



The Content Experts
formerly IT World Canada

WHITE PAPER



INSIGHT LEADING TO ACTION

GETTING THE REAL VALUE FROM BIG DATA AND ANALYTICS

The Journey So Far

Introduction

Over the course of the past few months, ITWC interviewed a number of technology and business leaders as part of our investigation into Big Data and Analytics and how companies are leveraging these. As we did this, we learned a great deal, made some interesting observations and achieved some real insights. In this white paper, we share our learnings with you in the hope that they may propel you further along your journey.

What is Big Data and Data Analytics?

One key discovery made is that Big Data and Analytics is not a destination, it's a journey. While this might seem trite, it is very much true. Each company we interviewed was at a different stage of development. Each company saw the challenges in a slightly different way. And, each aimed at what can only be described as a moving target.

Insight Leading To Action

When asked to define Big Data and Analytics, we found that all definitions provided by the companies which participated shared similar objectives. No company pursues Big Data and Analytics for its own sake. They are all in search of a result—a concrete and measurable benefit for the effort and investment made in this area. What that result is and how it is measured depends on the particular company and context, but each company is in search of this basic aim.

Three Waves of Data

When asked about the type of data being collected or analyzed, we found that companies also faced a similar challenge, described below in terms of three waves:

Wave 1 - Structured and Transactional Data

This represents the bulk of the data that companies deal with today. Largely transactional data, it is produced by day-to-day business activities and trapped in current and often legacy systems. By its very nature, this transactional data has a fixed structure which represents a strength and a weakness. Its strength lies in the fact that such data is relatively easy to retrieve and analyze in either standard reporting or with the use of business intelligence tools. The weakness also lies in the structure. It may or may not be possible to find key information. Integration between different silo sources is often an issue as organizations struggle to find a 'single source of truth' and to integrate disparate data stores and structures. Most of the work done in what we know as business intelligence falls in this realm.

Wave 2 - Unstructured Data

There is another rapidly emerging area of data that has incredible value, but little structure. It consists of various media—video, unstructured text and increasingly social media data.

More and more of this unstructured data is created outside the walls of a company, or at least outside the paradigm of structured capture and storage. The data that is created within social media is more problematic. It is unquestionably valuable. Few, if any, companies dispute this today.

For those that do, the evidence supporting value is mounting. The dated idea that social media is just a vehicle for discussions does not hold up to scrutiny. For example, a recent Twitter study showed that 60 per cent of followers have purchased something because of some information shared on Twitter. Other studies have confirmed what we already know from our own behaviors. When we make major purchases, where do we go first? We go to the internet and start typing in the search bar. From there, we follow the conversations. And what are those conversations? Increasingly they are created within the bounds of social media.

For companies this represents a huge store of data about customers and about the company itself—if it can be harnessed. That requires dealing with a number of challenges. As the data is unstructured, how do you query it and analyze it? Because it exists in digital form, how do you successfully gather key information about context and sentiment – things even our language is notoriously bad at revealing? In a world where a comma placement in the

phrase “eats shoots and leaves” can make the difference between a murder scene and an animal’s diet, understanding the complexity of human interaction from digital data is a challenge.

Wave 3 – The Internet of Things

Before most organizations fully realize the potential of Wave 1 and 2 – a third wave of data will be solidly in place. In what is referred to as the Internet of Things (IoT), millions of connected devices exist sending each other massive amounts of data ready to be intercepted and analyzed. Machines gather this data on the factory floor, in our cars, trucks and around the world through devices in our offices and our homes, and increasingly in technology that we wear and carry.

In both Wave 1 and 2, the volume and velocity of data are an enormous challenge. By some estimates, a full 90 per cent of all the data in the world has been generated over the last two years. Internet-based companies are awash with data that can be grouped and utilized.

By even the most conservative of estimates, the number of connected devices and the data they will accumulate with the IoT will dwarf even the current records by an order of magnitude.

What Matters Is How You Aggregate and Analyze

If we return to our basic premise that Big Data and Analytics require the merging and analyses of all three types of data to achieve ‘insight leading to action’ we have indeed outlined the challenge.

