on the phone?"

BOB SMITH	
First Name:	Bob
Last Name:	Smith
Address:	123 W. Main St.
City:	Columbia
ZIP Code:	29223
Phone Number:	803 419 6656
Auto Policy:	\$750

ROBERT SMITH	
First Name:	Robert
Last Name:	Smith
Address:	123 W. Main St.
City:	Columbia
ZIP Code:	29223
Phone Number:	803 419 6656
Auto Policy:	\$1500
Home Policy:	\$2500
Boat Policy:	\$500
Life Policy:	\$3000

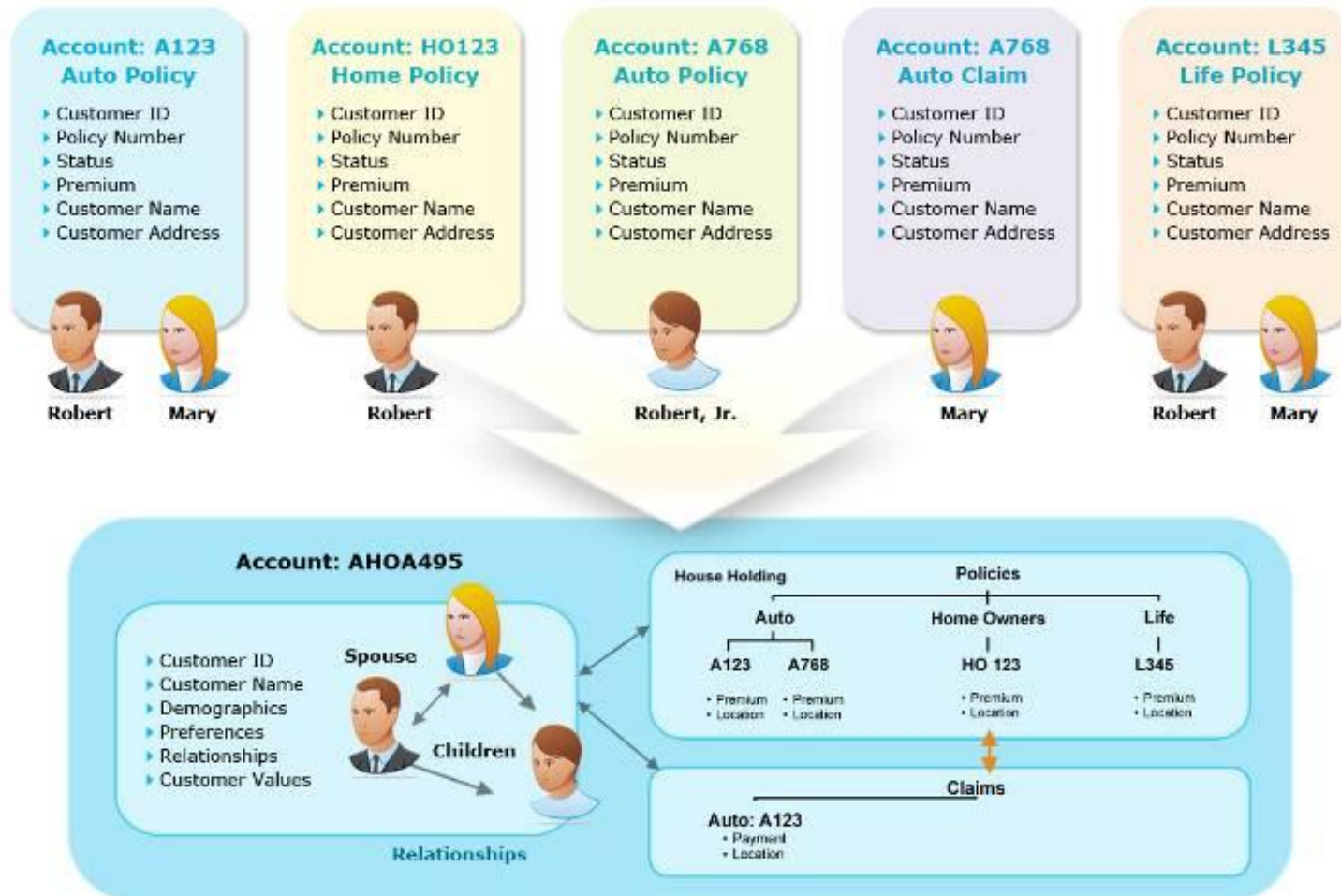
Who is the customer on the phone?

Data Management is the foundation for -



Spectrum is the Pitney Software Foundation for Business Processes

Integrate customer information into one single view



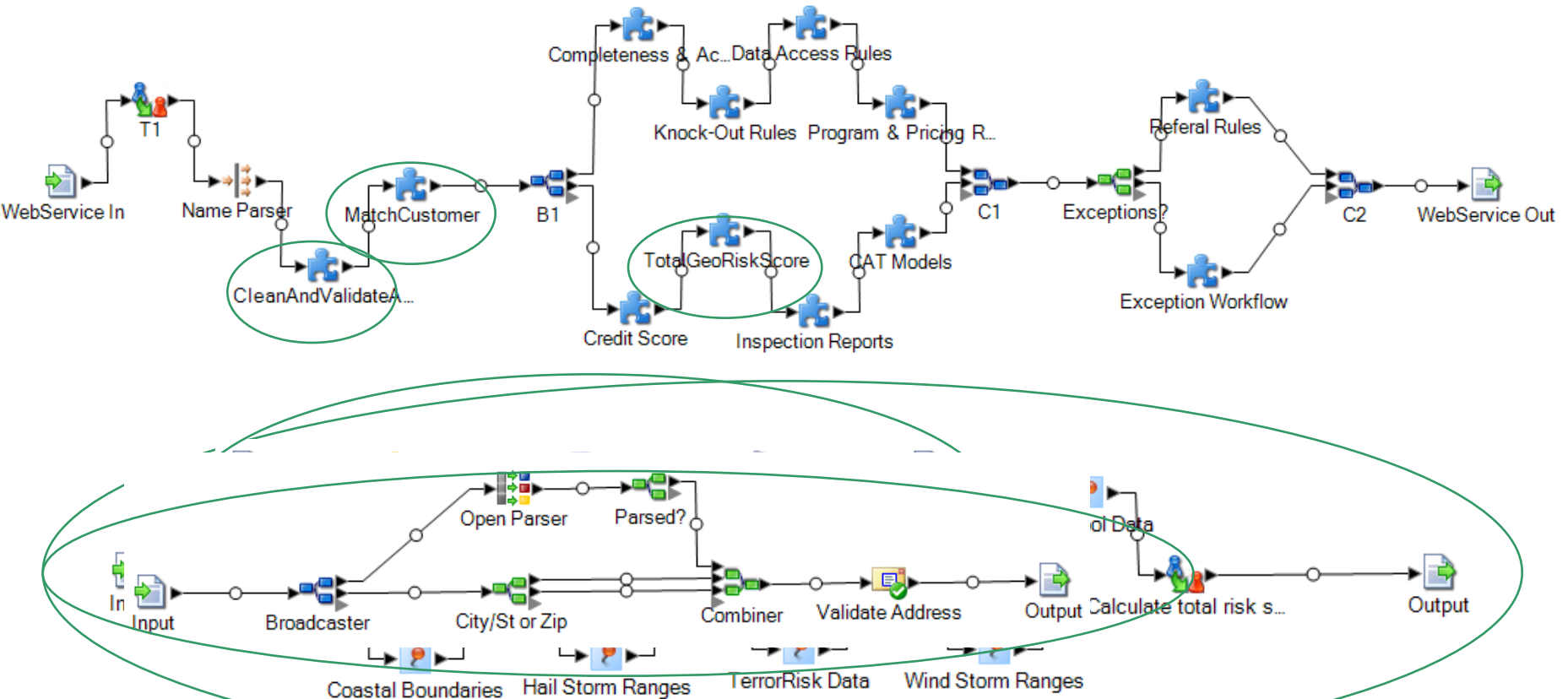
Spectrum is the Pitney Bowes Software Foundation for Business Processes

Conceptual View of Underwriting



Spectrum is the Pitney Bowes Software Foundation for Business Processes

Underwriting Process Flow

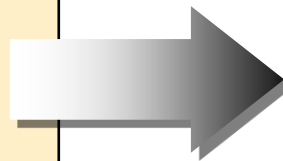


Geocoding – Definition

- Geocoding is the process that assigns a latitude/longitude coordinate to an address or named location
- Once a latitude/longitude coordinate is assigned, the geocoded address can be displayed on a map or used in a geographic search or calculation.

