

**INFINILYTICS,
INC.**

NEXT GENERATION DECISION SCIENCE FOR the INSURANCE INDUSTRY



**DATA IS A PUZZLE, BIG DATA IS AN INFINITE PUZZLE -
WE BELIEVE WE CAN SOLVE THEM TOGETHER**

Whitepaper series: Big Data, Data Science, Fact-based Decisions, Machine Learning and Advanced Analytics: An Introduction

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Executive Summary

A day doesn't go by and you receive an email exchange, access a website or read an article which includes the term "Big Data, Data Science, Fact-based Decisions, Machine Learning or Advanced Analytics" and the thought comes to mind ----- how does this intersect with our underwriting/risk selection predictive analytics, data-driven analytics, or fraud analytics capabilities and initiatives? What are the differences and should we care? Then you stop and reflect.....yes we care, but are we prepared, do we have the skills, and what do we need to do?

This whitepaper helps you answer those questions by providing insights into the differences of the terms and we introduce the concept of the Decision Science Lifecycle as a method which provides an evaluation checklist you can leverage before you embark on any "analytic, data or data science initiative".

Overview

As an insurance industry, it is a known fact we are a data intensive industry; however, data has been one of our on-going challenges. The sheer volume of data, the format, the structure, sources and availability is forever changing. Where do we obtain the appropriate data and information for evaluating areas of claims severity, agency and customer profitability, customer retention, claims fraud or risk profiling? Once you obtain the data many times you are faced with additional roadblocks of how to perform "predictability", "manipulation" and "analysis" in a manner which allows you to measure performance or make the appropriate operational decisions and improve bottom-line results.

As an industry, we need to move very efficiently and quickly from analysis through prediction to enactment and combat these roadblocks. The road to success is not just analysis of the problem but being proactive to analyze it and implement decisions converting them to opportunities. Do companies need more than Predictive Modeling, Big Data Analytics, Business Intelligence and Reporting to help manage the ebb and flow of the market volatility with the continued goal of profitable growth?

Research and case studies indicate the industry has benefited from these capabilities; however, data initiatives many times require significant time and financial investments. Yet many projects are not supported by a business case, the necessary skills and talent or companies struggle with where and how to get started. Many organizations struggle with:

- Defining the business objectives and expected outcomes
- How to define "success"
- Understanding the every changing sources and profiles of data
- Moving from traditional methods of analysis to convergence of "descriptive, predictive and prescriptive" methods
- Determining the relevance of data and corresponding sources to support the converged business analytics
- Defining the frequency and relevance of data
- What technology methods and tools to leverage

One could say this is true of any new business and technology project; however, the speed in which data is generated and technology capabilities become more sophisticated and advanced – it can quickly become an overwhelming initiative. So, let's look at leveraging a practical view of "Decision Science" to make better decisions as you move forward in defining and implementing Business Analytics and Big Data capabilities into your insurance operations.

Decision Science - Introduction

The Decision Sciences Institute (www.decisionsciences.org) recently published an article on Business Analytics as the Next Frontier of Decision Science http://www.decisionsciences.org/DecisionLine/Vol43/43_2/dsi-dl43_2_feature.asp which



provides a nice overview of where we are, and we are headed with ‘decisioning’ supported by business analytics. Decision science can be thought as the logical extension of the three major perspectives: descriptive, predictive and prescriptive. If we look at the evolution of Decision Science coupled with the growth in new data sources such as social media, data on mobile devices and the various unstructured data sources in the insurance industry we have a convergence (Figure 1) happening in business analytics.

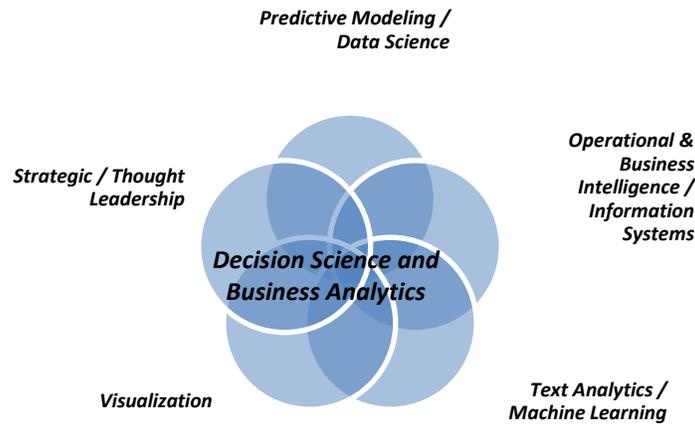


Figure 1: Decision Science & Business Analytics Convergence

We must focus on ensuring data and analytic initiatives are founded on actionable objectives, KPI’s, defined capabilities and skills, measurable ROI and expected outcomes. Without these being established at the beginning, the ability to measure success or failure can be a moot point. This is accomplished through following a Decision Science Process and Checklist.