The Benefits?

Given the seemingly insurmountable challenges, organizations may indeed ask, “Is this trip really necessary?” and “Do we really need Big Data and Analytics?” The answer to this lies in a few simple questions. What is it worth to a company to improve its identification of potential buyers by even a few percentage points? What can be achieved by knowing even a little more about customer reaction and demand for new products and services? What value can be found in knowing that problems exist with customers and customer experiences before these have escalated into the loss of key clients? These questions represent the potential revenue issues.

Similar questions exist on the cost side of the equation. If a company could detect errors in processes before they lead to waste, what might it save? Or, if it could detect machine failure early and do preventive maintenance before shut downs occur, how valuable would this be? What would even a few percentage points of additional throughput be worth?

And what happens to your competitive position should a competitor have these advantages while your company does not? Does your progress in Big Data and Analytics represent a barrier to entry and possible disruption or does your lack of progress constitute an invitation? Do you need tweak your existing business model, or create a new one?

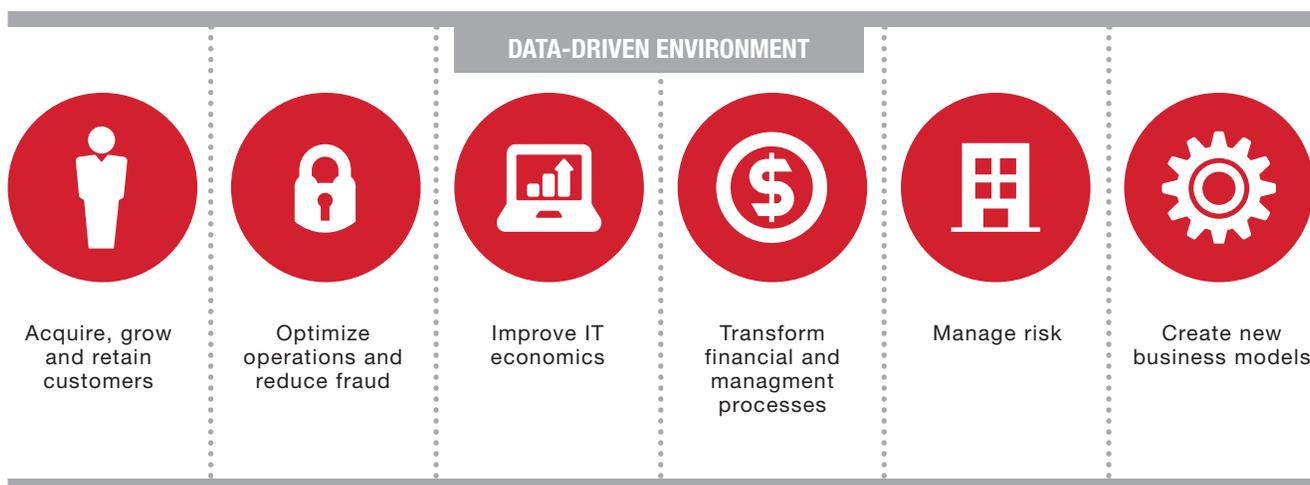


Figure A: Key questions represent key business goals and imperatives

The Future Is Here Now

Only 12 years ago, a key scene in a movie called “Minority Report” showed the main character walking through a mall where each item was aware of his presence, sending individualized messages to him and communicating the value of each item based on his specific profile and needs. This character is, for all intents and purposes, a market segment of one.

Until recently, that movie was merely science fiction. Today, the technology to deliver that same experience not only exists but is within the realm of ‘cost per customer’ that makes it affordable to companies of almost any size.

How Companies Should Address This Challenge?

It’s certainly a daunting challenge and the question is real. What should we do now, today? The answer to that is – it depends. Where are you now? And, where do you need to be to meet the challenges of your competitive world. To express this, we created a ‘maturity model’ akin to the SEI development maturity models used in software development.

