



Insurance-Canada.ca

What's Your Risk? Improving Aggregate Risk Exposure

**A WEBINAR BROUGHT TO YOU BY:
PITNEY BOWES BUSINESS INSIGHT**

September 15, 2011

Issue: Managing Risk

Speakers:

- Sean Russell, Guy Carpenter
- David Crozier, TEIG
- Bill Sinn, PBBi

Sponsor: Pitney Bowes Business Insight

Moderator: Doug Grant, Insurance-Canada.ca

Technical Moderator: Joe Golobic, ParkLaneResources



Cat Management – Inside and Outside the Box



GUY CARPENTER



Sean Russell, FCAS, Managing Director

Agenda

- Global and Local Catastrophes
- Catastrophe Modeling
- Exposure Accumulation Beyond Modeling

Global Cat Losses



Japan: March 11, 2011

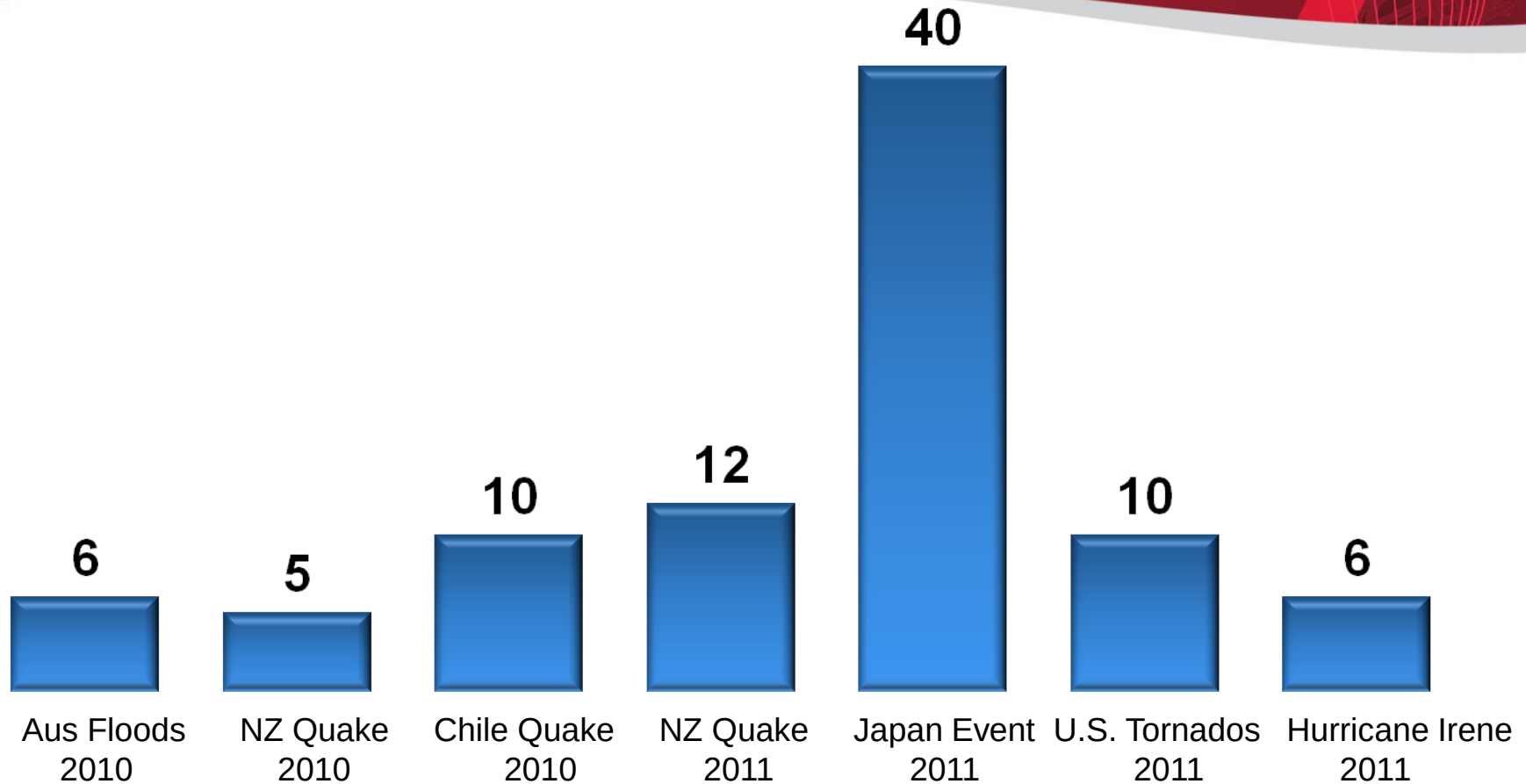
Global Cat Losses



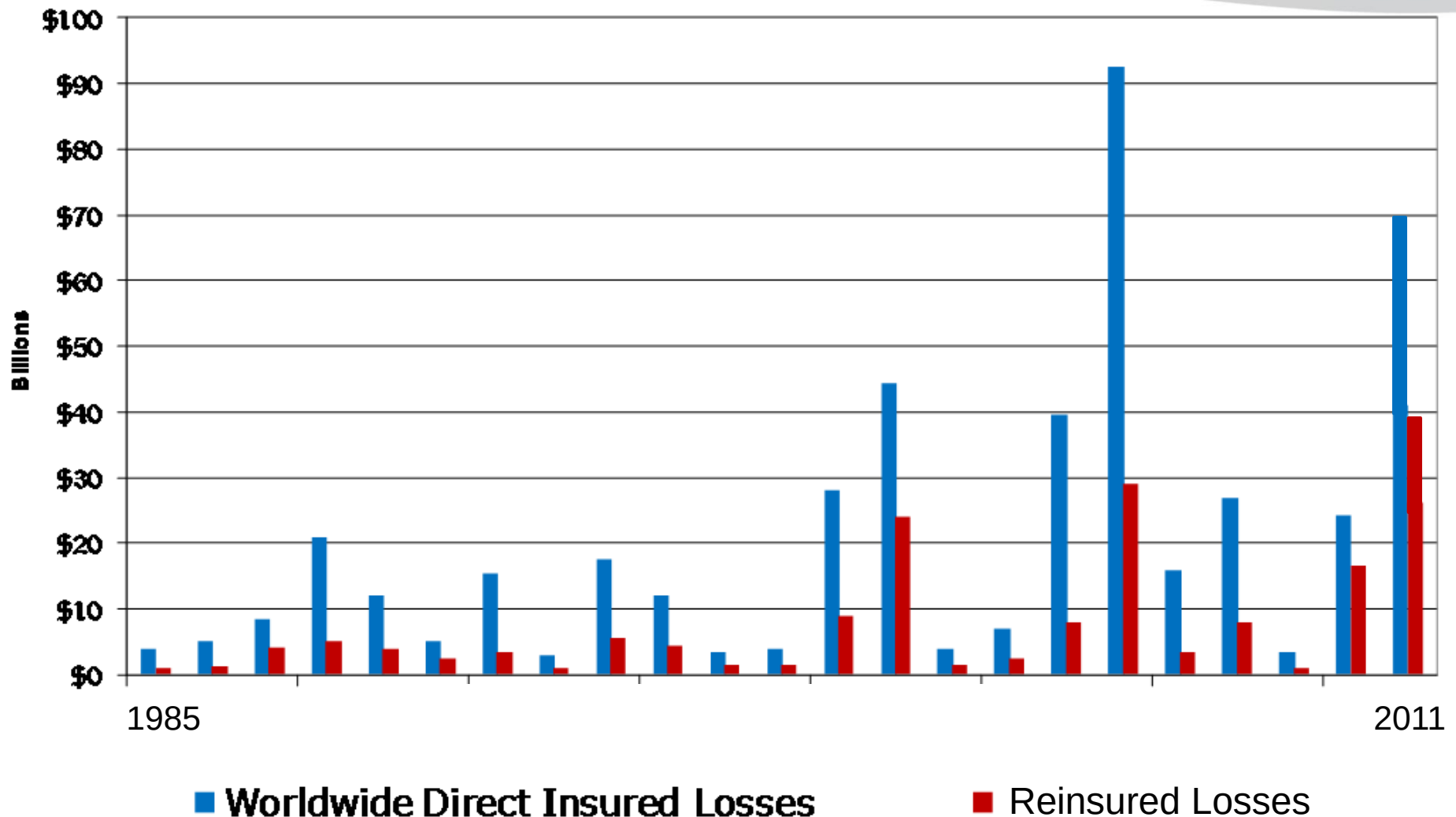
Japan: March 11, 2011

Recent Catastrophe Losses

(Billions)



Global Historical Catastrophe Losses



Local Catastrophes



Slave Lake: May 16, 2011

Local Catastrophes



Slave Lake: May 16, 2011

Local Catastrophes



Goderich: August 21, 2011

Local Catastrophes



Goderich: August 21, 2011

Local Catastrophes



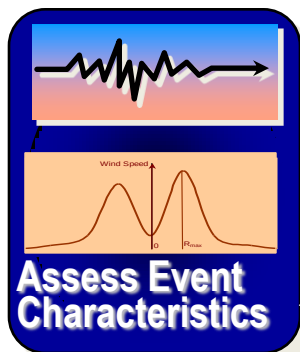
Goderich: August 21, 2011

Catastrophe Models – How they work

Hazard Module



Where?
How big?
How often?



How strong are the ground motions?
What is the windspeed?

Vulnerability Module



Where is the exposure?
What is its value?
What types of buildings?

Financial Module



How are the buildings damaged?

What financial implication to the insurer?
Effect of policy features?