Decision Science Process and Checklist

There needs to be a method to the madness as they say, as is true for any technology, process or strategic initiative. Decision science is better applied when there’s a process and the process is followed. It could be a process that’s worked before, or is a combination of agile, lean software development or standard solution development lifecycle. The process needs to incorporate necessary checkpoints and steps as follows:

Activity	Key Steps
Project Initiation	<ul style="list-style-type: none"> a. Quantifiable goals and objectives established b. Measurable ROI quantified c. Assignment of KPI’s / metrics to assess end goals and objectives d. Process defined for requirement changes e. Include Data/process/people/infrastructure/skills discussions from the planning phases f. Research enough about the technology, skill sets, availability of skilled resources well in advance g. Be sure to develop good backup and hand-off plans h. Definition and assessment of required capabilities and skills (see Subsequent Checklist)
Capability and Skill Checklist	<ul style="list-style-type: none"> ▪ Strategic analysts and thought leaders – resources that have business domain expertise and can identify the business results to be achieved. ▪ Decision Science minded “thinkers” – resources that can define the models design, development



Activity	Key Steps
	<p>and implementation and also blend in their strategic / domain experts to establish that ROI / objectives are achieved in a measurable manner and are scalable.</p> <ul style="list-style-type: none"> ▪ Subject matter experts (your SMEs) – resources that are knowledgeable of the current business capabilities and short-comings in current methods. ▪ Data Scientists with skills ranging from traditional business intelligence to ad hoc analysis through advanced analytics with structured, unstructured and social media data analysis. ▪ Evaluate Sourcing Alternatives for Capabilities and Skills such as: <ul style="list-style-type: none"> ▪ Data Science as a Service – There are technology vendors that provide data scientists to augment current analytics teams to design develop and implement Big Data platforms and Visualization. Additionally, they have skills to create domain specific metadata and data dictionaries to extract deeper insights from data and to evaluate and recommend build versus buy options for a lower TCO and faster ROI.
Design and Architecture	<ol style="list-style-type: none"> a. Include models that have relationships / co-existence with other areas that would need modeling as well. For example: if your requirements include the build of an underwriting model using varying new approaches that distinguish risk from profitability of the customer, you might want to consider modeling customer retention / acquisition techniques. b. Understand the business process from start to end and place the current model design in the process flow to understand the inputs and outputs. This will surface any pre-requisites that need to be modeled for the flow to be well-defined and the model to succeed. c. Establish your Big Data architecture and standards (See figure 2: Infinilytics Insurance Big Data Reference Architecture). d. Assess design requirements that might require additional capabilities and skills. (See Capability and Skill Assessment
Implementation	<ol style="list-style-type: none"> a. Allow and Adapt to strategic / market changes b. Include checkpoints to assess performance c. Do not spend excessive time investigating & documenting current processes / systems if they will be replaced by other packaged solutions. d. Be sure to document & communicate new processes / data flow changes to all stakeholders including customers, agents and vendors as applicable.
Maintenance	<ol style="list-style-type: none"> a. Maintain people with required skills sets b. Do not try to substitute key functions being performed by humans everywhere. Some tasks are meant for and better performed by human brain c. Adapt to changing goals and plan around it.
Enablement	<ol style="list-style-type: none"> a. Apply the result to the objectives / goals to ensure they are reasonably met or will be met. b. Determine ROI and test the KPI's before any hand offs c. Be sure to repeat the process anytime changes to goals, objectives, new requirements surface. d. The enablement task is better handled by a human brain, so try to minimize automation and use specialized skilled resources to accomplish tasks fairly quickly