INPUT:

26 Wellington East
Suite 500, Toronto ON

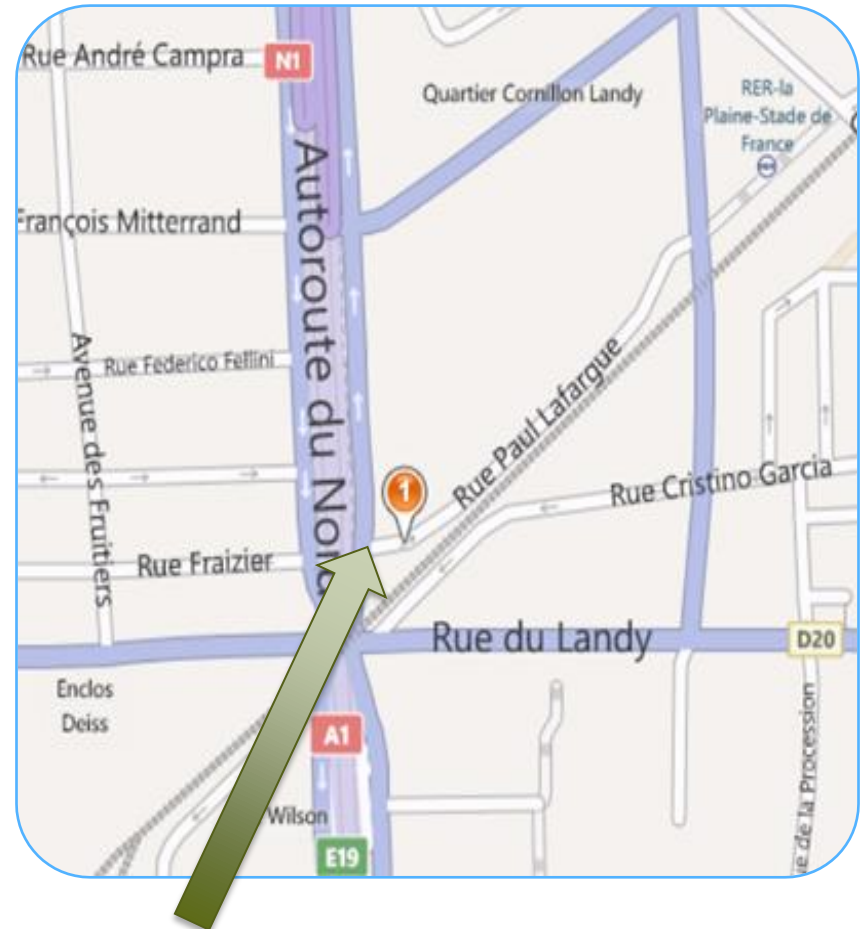


OUTPUT:

26 Wellington St E #500,
Toronto, ON M5E 1S2
-79.376003, 43.648152

Components of Geocoding

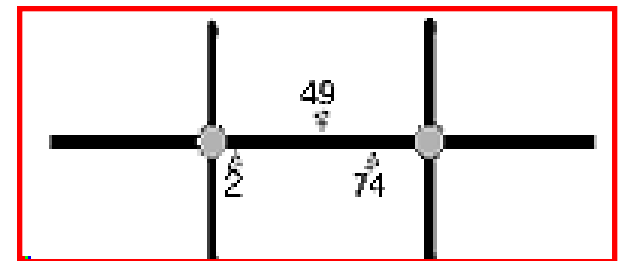
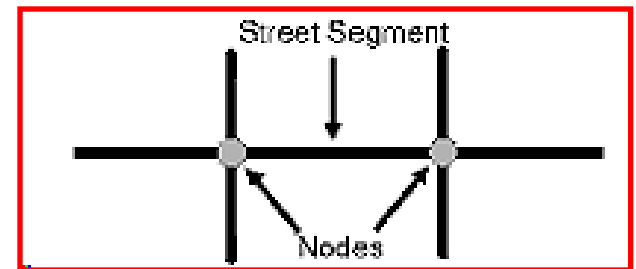
- Standardize Address according to country rules
- Cleanse Address
- Verify / Validate Address
- Match to Street Data / Local Geography
- Return Detailed Address and Location Codes for additional decision making



**18, rue Paul-Lefarge, 9204
Paris-La Defense 10**

Geocoding – Address Interpolation

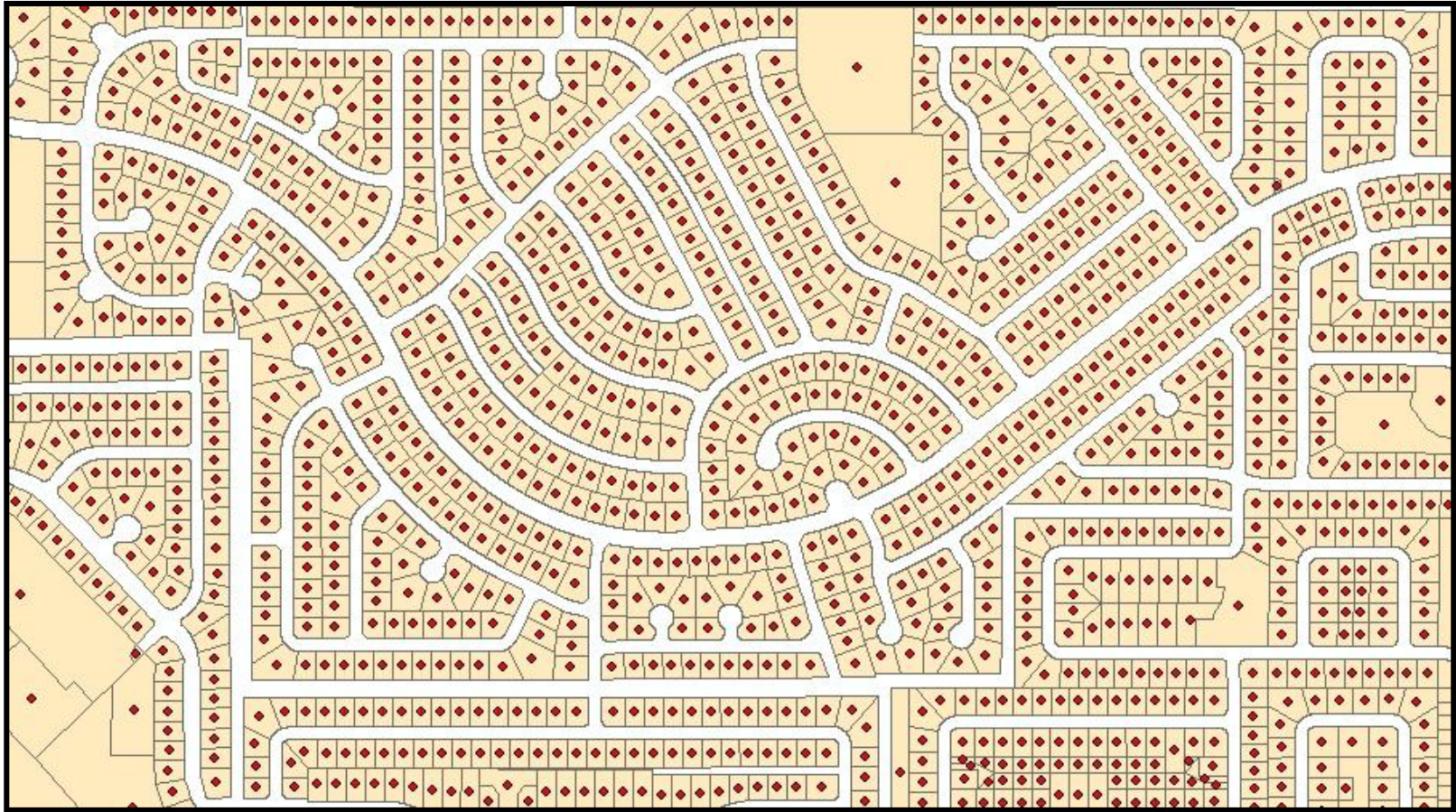
- Addresses are geocoded using street network reference databases
- Files contain street segments which are defined by the
 - street name
 - address ranges on each side of the street
 - boundary nodes (intersections)
- Geocoding approximates the location of an address based on
 - the length of the segment
 - address range assigned to the segment



An address of 49 Main Street is halfway into the address range, so it is located half way along the segment on the odd side