Catastrophe Model Vendors

- Leading Software Companies



Catastrophe Models Available

Peril	Company/Vendor			
	AIR	RMS	EQECAT	APOTH
EQ Shake	✓	✓	✓	N/A
EQ Fire Following	✓	✓	✓	N/A
Hurricane	✓	✓	✓	N/A
Other Wind (Tornado/Hail)	✓	✓	✓	✓
<u>Winterstorm</u>	✓	✓	X	✓
Brushfire	✓	X	✓	N/A
Terrorism	✓	✓	✓	N/A
WC Earthquake	✓	✓	✓	N/A
✓ = Licensed & Available ✓ = In Testing Phase X = Unavailable ■ = Not Available in Canada				

Beyond Catastrophe Models

i-axs

Exposure Management

- Drill into Geographies down to Site level
- Detailed Profiles
- Modeled Average Annual Loss (AAL)
- Set and Monitor Thresholds

Accumulation Management

- Cluster Analyses
- Portfolio Accumulations
- Hazard Accumulations

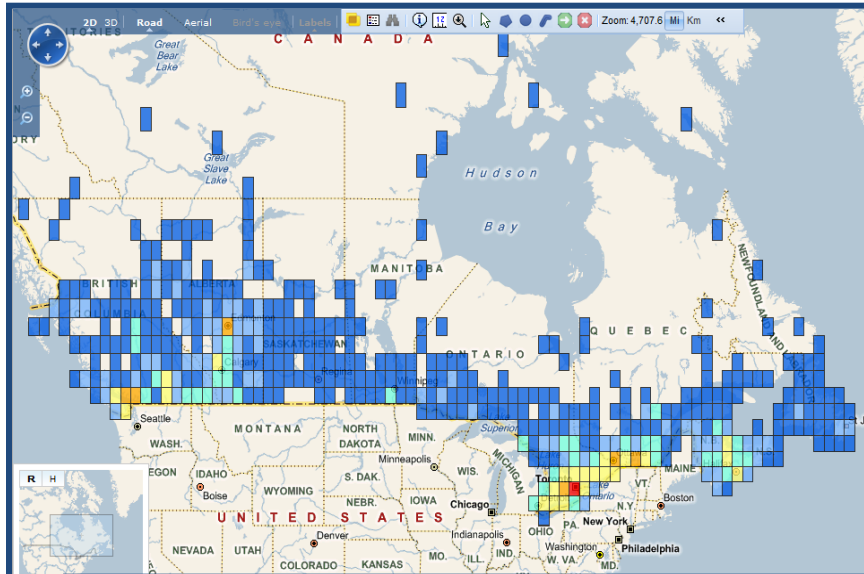
Real-time Event: RealCat

- Exposure to Real Time Cat Events
- Exposure to Historical Cat Events
- Policy Level Detail of Risks Exposed to Cat Events

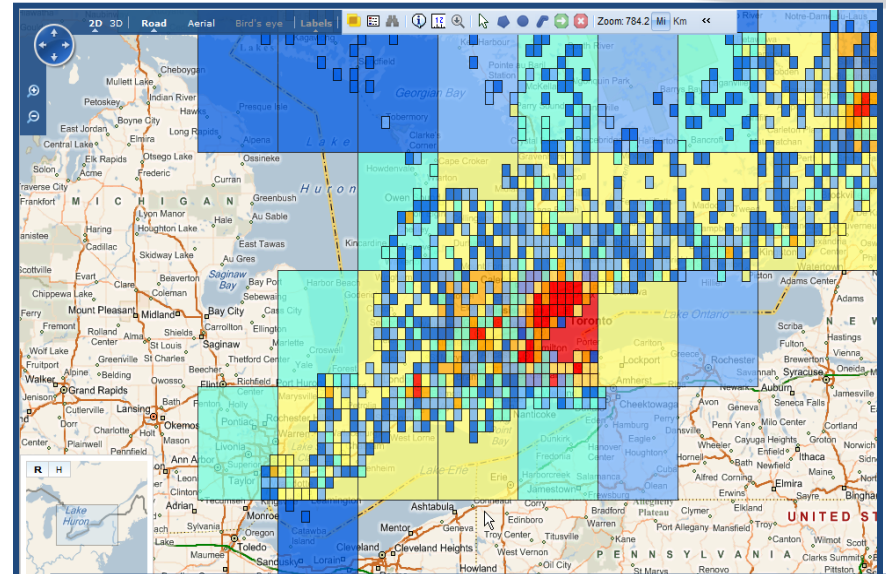
Underwriting: Risk Profiler

- Analyze prospective new risks
- Compare to business within the portfolio
- View satellite imagery of the location

Accumulation Management



Cluster_ID0	Metrics		Total TIV	Number of Risks
-80 43 Ontario	HALDIMAND-NORFOLK REGIONAL MUNICIPALITY		82,947,440,632	126,180
-81 43 Ontario	ELGIN COUNTY		26,359,251,960	50,445
-124 49 British Columbia	ALBERNI-CLAYOQUOT REGIONAL DISTRICT		20,254,734,787	33,743
-76 45 Ontario	LANARK COUNTY		20,127,413,843	39,749
-123 49 Washington	WHATCOM		19,975,420,557	33,755
-74 45 Quebec	LE HAUT-SAINT-LAURENT		16,398,256,191	30,028
-114 53 Alberta	DIVISION NO. 10		13,098,158,517	17,030
-124 48 Washington	JEFFERSON		10,252,346,036	16,648
-80 44 Ontario	DUFFERIN COUNTY		9,227,522,400	17,526
-83 42 Ontario	ESSEX COUNTY		7,293,890,462	16,129



Cluster_ID1	Metrics		Total TIV	Number of Risks
-79.4 Ontario	TORONTO METROPOLITAN MUNICIPALITY	M5J 43.6	5,766,221,138	8,557
-79.5 Ontario	TORONTO METROPOLITAN MUNICIPALITY	M6M 43.7	5,307,637,297	8,089
-79.5 Ontario	TORONTO METROPOLITAN MUNICIPALITY	M8V 43.6	5,263,809,642	9,376
-80.6 Ontario	WATERLOO REGIONAL MUNICIPALITY	NOB 43.4	4,684,383,689	9,147
-79.4 Ontario	TORONTO METROPOLITAN MUNICIPALITY	M5P 43.7	4,189,554,880	6,445
-80.5 Ontario	WATERLOO REGIONAL MUNICIPALITY	N2R 43.4	3,753,587,785	7,787
-79.7 Ontario	HALTON REGIONAL MUNICIPALITY	L0P 43.5	3,320,185,079	4,533
-75.7 Ontario	OTTAWA-CARLETON REGIONAL MUNICIPALITY	K1S 45.4	3,244,088,647	6,509
-79.6 Ontario	PEEL REGIONAL MUNICIPALITY	L4Y 43.6	3,235,215,967	4,623
-79.5 Ontario	YORK REGIONAL MUNICIPALITY	L4K 43.8	2,990,518,372	4,020

Accumulation Management

PAGE-BY:

Metric Type: TIV

Radius: 5

Distance to Unit: Kilometer

Dispersed: 1:Yes

1

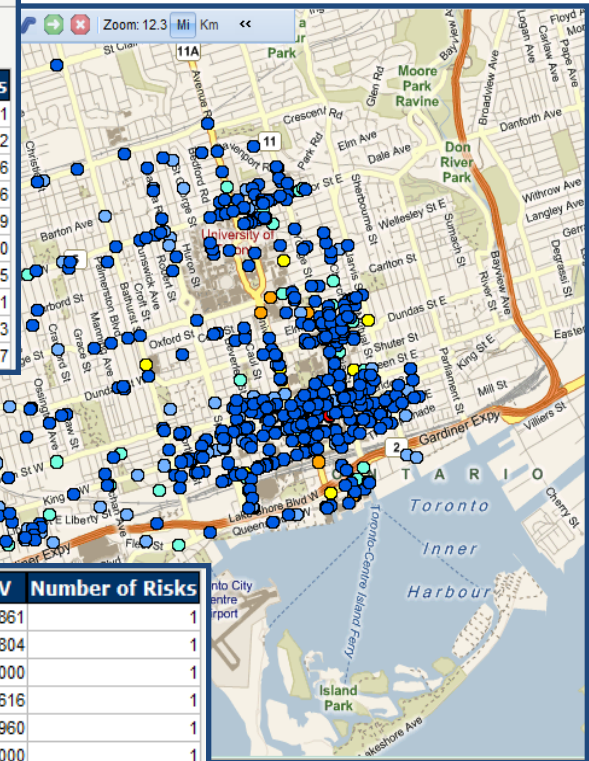
2

3

4

of 4 pages

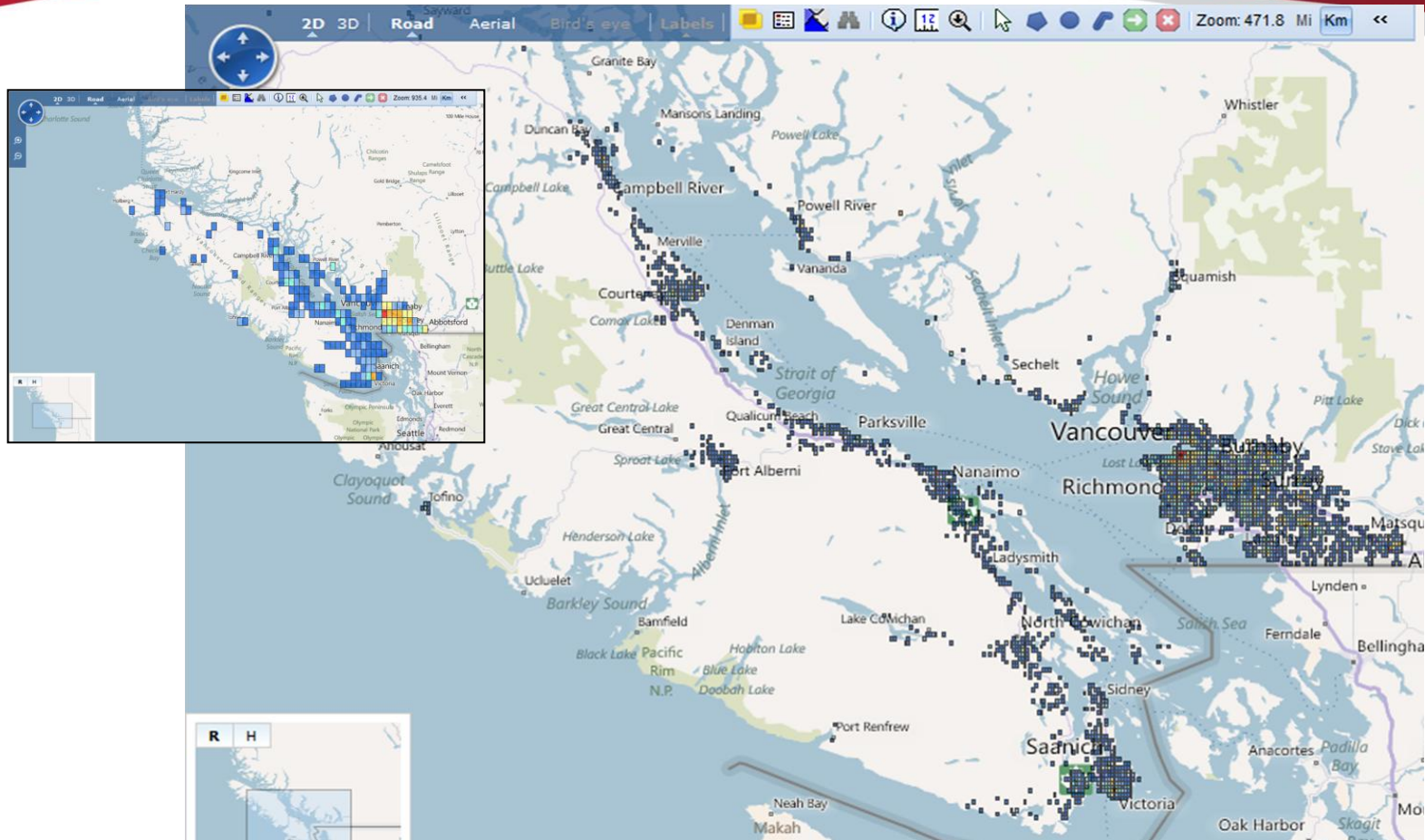
Site Accumulation				Rank	Metrics	Total TIV	Number of Risks
1557 Hastings Crescent S.E.,T2G4C8,Calgary,AB,CA	51.0144	-114.034	4057174134	1		43,024,919,008	681
T2T3Y8,Calgary,AB,CA	51.0364	-114.09798	4057154006	2		42,159,864,403	652
Range Road,RR#10,Balzac,T2E1Z7,Calgary,AB,CA	51.07699	-114.06198	4057183192	3		42,034,544,020	696
625 Church St,M4Y 2G3,Toronto,ON,CA	43.670101	-79.382736	4057196587	4		37,673,279,408	1,146
King St. W.,M6K1G3,Toronto,ON,CA	43.63889	-79.4274	4057182044	5		31,283,726,438	889
428 MORAIN RD NE,T2A2P2,Calgary,AB,CA	51.05496	-113.99865	4057188003	6		31,084,944,692	370
HASTINGS,V6A1R9,Vancouver,BC,CA	49.2811	-123.084	4057151566	7		27,642,342,947	1,305
1755 West 14th Avenue,V6J 2J6,Vancouver,BC,CA	49.259041	-123.144829	4057191746	8		24,828,799,899	1,141
5 5055 Satellite Drive,M4M3H7,Toronto,ON,CA	43.6531	-79.32318	4057200876	9		22,555,444,838	583
3RD,V7P3K7,North Vancouver,BC,CA	49.32149	-123.13322	4057151114	10		19,977,627,558	767