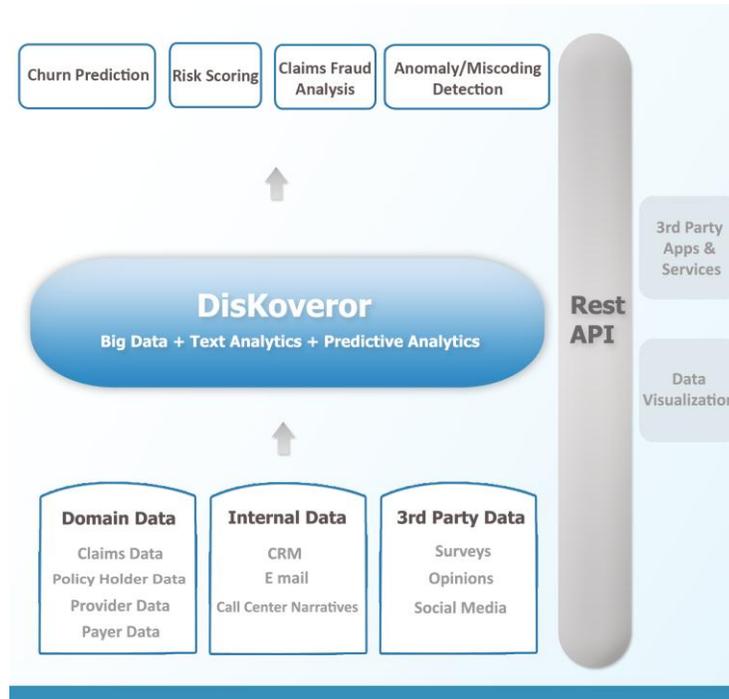


Figure 2: Infinilytics Insurance Big Data Reference Architecture

Conclusion

As highlighted by the Decision Science Institute: *“The real trend this year is not the technology. It’s about helping business people make better decisions, and actually change the way companies do business. Analytics has always been about transforming business, but the recent huge changes in analytic technology have created interesting new opportunities for business innovation”.*

From industry research, it is known fact that data-driven insurance organizations are achieving competitive advantage by tapping into their data for business advantage. As new data sources and the volume of data increases, it is important to move beyond the traditional data analytics and embrace the convergence of Big Data and Decision Science whether it be to define claims severity models, customer-sentiment analysis or risk profiling – these new data analysis techniques enhance your business outcomes.

However, do not underestimate the change in skill sets required as having the appropriate skilled resources to exploit the data can make or break the business vision and outcomes end-to-end. Thankfully, newer companies have emerged that address some of these challenge by offering Decision Science as a Service. Working closely with the business stakeholders, these companies bring in a technology stack that can be customized and deployed over the cloud. Decision Science can now be part of every business – big or small.



**About the Authors:**

- **Cindy Maike**, is a Partner with Tshibanda & Associates, LLC and oversees the insurance industry practice. She has over 25 years of consulting/advisory services and research experience including senior management positions in the software industry. Her focus is in providing thought leadership in the insurance industry in the areas of business strategy, business architecture and technology integration. She has been actively involved in industry standards including efforts with ACORD and OMG. She previously held the leadership positions at Progress Software, Aon-Inpoint, Strategy Meets Action (formerly Smallwood Maike & Associates), and IBM. Cindy is a frequent speaker at industry events regarding data and analytics.
- **Sri Ramaswamy**, is the Founder and CEO of Infinilytics focusing on big data for Insurance, a start-up company based in California. She has over 11 years of extensive experience in Enterprise Applications, Business Intelligence, Data Analytics and Decision Science in the Financial Services sector. She has experience with convergence of traditional Data Analytics with Unstructured data, Social Media & Visualization capabilities. She most recently served as an Insurance Industry Solutions Architect. Her focus and objective is to provide Decision Science as a Service for the Insurance Industry by enabling Insurance Industry achieve continuous profitability through the usage of emerging techniques in Big Data Analytics.
- **Ravi Condamoor**, is the Founder & CEO of Serendio and over the last 20 years has been an entrepreneur and technocrat, holding senior management and technical positions in numerous organizations to help shape the computing industry with innovative products and solutions. At Serendio, Ravi has focused on bringing Big Data Science solutions to a broad range of Data-intensive industry domains as in Retail, Insurance, Education, and Healthcare. Previously, Ravi held leadership roles at Portal Software, Oracle, Sybase and IBM. Ravi holds several patents in E-Commerce and On-Line Trading systems and has publications in Distributed Computing and Graph Theory.
- **About Infinilytics** – *Infinilytics is based in the San Francisco, CA area and focuses on providing Data Science Analytic Solutions specifically for the Property & Casualty and Health Insurance industries to enable its clients to achieve enhanced profitability through the usage of emerging techniques in Big Data analytics. The organization has extensive experience in Enterprise Applications, Business Intelligence, Data Analytics and Decision Science in the financial services sector as well as experience with the convergence of traditional data analytics with unstructured data, social media and visualization capabilities.*
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- **About Serendio** -- *The name Serendio is derived from the expression Serendipitous Discovery. Unearthing the not-so-obvious and seemingly unrelated from Data - structured and unstructured, is a hallmark of our technology and our name merely reinforces that. Our Big Data Science solutions help in driving Decisions and Actions from Data for a wide variety of businesses in Retail, Insurance, Media, Education, and Healthcare.*
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