

Mitigating Risk with Location Intelligence

Whitepaper

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EXECUTIVE SUMMARY

Efficiency is essential to gaining a competitive advantage in today's complex, consumer-focused business environment. Driven by the surge of technology and its focus on data analytics, issues arise with data governance and most organizations are facing challenges with data quality. This whitepaper demonstrates how financial institutions can leverage location intelligence to increase data quality, better manage risk, streamline business processes and increase operational efficiency.

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“In today’s technology driven, customer-centric world, the competitive edge for financial institutions lies in providing answers quickly ...”

INTRODUCTION

Financial and operational risk management is at the core of financial institutions. In a constant quest to gain a competitive advantage in the marketplace, and mitigate these risks, many organizations are seeking to unlock new insights by combining business analytics and geo-data together. Mapping and spatial analytics tools provide a context that is not possible with tables and charts alone. While this geographic aspect has been largely absent from business analytics solutions, many organizations are now looking toward incorporating location analytics into their operations.

DATA GOVERNANCE – ACCURACY WITH GEO-CODING

Most financial institutions use standard systems of identifying addresses, such as those based on municipal registries or postal addresses. Inherent nuances within those systems create ambiguities that, in turn, leave margin for errors, omissions, and confusion. Standard systems can be further compromised when municipal changes are implemented. For example, when a property is repurposed and results in additional or altered postal codes, or in the case of the 1998 municipal amalgamation of Toronto, ON and its surrounding communities, whereby many addresses (i.e. 3 Byng St.) became duplicates and same name streets – once formerly defined by their own town or city name – now fall within the City of Toronto.

Another problem with standard systems occurs when streets have multiple names. Highway 48, a roadway running north/south in Ontario, Canada, begins as Markham Road, changes to Highway 48, becomes Main Street as it runs through Markham, Ontario, then switches back and forth between Highway 48 and Markham Road as it continues northwards. This is complicated by the fact that Main Street runs¹ through Markham, but there is also a Main Street in Unionville, which is a suburban village within Markham.

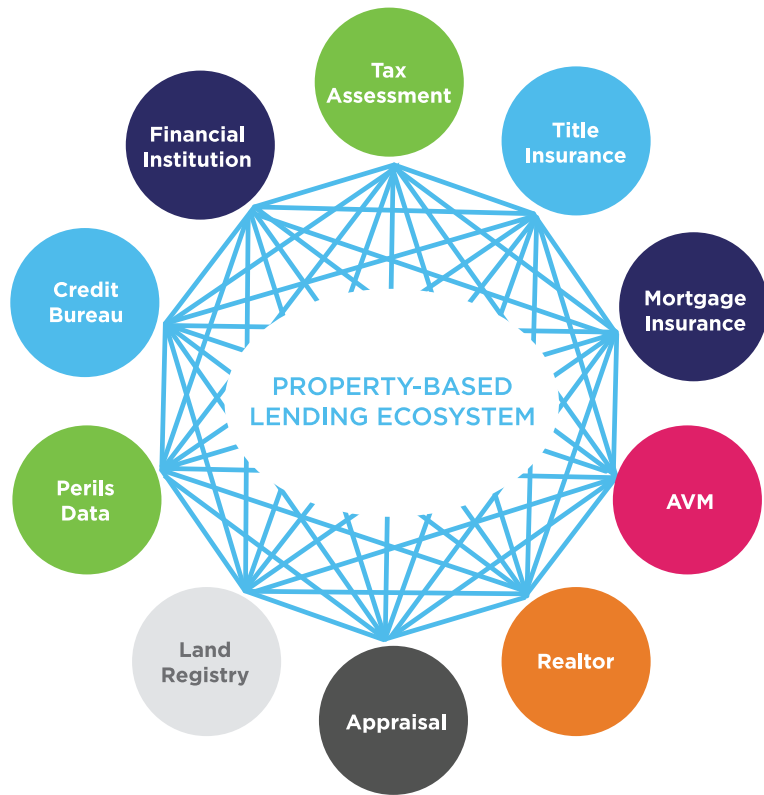


In today's technology driven, customer-centric world, the competitive edge for financial institutions lies in providing answers quickly – essentially getting to the yes or no – while mitigating and managing their risk. Location intelligence helps to more quickly determine the answers to questions such as – does the property exist? Is it accurately identified? Is everyone within the mortgage ecosystem referring to the same property? Is the property subject to any environmental or demographic factors that require further risk assessment or result in greater assumption of risk?