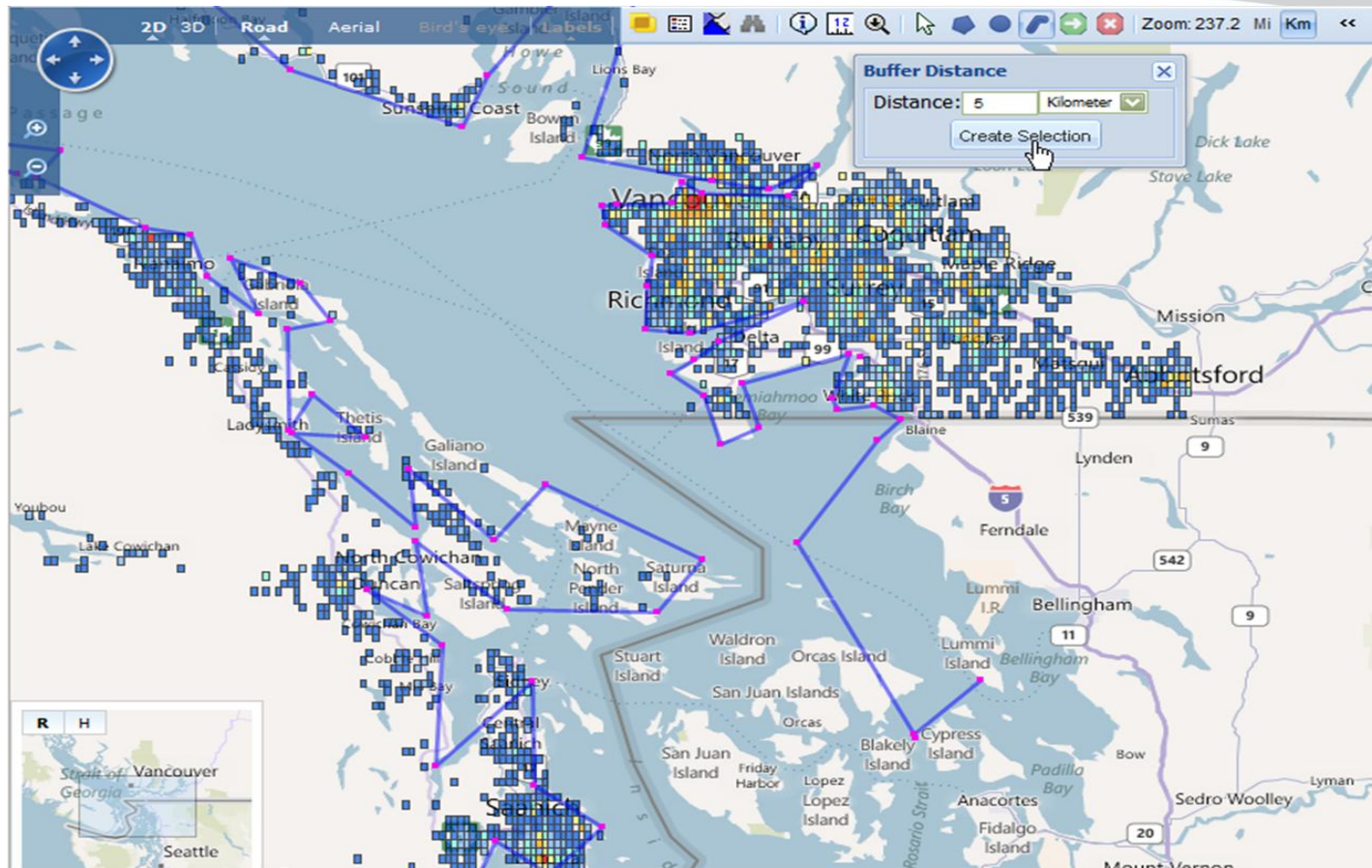
Site	Distance	Metrics	Total TIV	Number of Risks
-79.4303 43.6507 8831187GCFECAN0001 Gladstone Ave, M6J3L9, Toronto, ON, CA	1.3328518878		2,137,369,861	1
-79.379578 43.648891 22949TorontoCanada 22949 40 King St W, M5H 3C2, Toronto, ON, CA	4.0153389095		1,002,106,804	1
-79.379807 43.653851 26302TorontoCanada 26302 220 Yonge Street, M5B 2H1, Toronto, ON, CA	4.184216421		982,501,000	1
-79.382301 43.649288 22709TORONTOCanada 22709 199 BAY ST, M5L 1G1, TORONTO, ON, CA	3.8177437143		969,958,616	1
-79.38035 43.64863 19645TorontoCanada 19645 100 King Street West, M5X1B5, Toronto, ON, CA	3.9474385589		940,138,960	1
-79.382301 43.6469 26289TorontoCanada 26289 66 Wellington Street West, M5K 1A1, Toronto, ON, CA	3.7460702613		919,028,000	1
-79.379662 43.647301 23156TorontoCanada 23156 200 Bay Street, M5J 2J2, Toronto, ON, CA	3.9635309362		891,847,159	1
-79.378288 43.65749 26445TorontoCanada 26445 1 Blue Jay Way, M5B 1Y2, Toronto, ON, CA	4.4687937283		882,112,552	1
-79.38218 43.6454 8837532GCFECAN0005 Front Street West M5J1E3, Toronto, ON, CA	3.7196530987		820,782,862	1



Tsunami Risk Assessment using i-aXs



Tsunami Risk Assessment using i-aXs



Conclusions

- Growing Trend in Catastrophes Globally and Locally
- Catastrophe Modeling Important for Complex Analysis
- Other Tools Needed to Complement Catastrophe Models