Level 0 – Heroes and Zeroes

Companies at the first level manage without any structured data programs. If you asked the management of the company as to how they make decisions, they would say that they operate by experience or even gut feel. The analytical mind might belittle this stage, but often it represents the fierce determination of an entrepreneur or the collected wisdom of a company that has deep experience with its market and clients. As long as the company can take risks on the entrepreneurial venture or if the future is like the past on the operational side, this is a viable strategy.

Stage 1 – Business Intelligence

At this stage companies have started to collect, report on, and manage with data gathered largely from operations. Operational reports, whether from legacy systems or compiled manually are hallmarks of early stages. Dashboards and scorecards are more advanced evidence. The real key is that management decisions are made based on the data gathered.

Stage 2 – Business Analytics

In stage two companies have the ability to gather more data and to aggregate

and analyze existing data in a relatively sophisticated, if structured manner. The ability to merge and analyze information from different sources or even corporate silos is a sign of later maturity. Overall, however, the organization is dealing primarily with structured data.

Stage 3 – Predictive Analytics

At this stage, the organization is able to go beyond analyses of past history and begins to make predictions based on patterns that are detected in one or more data sets. This level is dependent on the ability to develop complex predictive algorithms which, in turn, allows a company to develop approaches and algorithms to analyze unstructured data from social sources and, where applicable, from intelligent devices.

Stage 4 – Micro-Segmentation

Here a company has the ability to gain insights and the agility to respond in near-real-time to trends identified within its data. While it's tempting to dismiss this as nirvana, the reality is that some digital enterprises are already testing capabilities in this area. They can predict and customize an offer to you in less than a second—an offer that they could fulfill. In a short period of time, credible analysts predict that innovations like 3D printing could make this a reality for those who produce non-digital products and merchandise.

Where are you?

While the stages are presented as discrete units for illustrative purposes, they really represent more of a continuum. The key is to know where you are in this continuum as well as what it would take to advance to a different stage. When the potential benefits or risk/competitive threat mitigation are clear, the necessary business case is easier to define.

II. The Journey to Data Analytics Excellence

The Big Data and Analytics journey is different for every company. As noted earlier, each company will have its own challenges, a differing level of maturity, and a different vision.

Each company has to plan their own unique journey. But they need do not need to do this from a blank page – paper or electronic. Experience has shown that there are key steps that are common. How the organization deals with each might be unique but in the experience of many companies, the steps themselves are similar.

A Journey Map

When the journey is uncertain and results are not yet achieved, it's a good idea to share the path that you are proposing. Knowing that there is a path brings confidence. The diagram shown below illustrates one view of the path that many organizations take.