Location intelligence provides specific location identification, ensuring its accuracy, and facilitating the current, historical, and predictive multi-faceted environmental and demographic data for that location.

Another hurdle in data analytics that most organizations currently find challenging, is ensuring data quality. For instance, a city name could be spelled in multiple ways, or users enter different abbreviations for the same data. As organizations grow inorganically – by mergers and acquisitions, this problem is compounded due to inconsistent data and data definitions between the various systems.

At the core of location analytics is geocoding, an identification method through which data becomes geo-enabled. Unlike the standard systems, geocoding is the identification of a precise location through geographic coordinates (latitude/



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longitude), with rooftop level precision. That location is further verified through various external inputs, thereby providing a high degree of reliability. One location intelligence system, DMTI Spatial's Location Hub assigns what is known as a UAID™ (Unique Address Identifier) to each individual address. The self-service data analytics engine leverages Canada's most robust, accurate, and up-to-date location-based data, to cleanse, validate, and geocode the organizational address database. The company covers 94.8 per cent of all possible Canadian addresses and realizes a high precision coverage of 95 to 99 per cent in urban areas.

With the reliability provided by such a high precision coverage address system, financial institutions realize seamless transitions between all stakeholders. This provides for such things as ensuring that a given location is one and the same property being referenced by the vendors within the property based lending ecosystem, or providing clean data that can be analyzed for essential trends and patterns. With the results displayed on a map, it allows user visualization and interaction for better data profiling which not only ensures operational efficiency, but is a critical first step in risk management.



RISK ASSESSMENT

Within Canada, banks are being impacted by ongoing government efforts to rein in mortgage lending and forestall the sort of housing crisis experienced in other parts of the world. The federal government is scaling back the role and size of Canada Mortgage & Housing Corporation (CMHC) in an effort to reduce taxpayers' exposure to housing-sector risk, after a real estate boom turned CMHC into Canada's largest bond issuer and saw the amount of mortgages it insures swell to \$567 billion in 2011. CMHC currently insures \$543 billion in home loans. Eventually it may only insure low-ratio mortgages to those used in CMHC-backed securitization programs and prohibit the use of any taxpayers backed mortgages as collateral in non-CMHC securitized vehicles. This change, along with prior adjustment to mortgage lending rules, will change both the way Canadians obtain mortgages and the way their bank funds those mortgages. Banks will need to decide if they wish to underwrite more non-insured mortgages, increasing their credit risk, or lose the business to non-bank lenders. This will call for better risk assessment techniques to underwrite more non-insured mortgages. Banks will now have to think beyond the traditional method of relying on the credit history for risk assessment.

Location intelligence will become increasingly important in risk mitigation as well as analyzing the risk concentration. Clean data can be enriched with various demographics information for analysis on risk concentration and customer intelligence. Financial organizations can generate risk concentration lists and apply risk mitigation / risk diversification strategies by infilling the addresses within specific territories that are not in their current database.

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GEO-CODING FOR FRAUD MANAGEMENT

Another area of opportunity using location intelligence and its geo-coding capability is within fraud management. Fraud management represents a multi-billion dollar problem for the banking and insurance industry in Canada. Location intelligence and analytics can add a powerful dimension to fraud management.

The growing complexity of fraud and well-executed rings have exposed the limitations of traditional detection systems, such as red flag indicators, investigations based on manual observations, internal audits findings, and software that shows anomalies based on a pre-defined set of business rules. In order to address fraud, organizations are becoming more proactive and sophisticated in their approach to data and information. In particular, data analytics and predictive modeling are allowing insurers to uncover complex, organized fraud activities using both structured and unstructured data.

Although location intelligence and analytics represent a key piece of the fraud puzzle, traditionally they have been overlooked or vastly underutilized. Geospatial analytics tools provide access to a rich library of address-related content including name and phone number, demographics, firmographics, Canadian flood data, environmental risk information, land use information, earthquake boundaries and more, and can help unlock useful information and allow insurers to connect the dots on previously hidden fraud schemes.

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Accurate geo-coding can also help verify the claim location. Encircle Inc., a privately held technology company dedicated to improving field documentation and workflow for Property and Casualty insurers and claims professionals globally, uses geo tagging and time stamping to determine the authenticity of information of property claims in an exact geographic coordinate. Was the claim in an area where a significant loss event, such as flooding, actually occurred? Geospatial analysis can be used to identify the exact area affected by a natural disaster, which helps determine the amount of risk to insured properties and weed out claims that are filed from areas not located in the affected zone.