Aggregation and the Primary Insurer



**The Economical
Insurance Group**



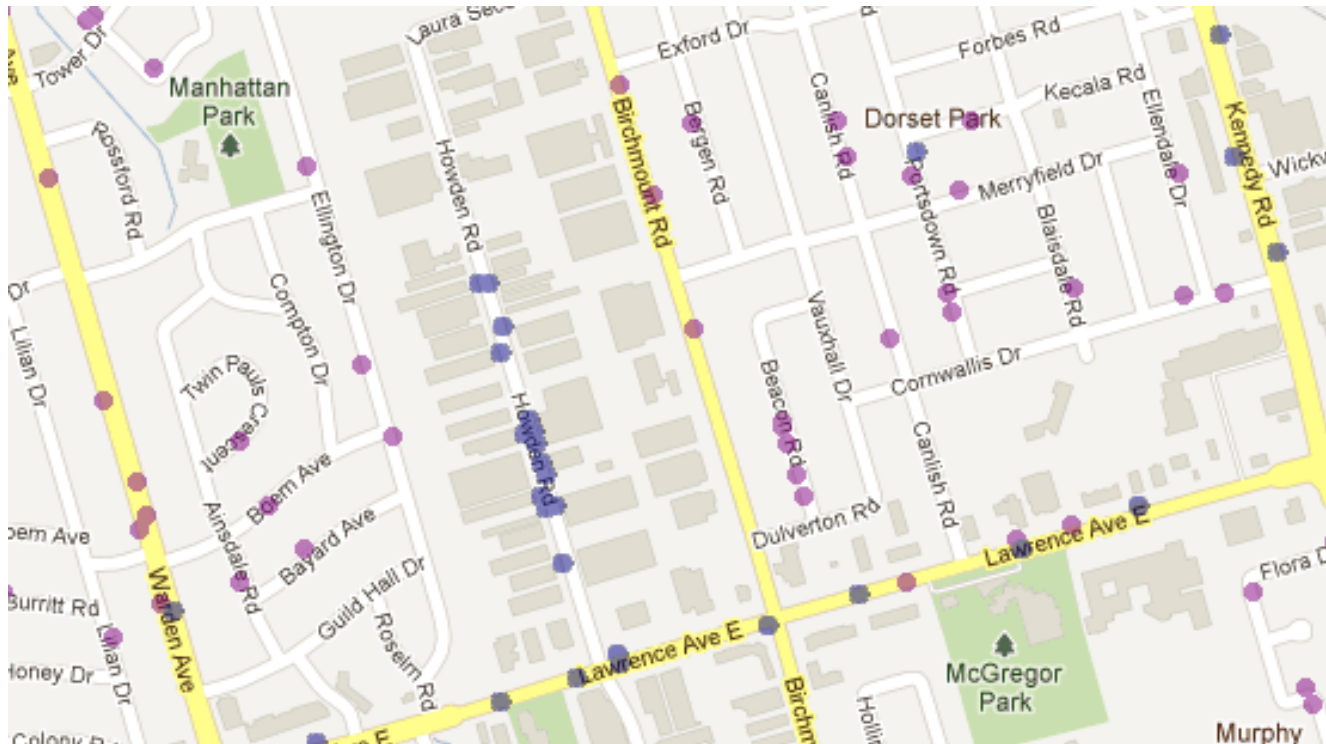
DAVID CROZIER, SENIOR VICE PRESIDENT – OPERATIONS



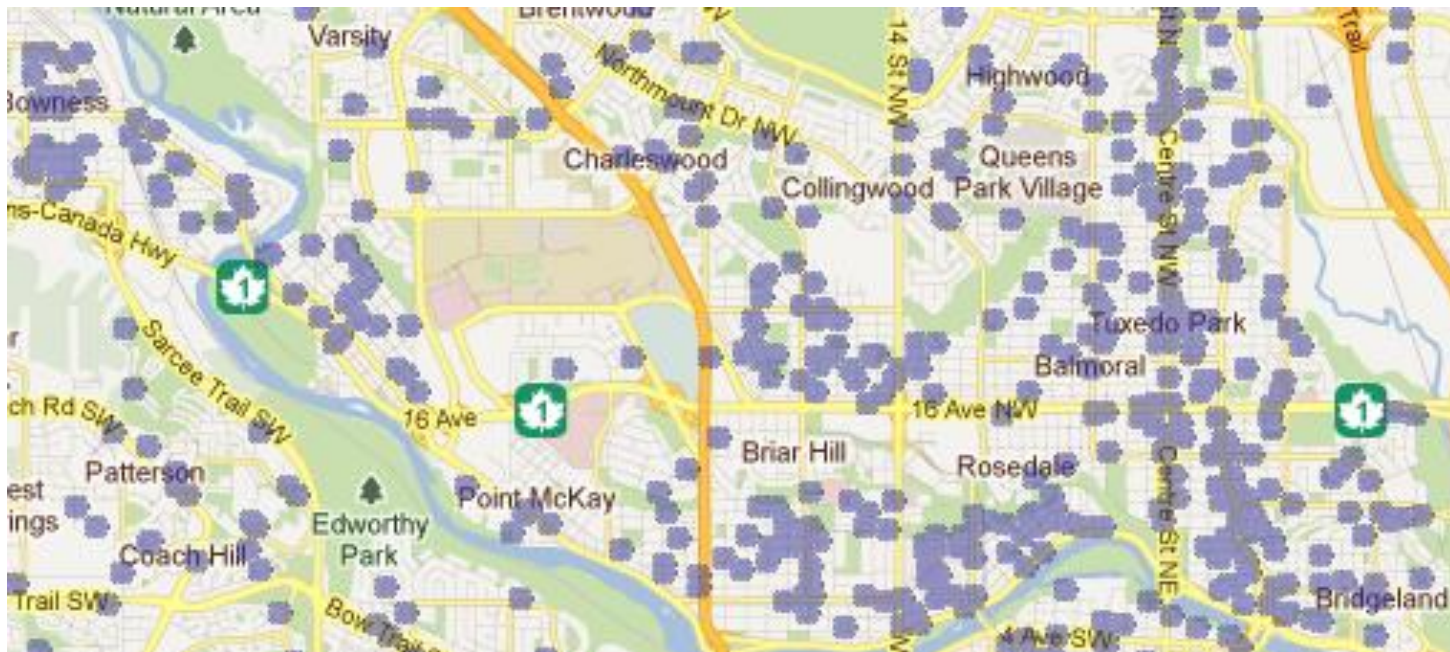
Sophisticated Underwriting

- Map risks at the point-of-sale
- Better understand risk aggregation and use of capacity
- Offer greater clarity of appetite, greater consistency in decisions
- Allow holistic comprehension of personal and commercial exposure
- Target marketing efforts

Risk Mapping



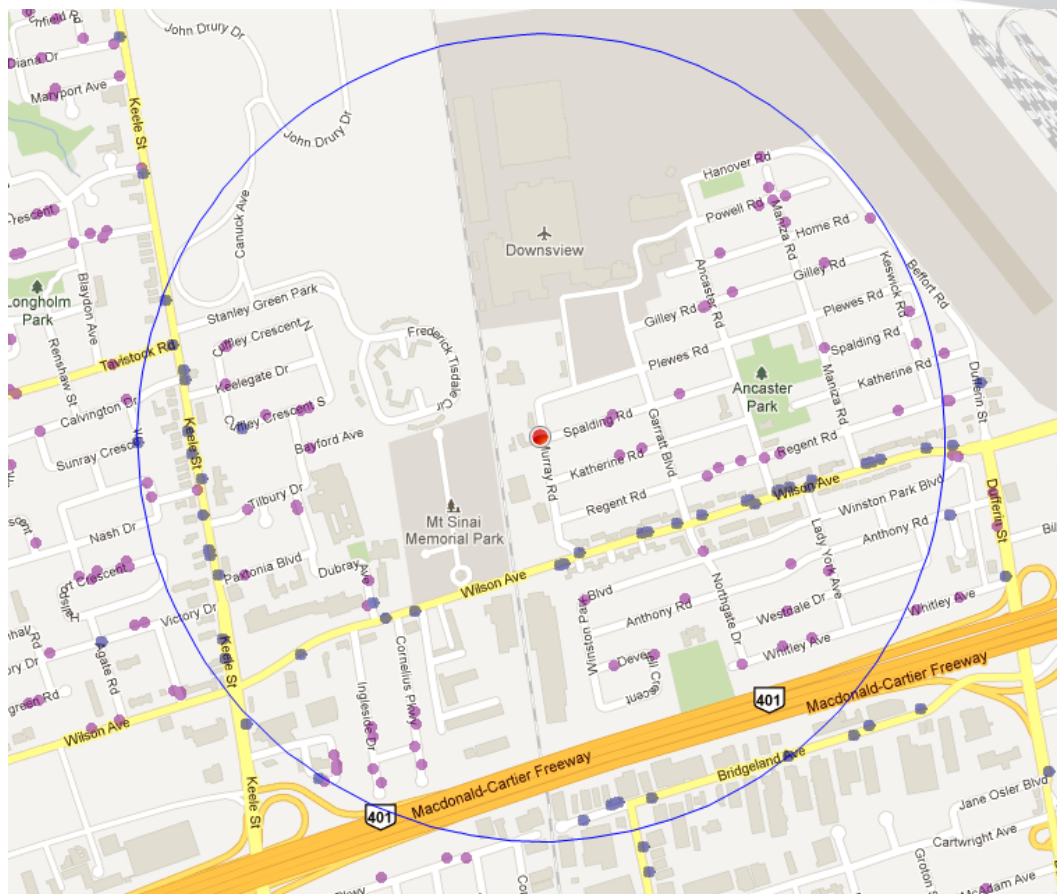
Accumulation of Risk



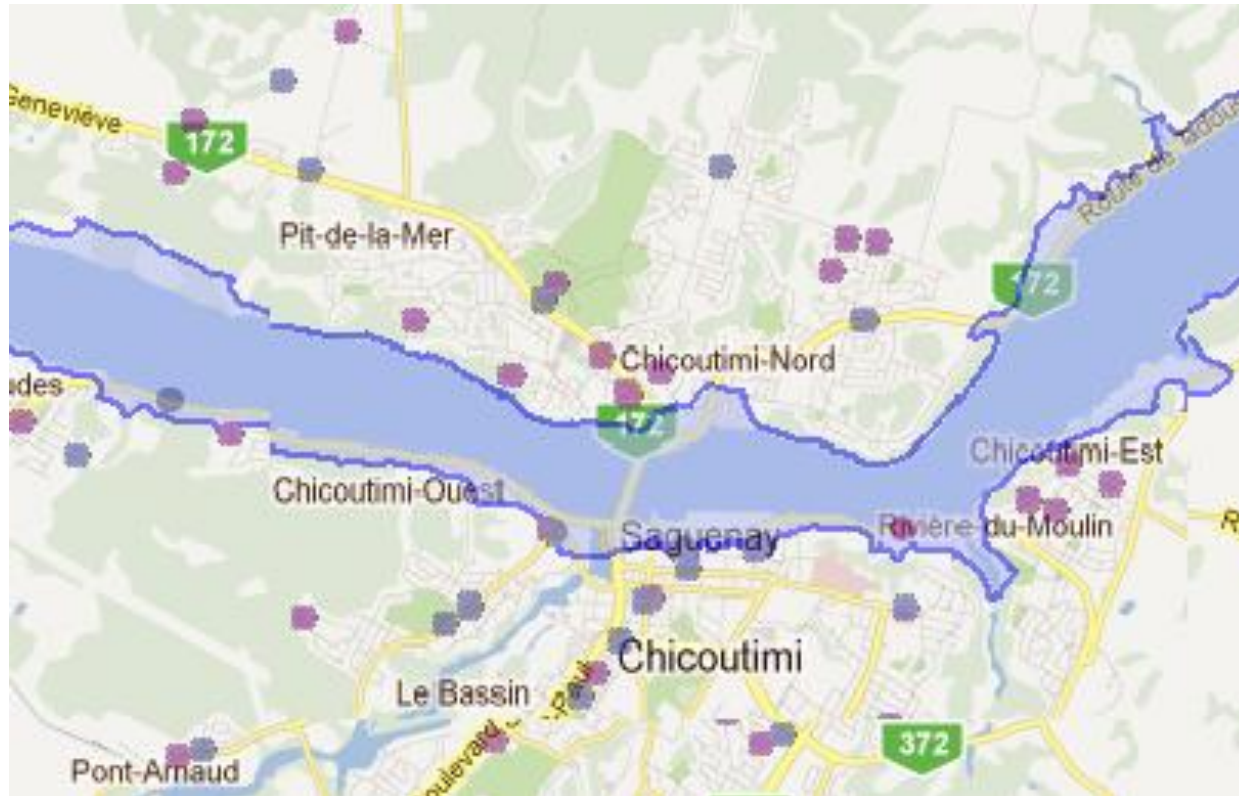
Claims Application

- Enhance fraud detection
- Enable preventative measures to mitigate potential losses
- Ability to model catastrophic activity and tailor a response