Point-Level Geocoding

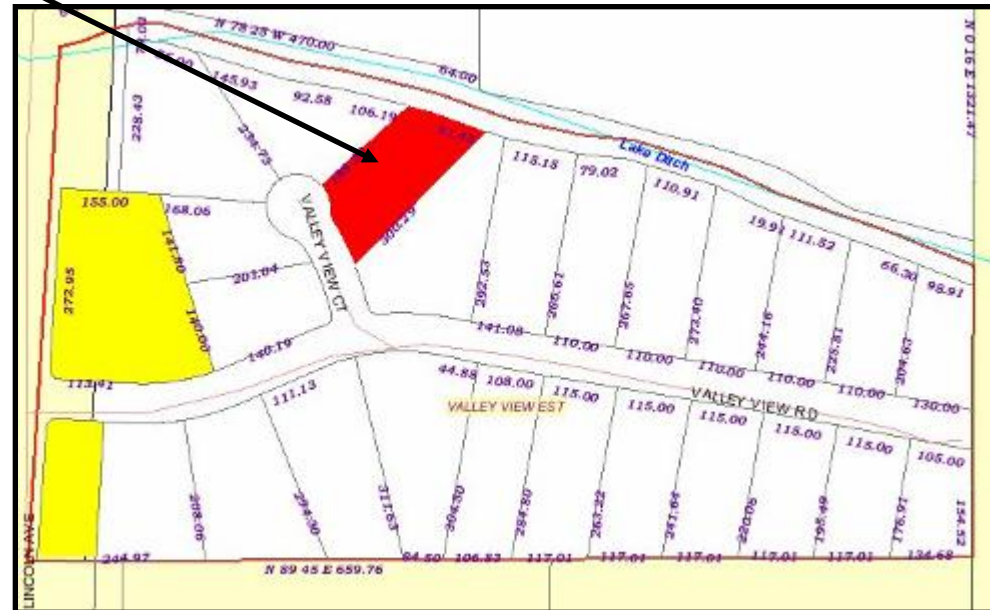
The Most Precise Location



Geocoding – Point Level

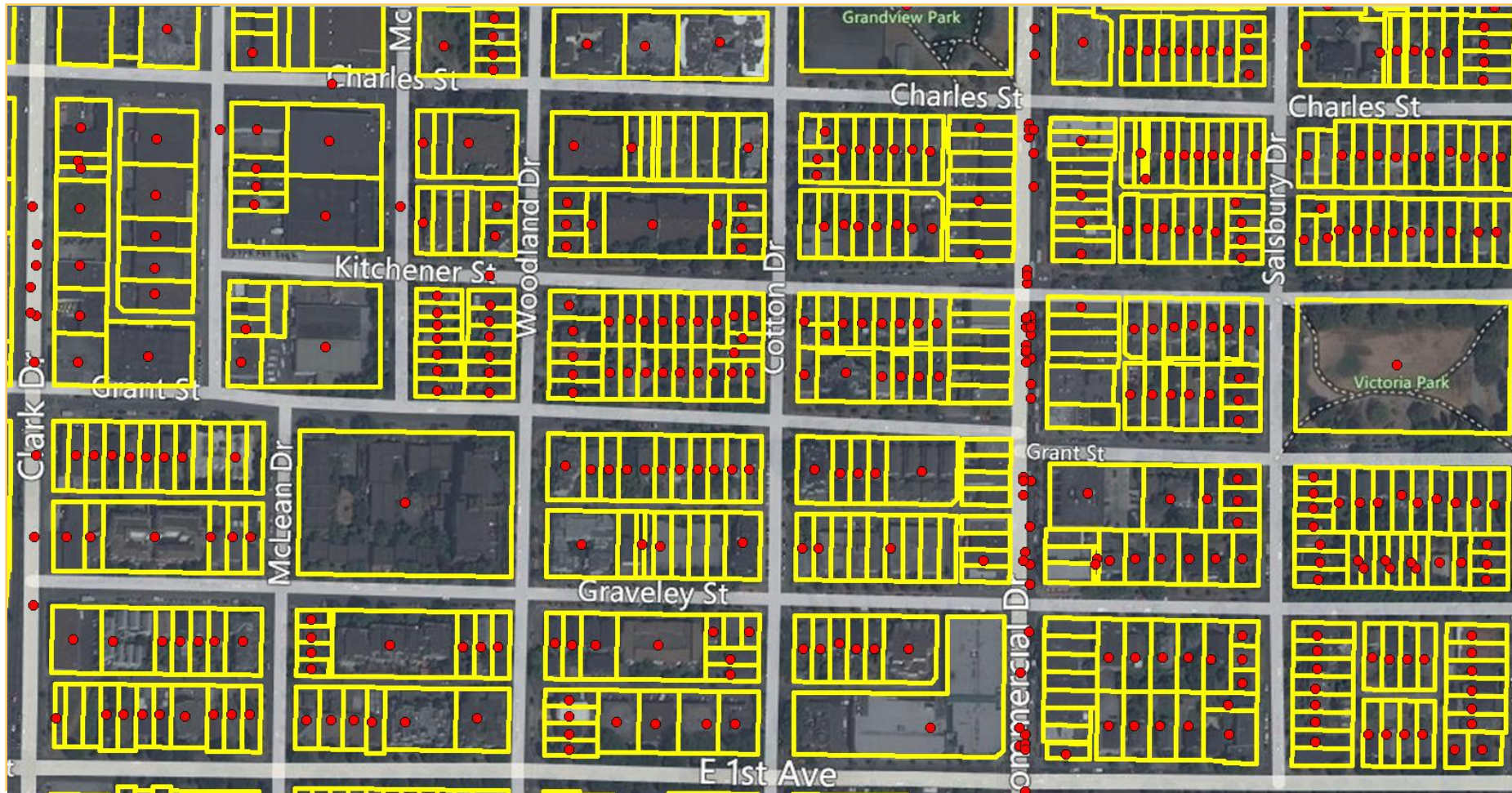
Point-Level Geocoding

- Address is cleansed and standardized
- Address is matched to the location of the:
 - Building Rooftop
 - Parcel Centroid
- Positional Accuracy is exact