This could involve, as an example, a spate of hail damage claims in a particular area. An insurance company can quickly pinpoint the exact geographic coordinates of the claim in real-time and overlay the storm's path over that location. Was the claim location actually affected by the storm, or is it outside the boundaries (or marginal)? In large loss events, insurance companies often experience claims 'leakage' – when claims payouts are more than the terms set out in the policy. Precise use of location intelligence can help stop the leakage of opportunistic claims, or 'soft fraud'. Location intelligence can help with more than just catastrophic events. There may be, as an example, a series of small, but costly kitchen fires in a certain neighborhood. Is this just an anomaly or is it neighbors' talking over the fence about how small fires can lead to full kitchen replacement costs? With location intelligence, this cluster can be flagged for follow up investigation.

IDENTIFYING AND MANAGING RISK EXPOSURE

In addition to fraud management, once the precise location identification of a given property is determined, location analytics can then provide the ability to layer critical decisioning data to that property. By overlaying available data, past, present, and predictive information becomes available. Environmental, weather, and demographic data provides insight into potential risks from such things as flood, earthquake, railways, pipelines, weather events, crime, etc.

In June 2013, Alberta, Canada, experienced heavy rainfall that triggered catastrophic flooding which the provincial government described as the worst in Alberta's history. Areas along the Bow, Elbow, Highwood, Red Deer, Sheep, Little Bow, and South

Saskatchewan rivers and their tributaries were particularly affected. A total of 32 states of local emergency were declared and 28 emergency operations centres were activated as water levels rose and numerous communities were placed under evacuation orders.

In September 2013, the Insurance Bureau of Canada stated that insurable losses had exceeded \$1.7 billion and continued to grow, making it the costliest disaster in Canadian history in terms of insured damages (and without accounting for inflation), surpassing the \$1.6 billion cost of the North American Ice Storm of 1998. In looking at the immense costs involved in the Alberta floods, one can only speculate whether the banks would have made different decisions on lending in Alberta had they known the flood information. On July 6, 2013, an unattended 74-car freight train carrying Bakken formation crude oil rolled down a 1.2 per cent grade hill, resulting in its derailment in downtown Lac-Mégantic, QC, resulting in the fire and explosion of multiple tank cars. Forty-two people were confirmed dead, with five others reported missing and presumed dead. More than 30 buildings in the town's centre, roughly half of the downtown area, were destroyed and all but three of the thirty-nine remaining downtown buildings were deemed to require demolition due to petroleum contamination of the town site. Reports described a one-kilometre blast radius that formed the primary evacuation zone.

Location intelligence is very useful to determine the risk exposure of any company in these types of situations. In the case of Lac Mégantic, DMTI Spatial was able to use its Location Hub® Post Event Service to determine the boundary of the event and its evacuation zone. It built a geographic fence around the disaster zone and in so doing, was able to highlight the properties affected by the explosions and fires. Through satellite imaging, pre and post event images were captured which were then compared to the evacuation zone. By overlaying the images, a more clear and accurate assessment of the affected properties was possible. This in turn provided the ability for any given institution to understand what their real and specific risk was.

There is clearly a business case for financial institutions to be able to predict, analyze, and potentially mitigate their risks with respect to properties based on their location or proximity to zones prone to catastrophic flooding, forest fires, earthquakes, ice storms, and other catastrophic perils.

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CONCLUSION

With the inherent accuracy provided by geocoding and the analytic capabilities afforded from a vast number of inputs, location intelligence is a powerful tool for risk mitigation. Whether for data governance, risk assessment, fraud management, or for identifying and mitigating risk exposure, leveraging highly visual, interactive, and user-friendly tools like DMTI Spatial's Location Hub®, is a good business strategy for financial institutions. Organizations that build location intelligence into their business strategy will undoubtedly have a competitive advantage through better risk management, visual diagnostics related to geography, and on-demand access to a wealth of location-based information and assets.

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To learn more about how DMTI Spatial can help your business, please contact us at info@dmτισpatial.com.

ABOUT DMTI SPATIAL

DMTI Spatial, a member of the Neopost group, is the Canadian market leader in location based information and data quality. DMTI Spatial's award-winning solutions and high-precision data is relied upon by Global 2000 companies including top Canadian financial institutions, telecommunications companies and government agencies.

We help businesses grow through actionable insights uncovered by leveraging location to bring together and analyze a growing world of data. We make breakthrough products that change the way people use location. Learn more at www.dmtispatial.com