Fraud Detection



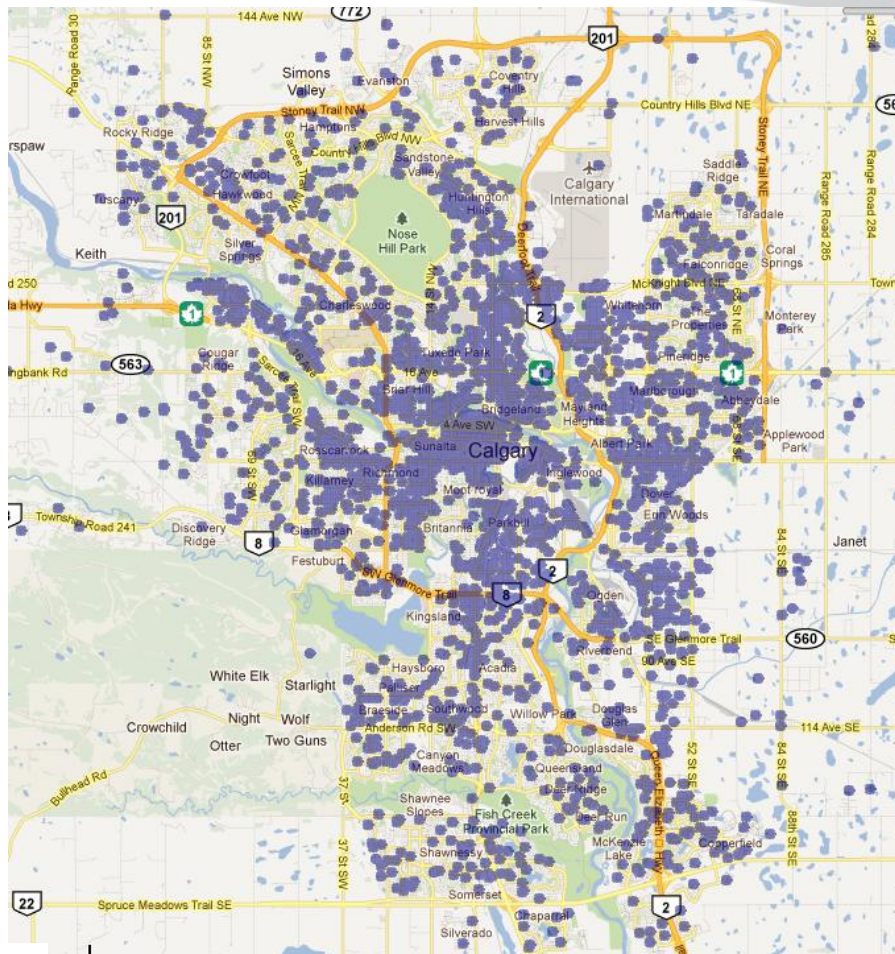
Cat Tracking and Planning



Reinsurance and Risk Impact

- Decrease reliance on intermittent modeling by third parties
- Protect and optimize reinsurance programs
- Further empower enterprise risk management

Risk Management



What's Your Risk?

Improving Aggregate Risk Exposure



Bill Sinn, Strategic Marketing Director

Our Mission: Enabling Lifetime Customer Relationships



Pitney Bowes Business Insight:

Focusing on Customer-Centricity



Agenda

- The Risk Management Framework
 - Our 5-step process to drive greater efficiency and accuracy in risk management
- Technology to the Rescue
 - Data is the key to managing risk
 - Reaping the benefits of Location Intelligence technology
 - Geo-coding & spatial analysis
 - Risk data