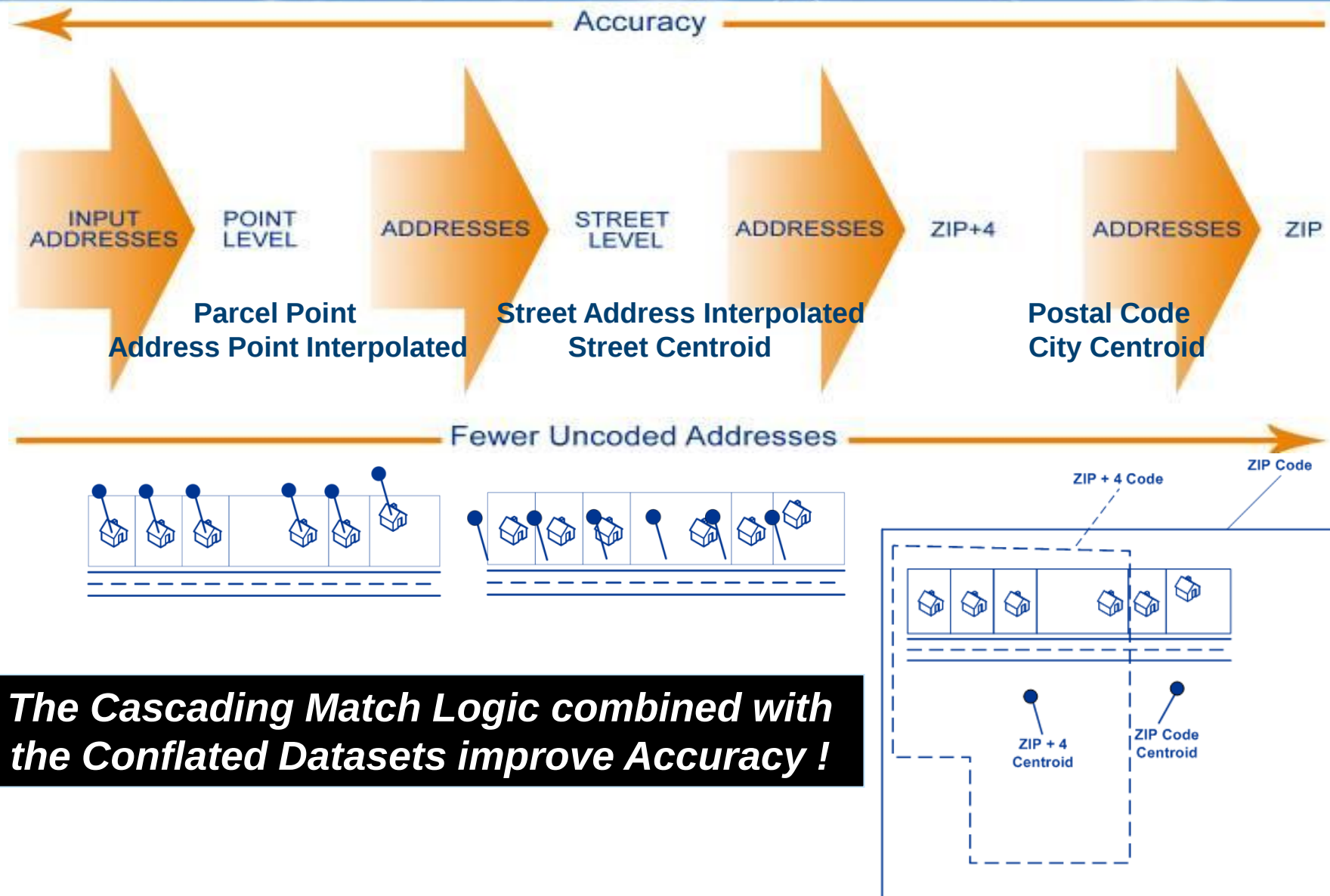


Canada Rooftop Geocoding - Vancouver

Visual depiction of Canadian rooftop geocoding data



Geocoding Coverage and Cascading Match Logic



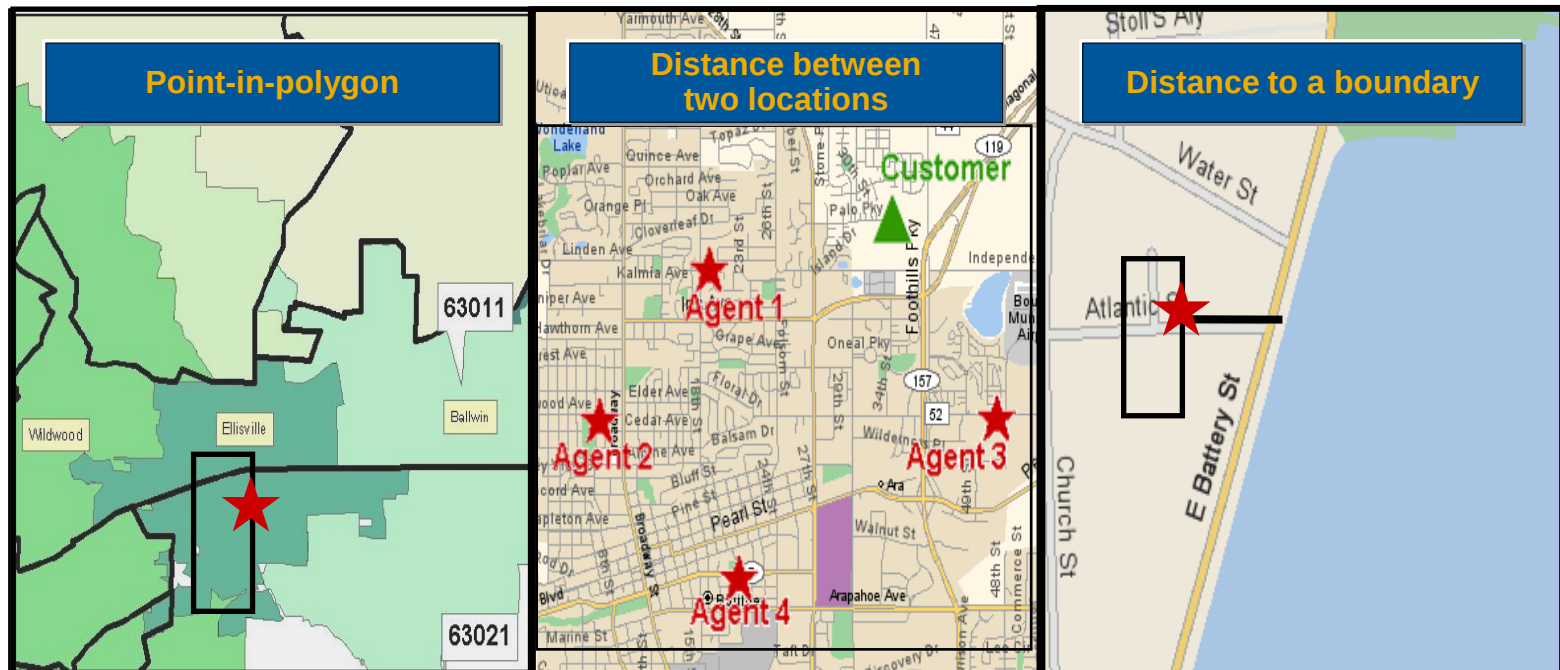
Pitney Bowes Software – Expertise in Canadian Geocoding

- Integrates superior address cleansing with geocoding process
- Multiple levels of geocoding
 - Parcel Centroid
 - Street Address
 - Postal Codes (LDU and FSA)
 - Street Segment
 - Place Name / City Centroid
 - Intersection
- Quarterly Updates combining Street Data, Parcel Data and SERP-based Address range cleansing and verification
- Full Canadian Coverage
- Wide Platform Support
- High-speed Batch / Interactive / Web Services
- Combine with Real-time Geographic Analysis for Operational Effectiveness

Why Geocode?

Geocoding allows operational spatial decisions to be made

- What's the nearest . . . ?
- What is this point inside / close to?
- What is the value / risk / danger . . . ?



Predictive Geoanalytics In Insurance

Agenda

- 1 Industry Overview and Analysis
- 2 Data Quality, Enrichment & Geocoding
- 3 Predictive GeoAnalytics and Real-Time Risk Aggregation
- 4 Q & A



Predictive GeoAnalytics and Real-Time Risk Aggregation

Risk Management is Evolving



Underwriting

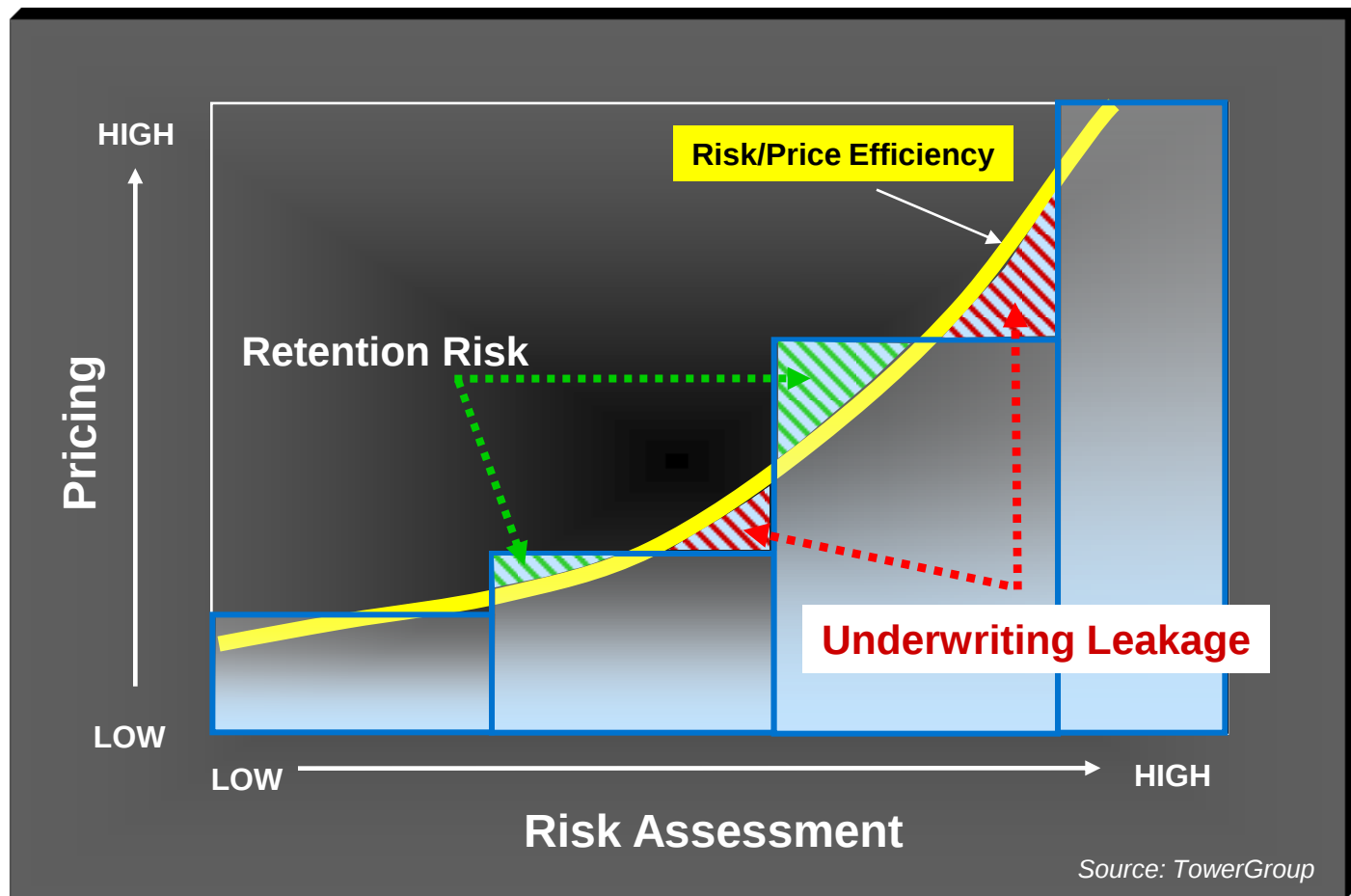


Underlying Challenge:

High-End business and home-owner growth in high risk areas:
Flood Areas- Brush Fires - Mudslides - Earthquake - Terrorism

Underwriting Business Focus

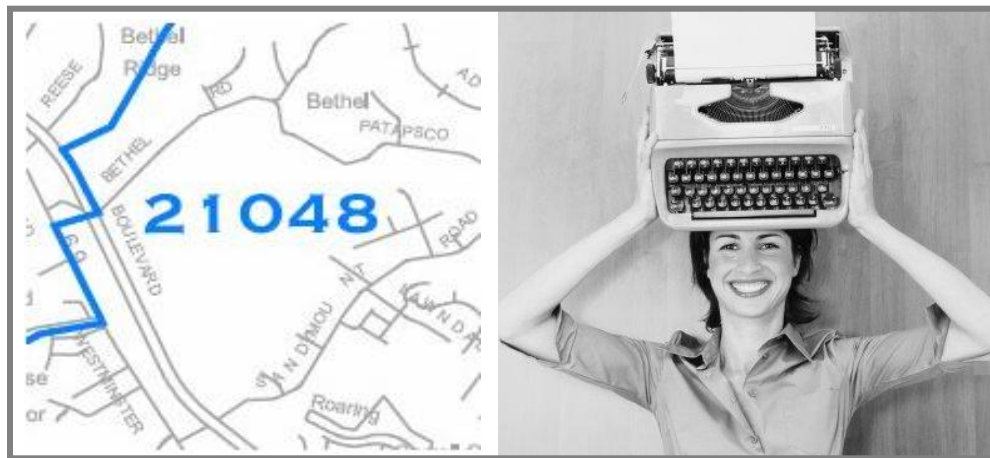
- Increase efficiency through automation and Straight Through Processing
- Reduce “Underwriting Leakage” and “Retention Risk”



Integrating Catastrophe Management and Risk Aggregation into the Underwriting Process

Catastrophe Management – Historical Perspective

- Geocoding and aggregation of underwriting risks was at best a back-end review.
- Rating homeowner policies and assessing geographic hazards was typically completed by Postal Code rating tables and physical inspections.
- All Policy concentration and customer segmentation were evaluated based on a county and Postal Code level



Geocoding and Predictive GeoAnalytics help Satisfy AM Best Guidelines

Keys to Strong Catastrophe Risk Management

Data Quality

1. Senior management's firm commitment
2. Proper coding of loss exposure
3. All properties are geocoded
4. Auditing of exposure coding
5. Most current Insurance to Value analysis

Monitoring Exposure

1. One or more catastrophe modeling tools are used
2. Aggregate loss exposure is monitored
3. Potential loss scenarios are considered in addition to modeled output
4. Monitoring of catastrophe exposure is a frequent and consistent process

Controls

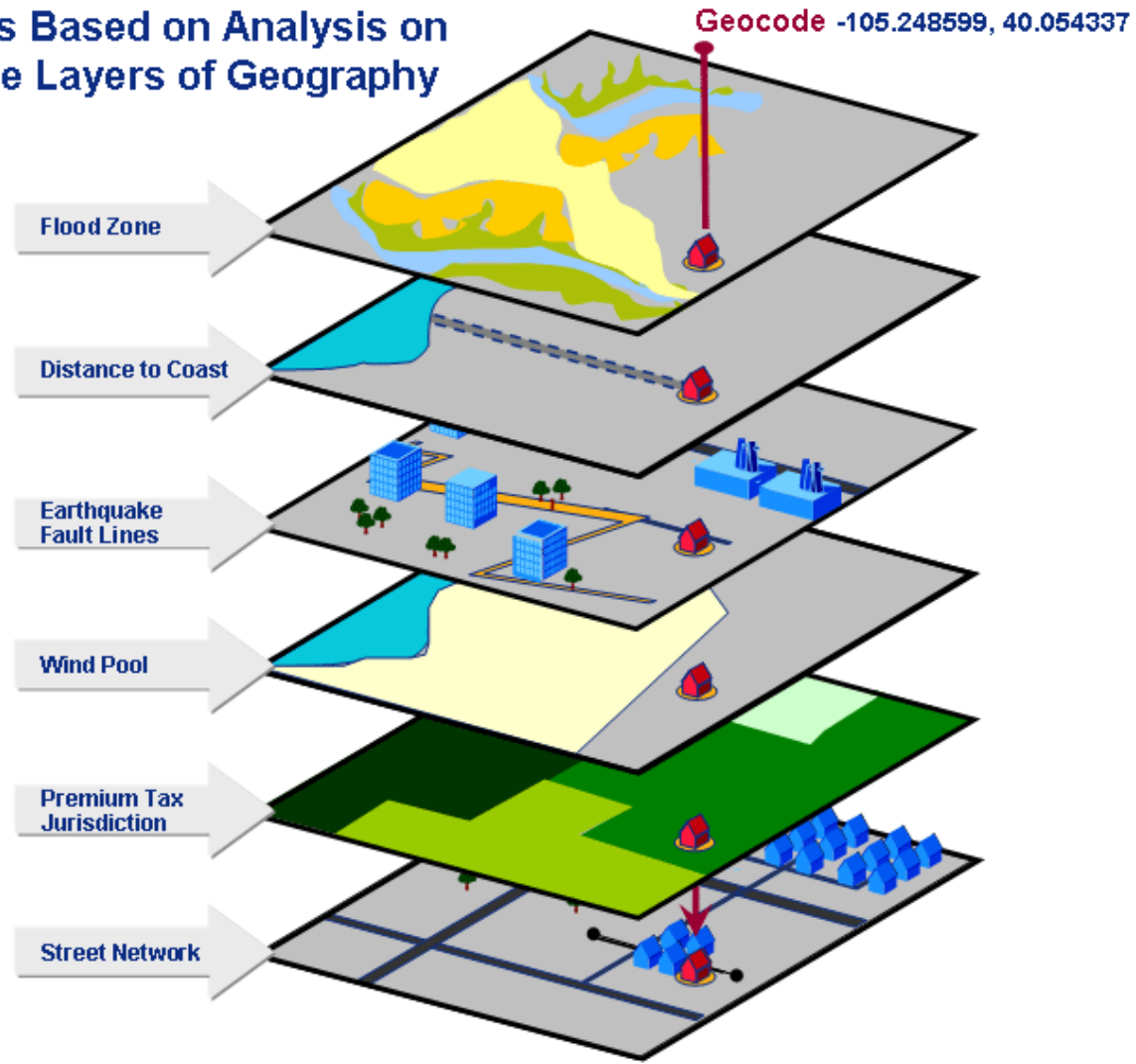
1. Specific aggregate limits are established using a reasonable and defensible basis
2. Reinsurance program is based on an assessment of all available tools to ensure appropriate protection
3. Catastrophe management is integrated into the underwriting process
4. Management establishes levels of acceptable exposure and clearly articulates the company's catastrophe risk-management program and how effective controls are ensured

- I. Geocoding all properties to ensure data quality
- II. Monitoring aggregate loss exposure
- III. Consideration of loss scenarios as well as modeled output
- IV. Frequent and consistent monitoring of catastrophe exposure