Hurricane Katrina

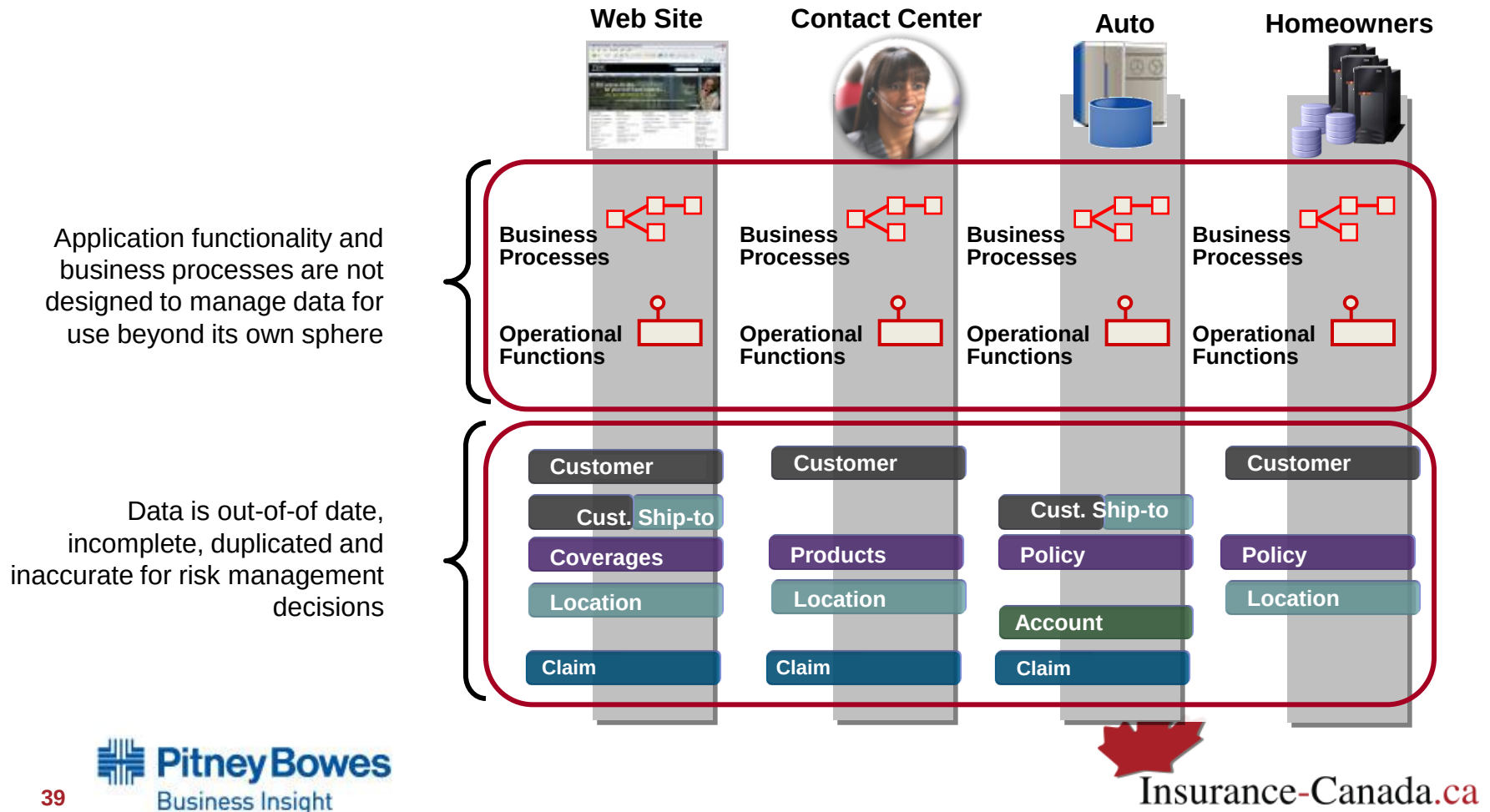


Risk Management Maturity Framework



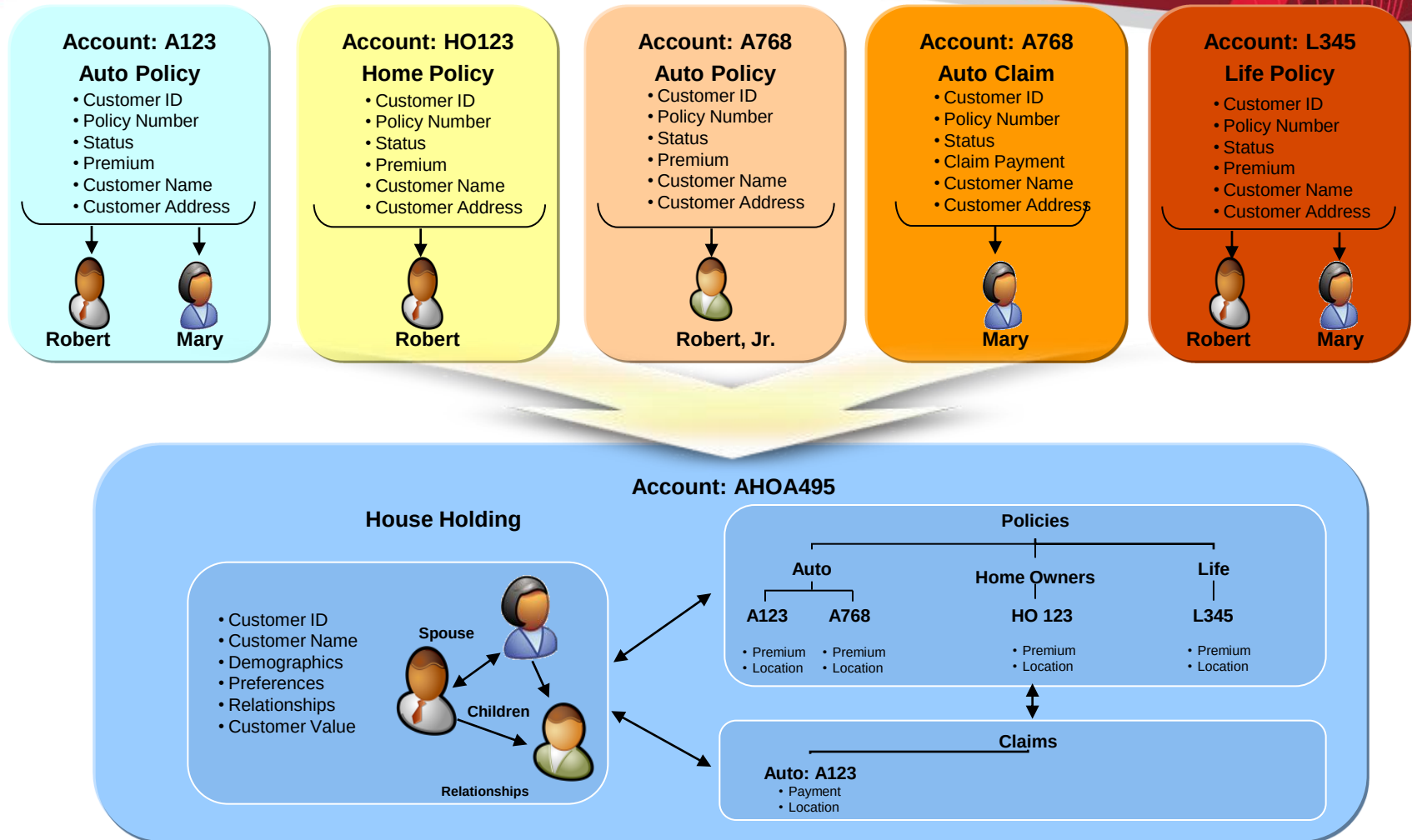
Level 1: Data Integration

Data is stored in many different places

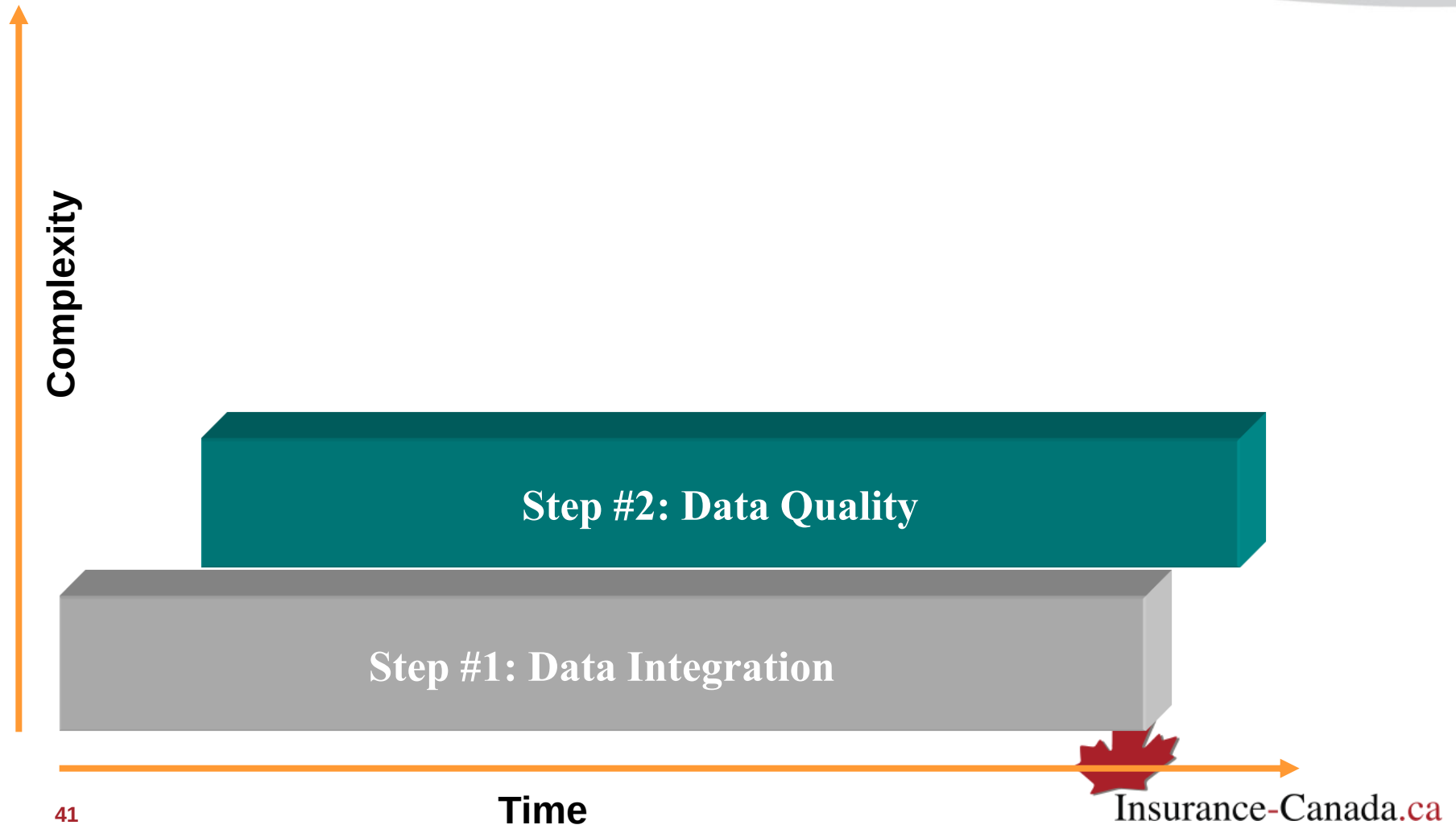


Level 1: Data Integration

Integrate customer information into one single view



Risk Management Maturity Framework



Level 2: Data Quality

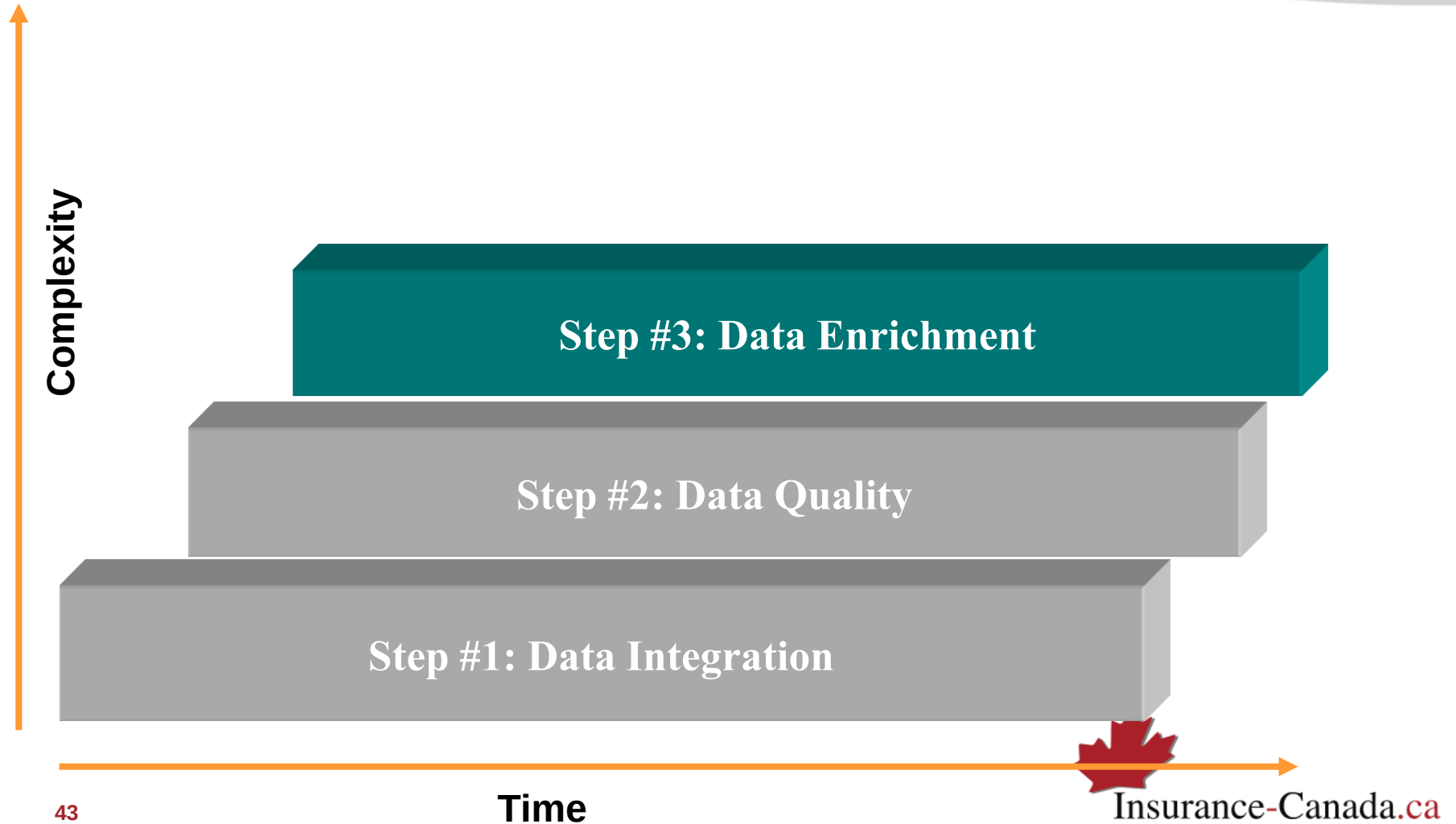
Addresses and names are validated at data entry

- Address standardization is a critical component for data quality and accurate geocoding
- Requires complete integration into operational front-end systems
- Up to 40% of entered addresses contain errors
- Example: 1400 Westgate Way, Fargo, ND

Could this be:

- 1400 **Westgate** Way?
- 1400 W **Gateway**?
- 1400 W **Gate** Way?

Risk Management Maturity Framework



Why Location Is Key

Sales/Marketing/ Distribution Management

Customer Segmentation, Target Marketing, Sales Territory Management, Producer Effectiveness and Market Penetration

Risk Analyses/ Actuarial

Risk Assessment, Customer Segmentation, Custom Rating Territories, Exposure Analyses, Accumulation of Risk, Loss History Analyses

New Business Processing Underwriting

Assign Rating Territory, Assign Correct Premium Tax, Exposure Analysis, Rule Engine Support

Claims

Claims Triage, Workload Assignment, Routing Optimization and Pattern/Fraud Detection

Risk Management/ Reinsurance

Urban Accumulation, Terrorist Hot Spot, CAT Scenarios, and Treaty and Facultative Reporting

Compliance/ Reporting

Accumulation Reporting/Management, Reserving and Reinsurance, Premium Tax Assignment



Step 3: Data Enrichment

The Science of Geo-Coding

- Definition:
 - “Geocoding” means assigning a latitude and longitude to an address or location
- Example:
 - 4750 Walnut St, Suite 200
 - Boulder, CO 80301
 - Latitude: 40.018912
 - Longitude: -105.239771