<http://www.ambest.com/ratings/methodology/catastropherisk.pdf>

Geocoded Addresses can be Geographically Compared to Hazard Risks in Real Time

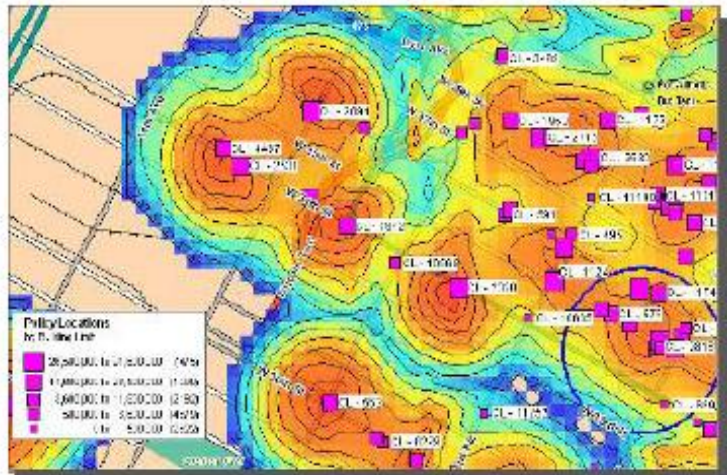
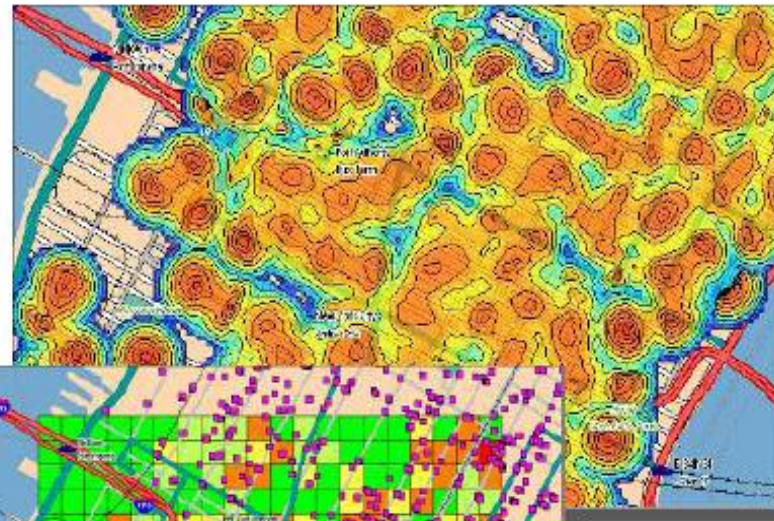
Results Based on Analysis on
Multiple Layers of Geography



Keys to Strong Catastrophe Risk Management

Aggregation Analyses & Implementation

Monitoring Accumulations



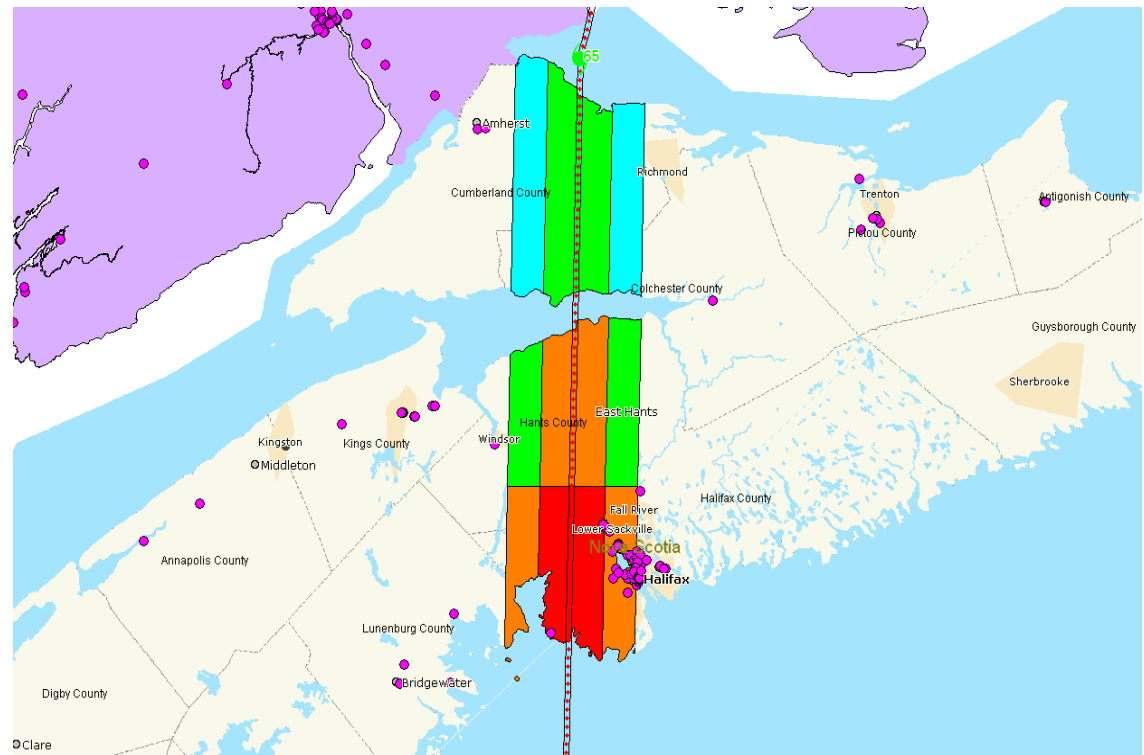
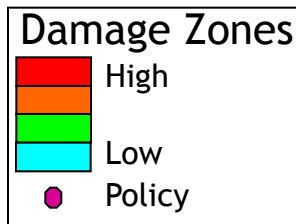
No Boundaries

Keys to Strong Catastrophe Risk Mgt

Aggregation Analyses & Implementation

Potential Loss Scenarios

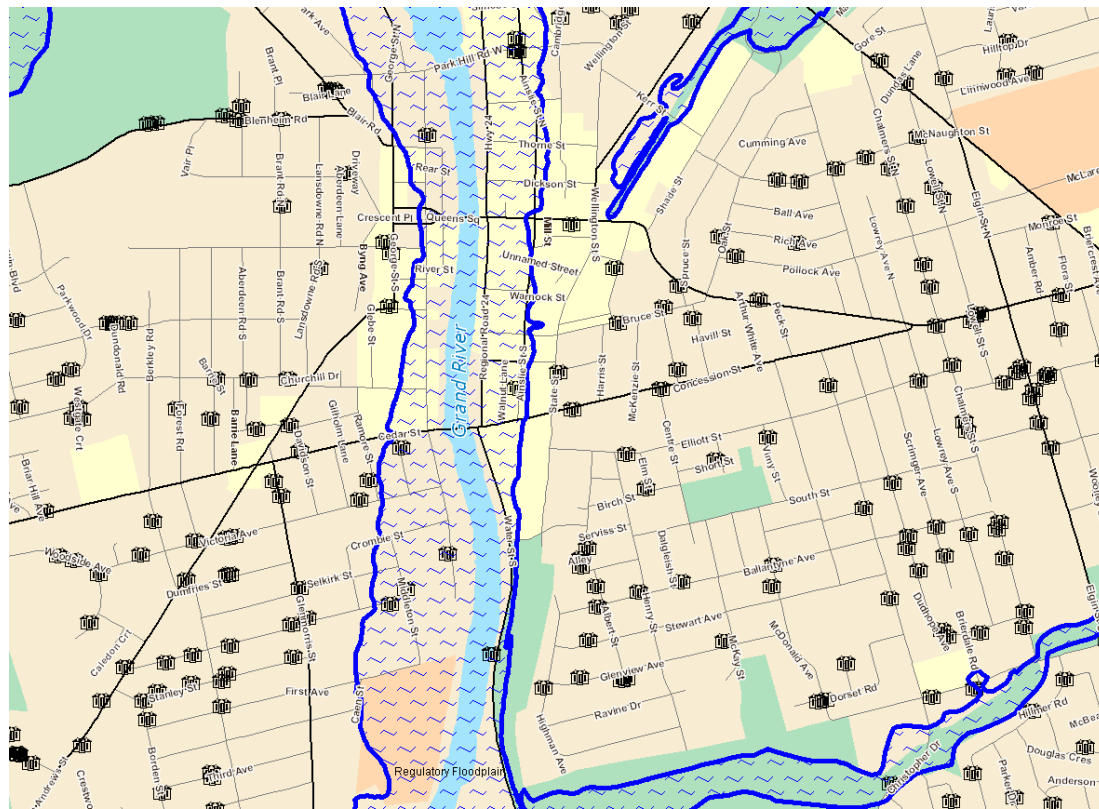
Path Hurricane
Juan – September
2003



Keys to Strong Catastrophe Risk Mgt.