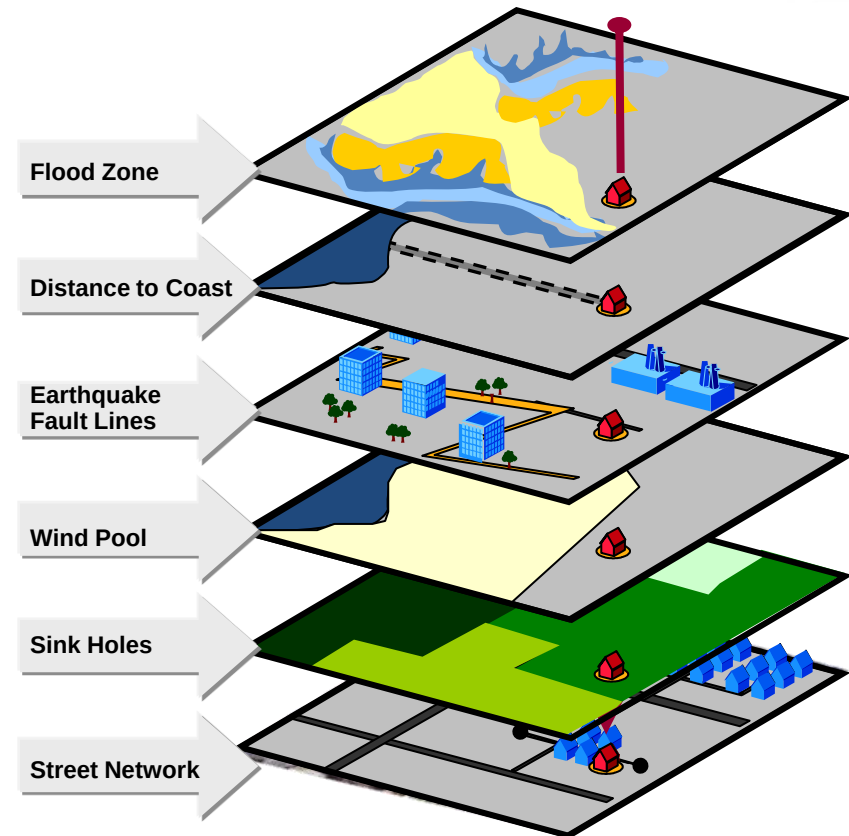


Step 3: Data Enrichment

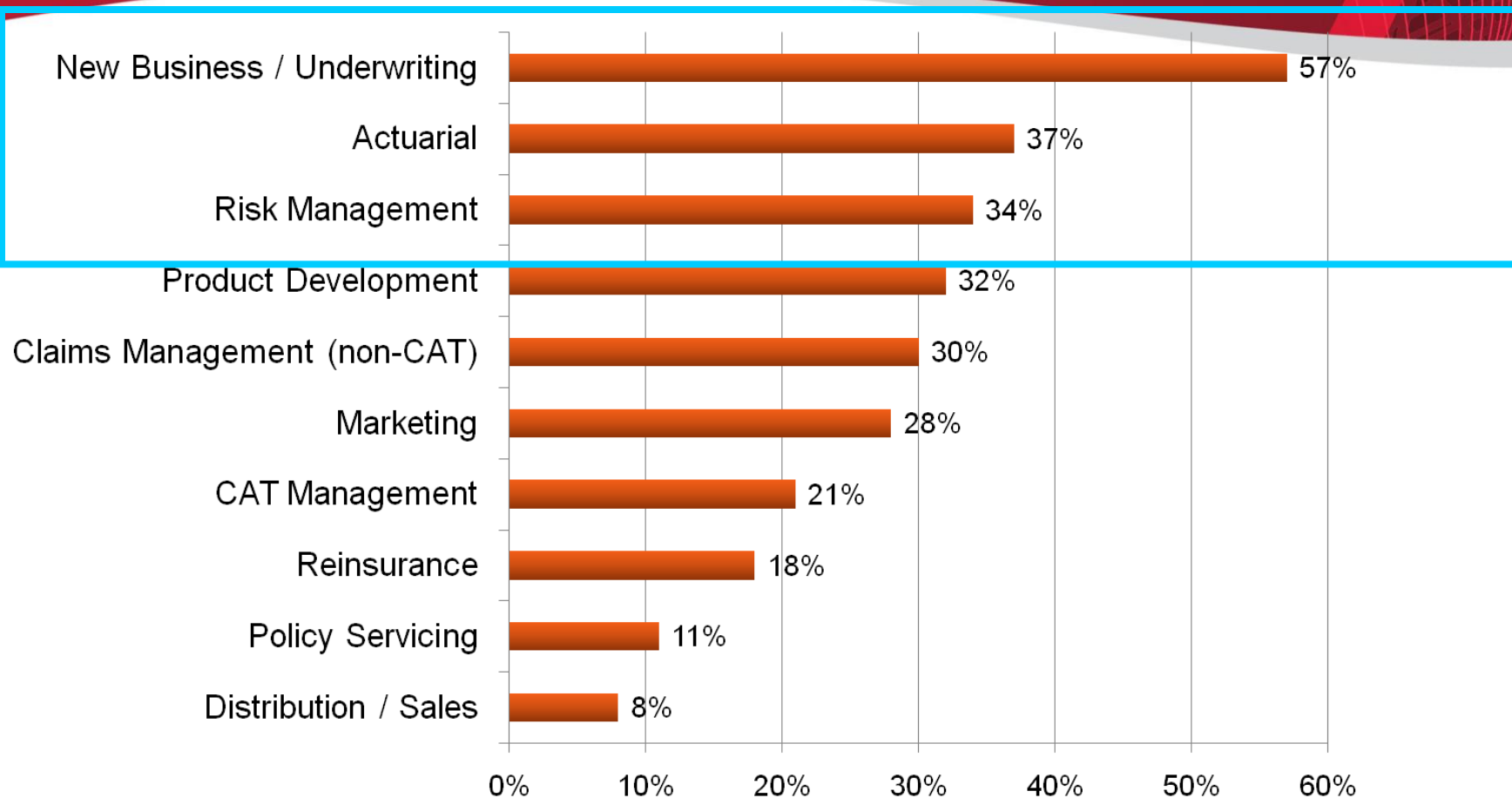
Building CAT Mgmt into the Underwriting Process

- Addresses standardized and geocoded on the front end; integrated into the quoting process
- Geocoded addresses geographically compared against hazard risks
 - ✓ earthquake
 - ✓ fire
 - ✓ tropical cyclone (hurricanes, typhoons, and cyclones)
 - ✓ windstorm
 - ✓ storm-surge
 - ✓ river flooding
 - ✓ tornadoes
 - ✓ hailstorms
- Exposures monitored in real-time

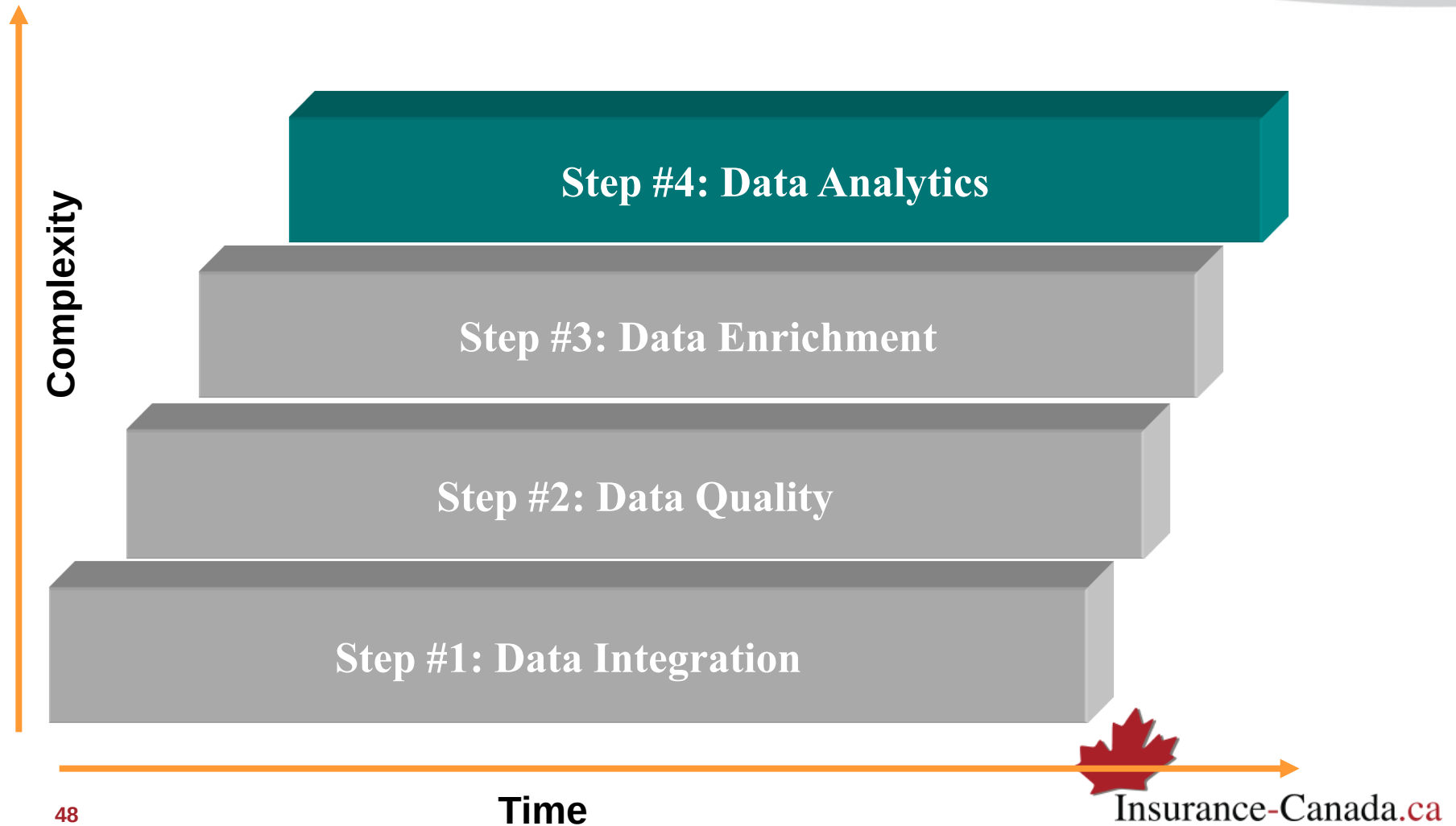
Geocode -105.248599, 40.054337



Areas That Benefit Most from External Risk Data



Risk Management Maturity Framework

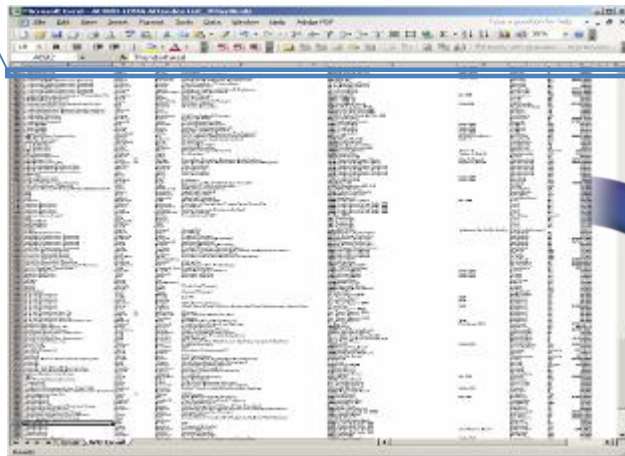


Step 4: Data Analytics

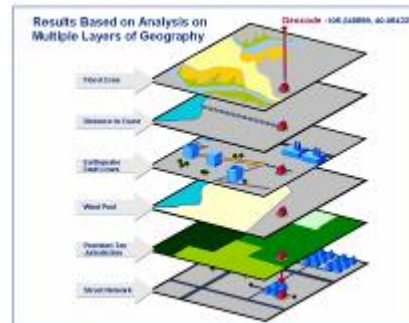
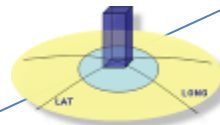
Enabling Your Data Geographically

1. Address Standardization & Geocoding

Street	City	State	Zip	Latitude	Longitude
758 Front Street	San Francisco	CA	94123	-122.398925	37.794000



A screenshot of a data table with multiple columns, likely representing a geocoded dataset. The table contains numerous rows of data, including addresses and their corresponding coordinates.