Aggregation Analyses & Implementation

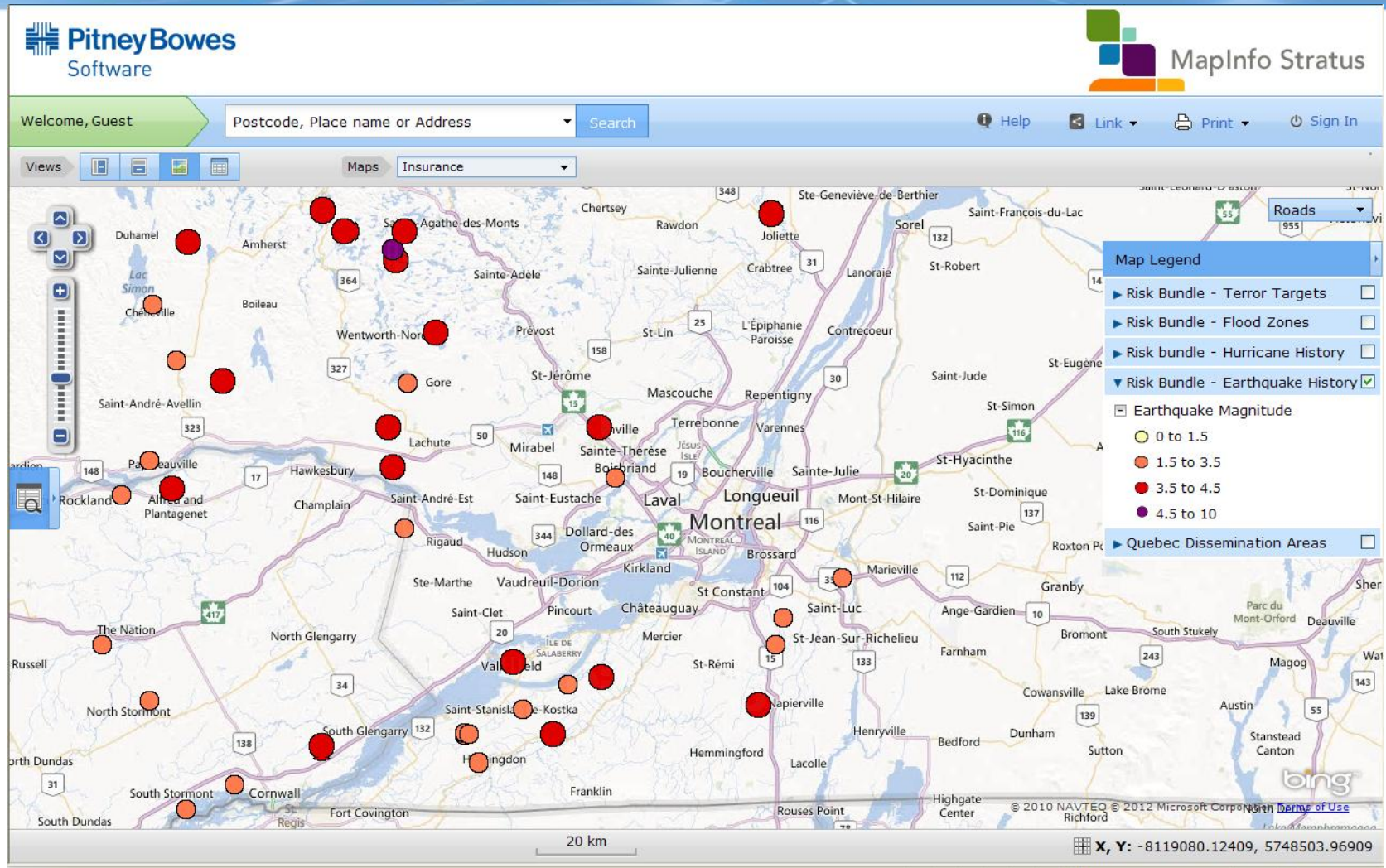
Potential Loss Scenarios



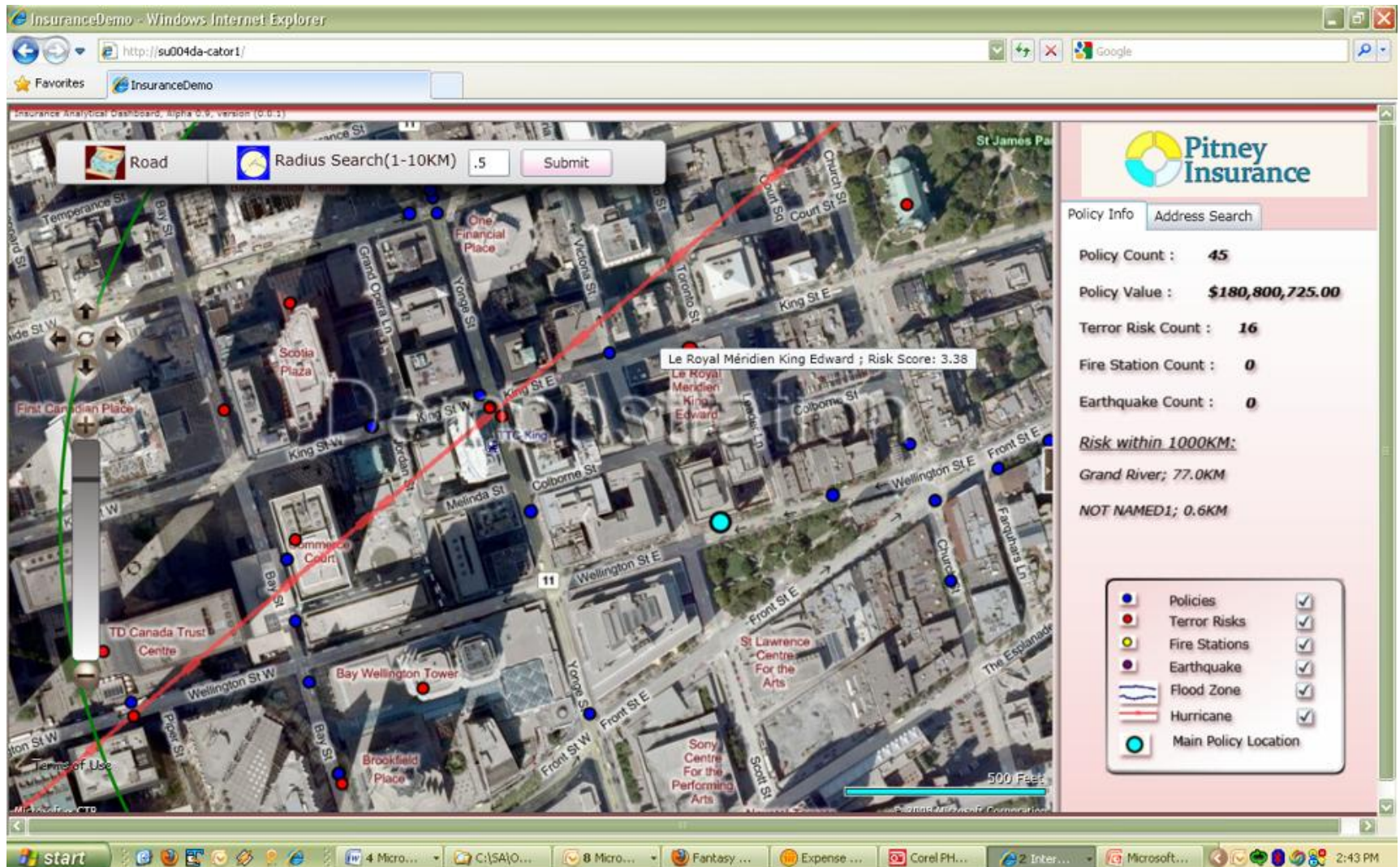
Grand
River
Floodplain

Cambridge
Ontario

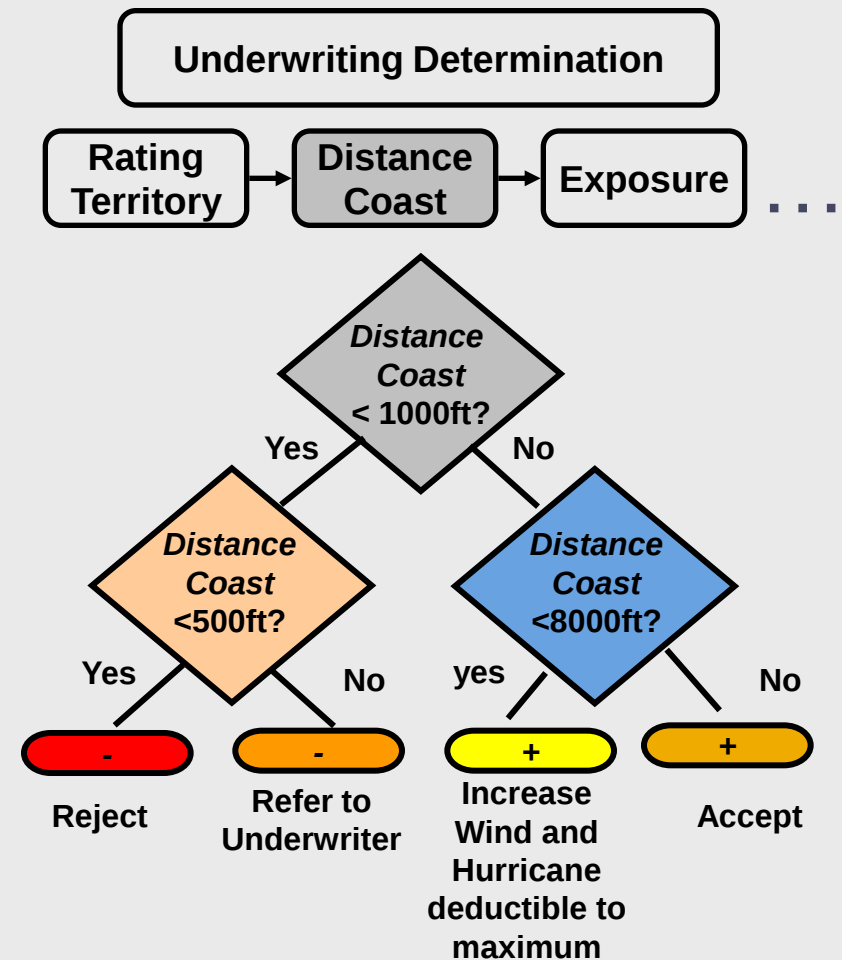
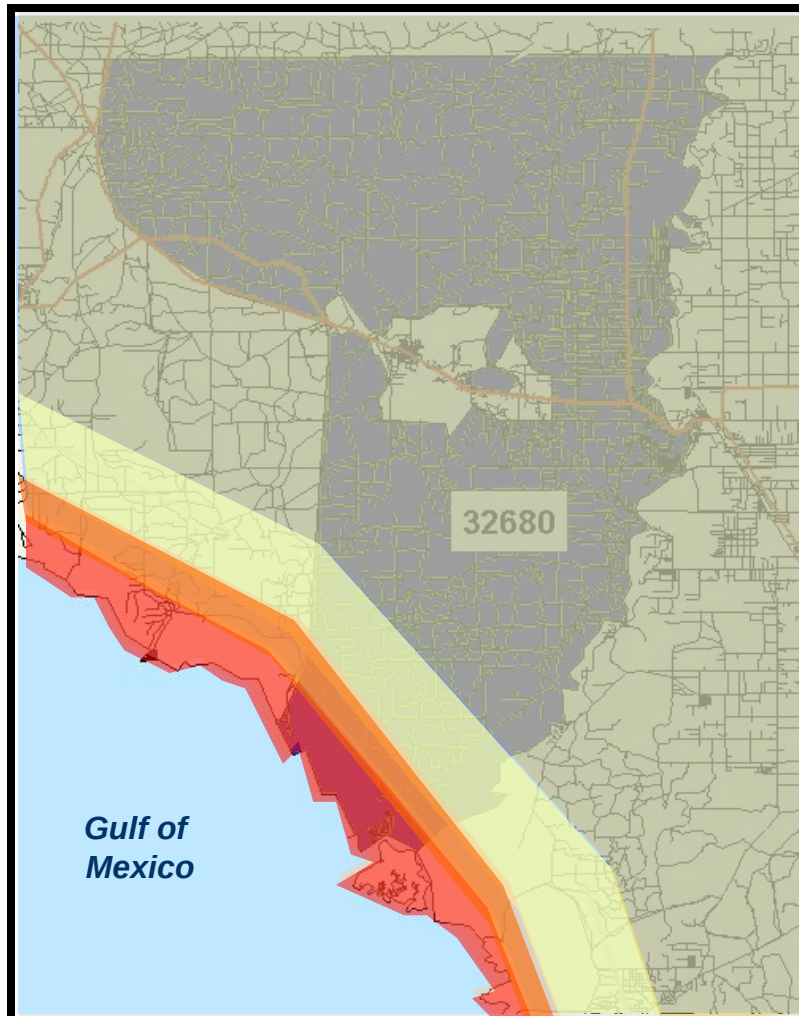
Canada Earthquake - Montreal



Canada Hurricane - Toronto



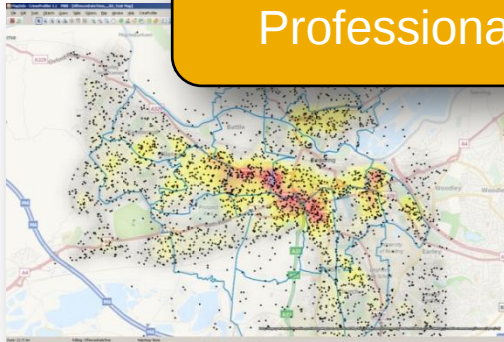
Coastal Underwriting Intelligence Example



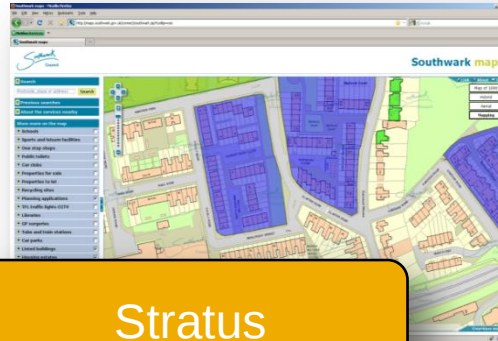
Pitney Bowes Software

The Enterprise Location Intelligence Suite

MapInfo
Professional



Stratus

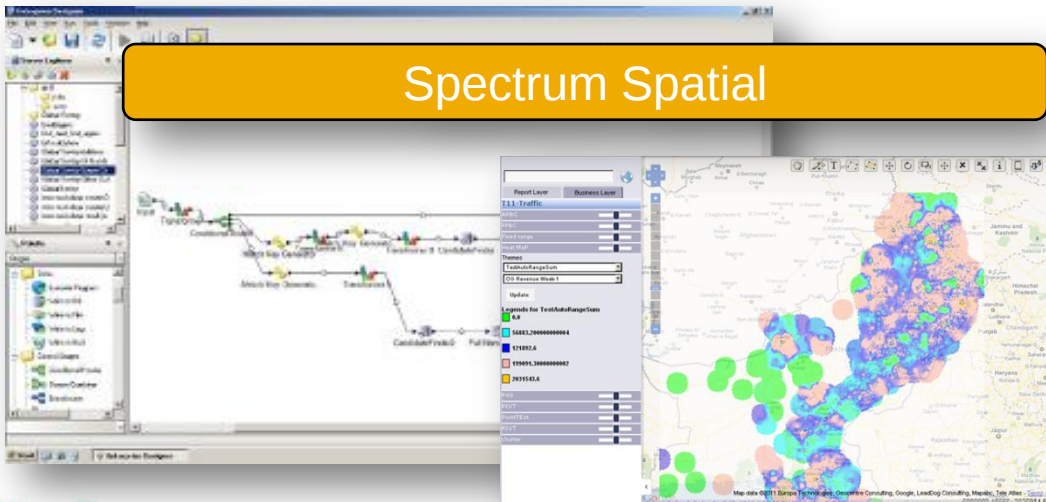


Custom
Application

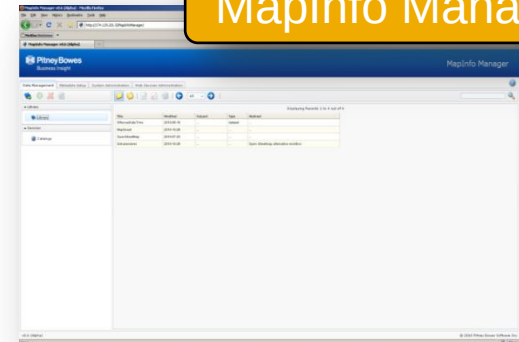


Services (OGC + SOAP + REST)

Spectrum Spatial



MapInfo Manager



Predictive Geoanalytics In Insurance

Agenda

- 1 Industry Overview and Analysis
- 2 Data Quality, Enrichment & Geocoding
- 3 Predictive GeoAnalytics and Real-Time Risk Aggregation
- 4 Q & A

Q & A

Thanks to our sponsor Pitney Bowes Software & our speakers , David Croizer and Berkley Charlton

For more Information contact

**800.268.3282
pbsoftware.canada.sales@pb.com**

Exit questions will ask if you would like a copy of the presentation or additional information.