2. Spatial Analysis

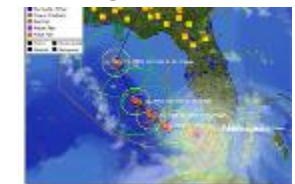
- Geo-coded addresses geographically compared against hazard risk
- PML exposures



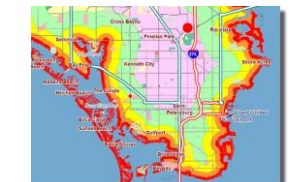
Setting Aggregation Thresholds



Monitoring Accumulations



Evaluates Potential Loss Scenarios



Windpool Management

3. Analytics

Insurance-Canada.ca

Step 3: Data Analytics

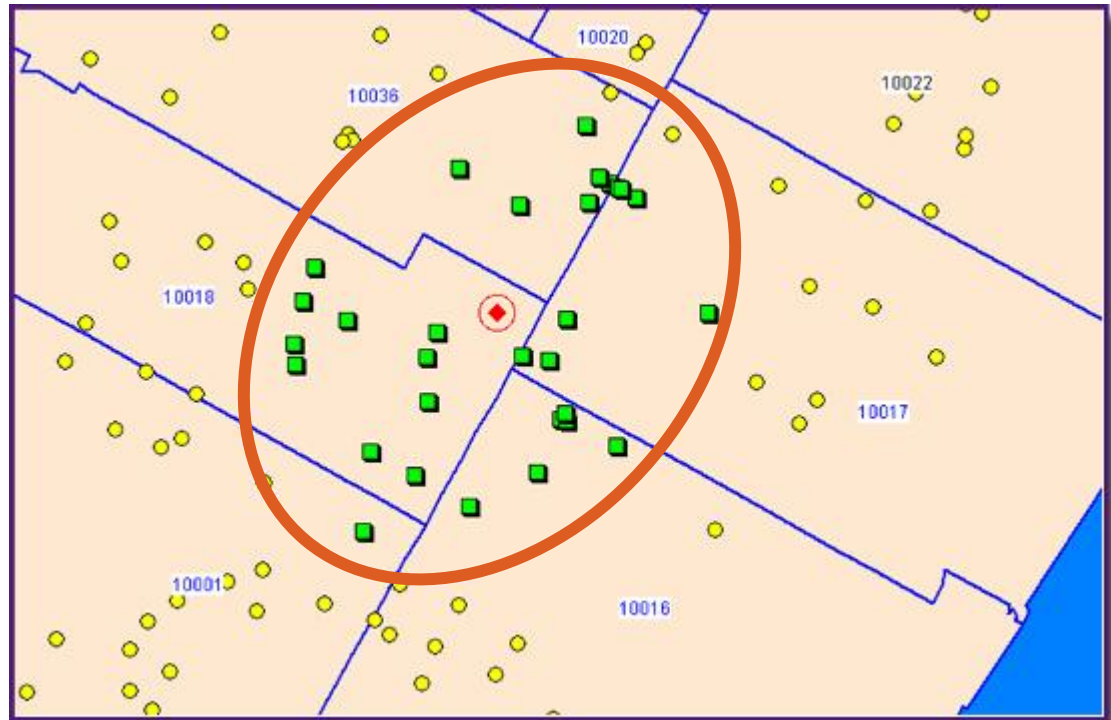
Monitoring Accumulations & Setting Thresholds

Excel Spreadsheet

Individual Postal Codes appear to be acceptable

Geo-coded and Analyzed

Visually, it is clear that there is an accumulation of risk

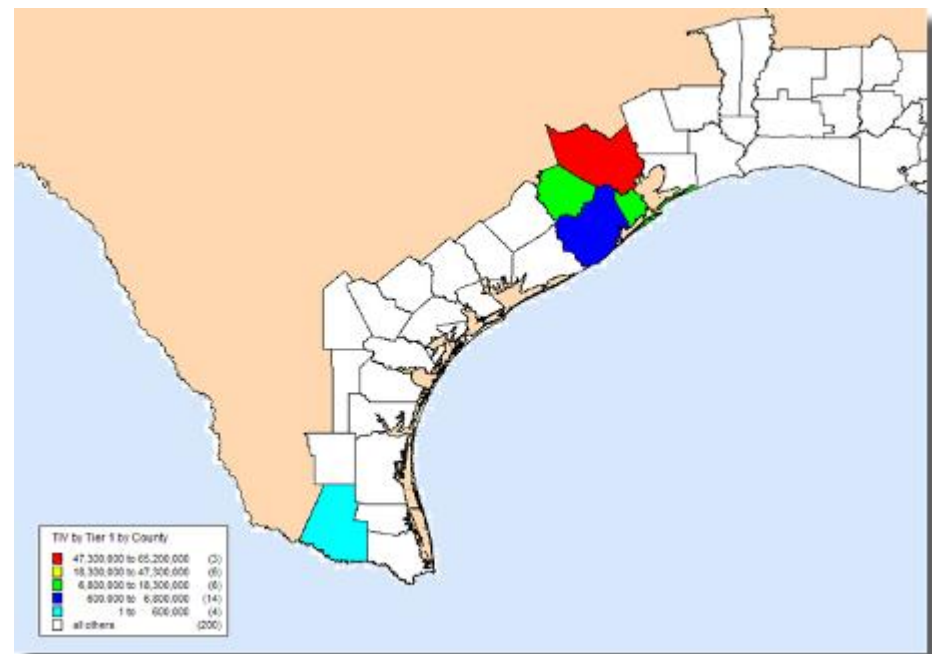


Level 4: Data Analytics

Aggregation Analyses & Implementation

Based on Analytics – Carrier is able to make informed analyses and set aggregate exposure thresholds

Having set thresholds – each added risk is measured against these thresholds

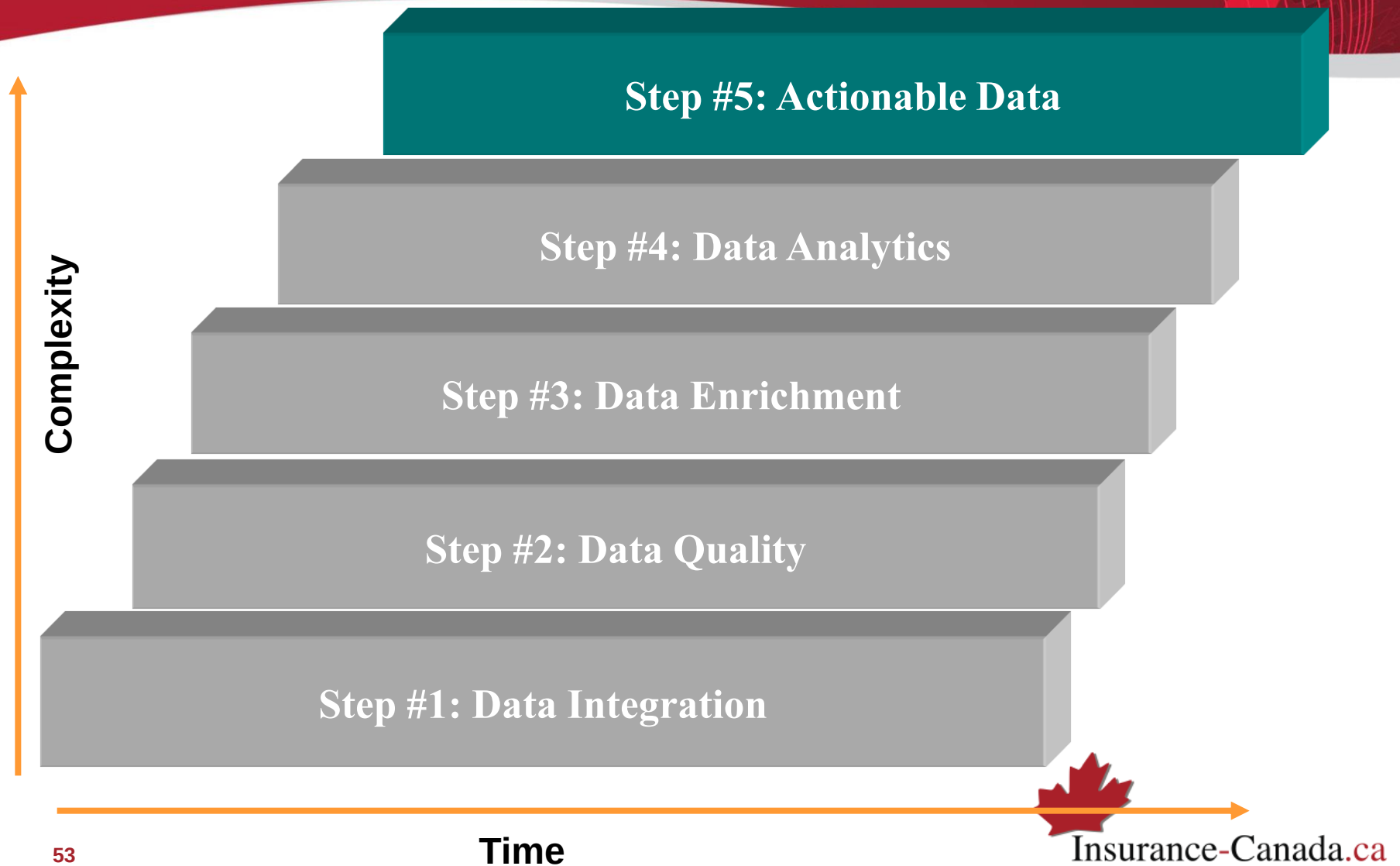


Level 4: Data Analytics

Potential Loss Scenarios



The Risk Management Maturity Framework



Homesite

- Company
 - Founded in 1997, the Homesite Insurance Group focuses exclusively on the homeowners market.
- Business Value:
 - Needed accurate & efficient location-based decisions
 - Determine if a given home, apartment or condominium is in a risk area for natural disasters, such as floods, brushfire, hurricanes, high winds, and hail.
 - Ability to better manage exposure, make underwriting decisions, and respond promptly to new policy applications.
- Results:
 - Improved customer experience
 - Real-time decisions on policy applications, rather than waits of up to 30 days.
 - Significantly improved business efficiency and better-informed underwriting decisions based on the most comprehensive set of address-level geo-codes available.



James River Insurance

- Company
 - Based in Richmond, VA., James River operates as an Excess & Surplus carrier in all 50 states plus Washington, DC.
- Business Value:
 - Wanted to improve its underwriting practices, analyze potential catastrophe patterns and enhance its catastrophe management and claims response practices.
- Results:
 - Underwriters can now view policy concentrations and proximity to risk factors such as distance to coast.
 - The claims and underwriting departments can now query the policy management system to determine the probable losses associated with an event.
 - “We were able to provide initial estimates of exposure and loss before the storm even hit the shore and then validate these through their on-site inspections.” *Brian Haney, Chief Actuary*

*“Vision is the art of
seeing what is invisible
to others.”*

-- Jonathan Swift

Conclusion

Our thanks to the speakers for their time in developing these excellent presentations and to all of you who attended. We hope you found the information presented in the Webinar of value.

The slides from this Webinar presentation and a recording of the Webinar will be available on Insurance-Canada's website shortly.

We now have some time for questions to the Panelists. Please submit your questions in writing and they will be presented to the panelists on a first come first served basis.



Questions



Please submit your questions to the presenters by writing them in the Question window. Presenters will answer as many as time allows during the Webinar.





Merci

Obrigado!

**THANK
YOU**



For your attention



Insurance-Canada.ca