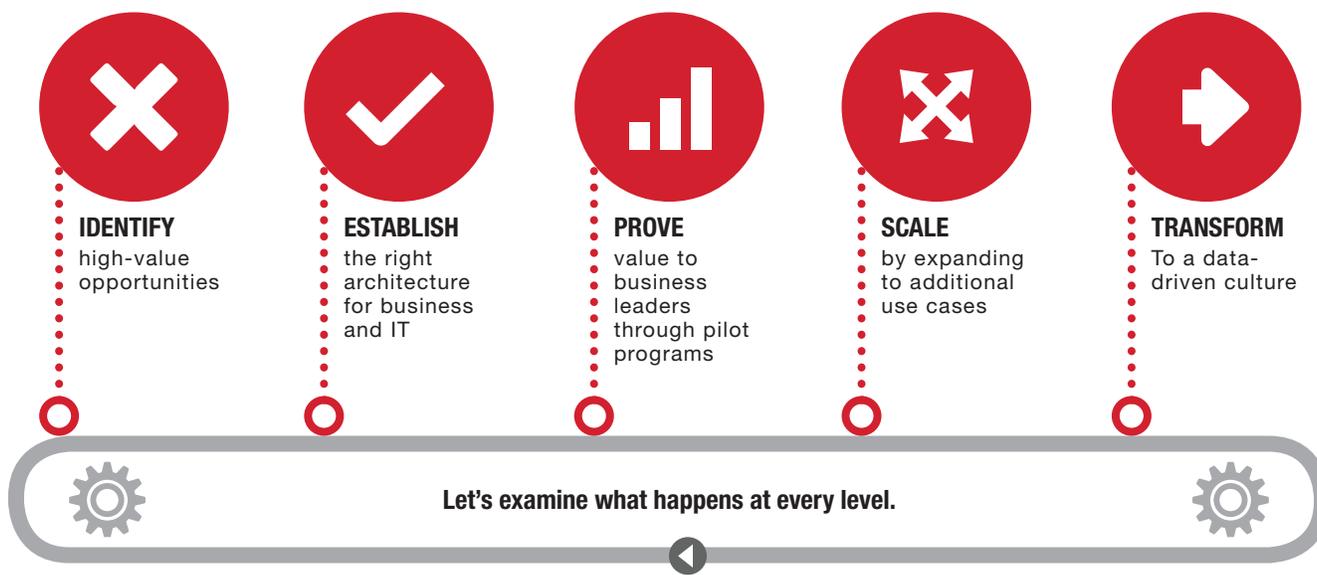


Figure B: A Journey Map: Big Data and Analytics

- Identify the needs for transformation by leveraging Big Data and Analytics. What opportunities exist in all types of structured, unstructured and real-time data? Articulate this in the form of a strategy and a vision. Share it actively and seek out key challenges from across the organization. At this point, the process will need a champion. Consider appointing a Chief Data Officer, or an Analytics Champion. Try to make this a senior role to demonstrate the importance to your company.
- Establish the structures and architecture necessary to achieve your goals. Create a technology blueprint. Don't forget the importance of people and skills. It's not all about the technology. The temptation is to envision and deliver the "perfect architecture". While a key future state is desirable, remember that the pace of change is so great that today's perfect architecture may be tomorrow's legacy system. This is a balancing act, but when push comes to shove, results are what count.
- Prove the concept through pilots and early successes. The reality is that no perfect business case is as compelling as some early quantifiable results. These inspire the organization and each success makes facing the next set of challenges easier. Some organizations may need to get to this early proof before really committing to Big Data and Analytics.
- Scale using the momentum created by the early successes and based on vision and architecture from the early stages. If there is no consistent leadership structure or governance in place by this point, drive to implement this.
- Transform and seek ways to infuse analytics everywhere. Measure and report success. Use the governance you established in earlier stages to drive more ambitious transformations of your processes, structures and even products.

These are the generic terms for the steps in the process. Do not use these as a formula but rather as a guideline. Make them your own and infuse them with your own challenges and even terminology. A plan that is jointly developed is more likely to be owned and ultimately implemented.

Analytics Centre of Excellence

Inevitably a new Big Data and Analytics program will start with pilots, sanctioned or not. These can be sponsored by IT, developed in Marketing, or increasingly done directly in the Lines of Business. The old general wisdom in IT was to try to control these ‘shadow IT’ projects. It was not solely territorial. Too many times these projects would be started by business areas that had all the right business ideas but lacked the technical prowess to deliver a lasting solution that was ‘ready for prime time’.

Today, savvy IT executives know that the best course of action is to get out in front of the Big Data and Analytics needs. They actively support and sponsor pilots and most importantly work with key functions such as marketing to build support areas such as a centre of excellence. The leadership can go a long way towards breaking down silos and building the collaboration that is needed.

Within that centre of excellence can also come the concept of a Big Data and Analytics champion. As noted this could be a Chief Data Officer or a role as creative as a Data Czar. The key is to make this position as senior as possible to give sponsorship and leadership to a champion who can earn the credibility of the entire organization including the executive group.

One final benefit to the establishment of a centre of excellence is the ability to reuse and learn. A wagon may need four wheels, but the wheel only has to be invented once.

III. Key Success Factors

In each Big Data and Analytics journey there are some key elements that must receive special consideration as they prove time and again to be critical to the ongoing success of any program. One such factor is the leadership and sponsorship that we discussed earlier. There are three other factors that are critical.

1. A Culture of Data-Driven Decisions

Without this fundamental culture, the progress that is possible can easily be undermined. For insight to really achieve benefits, it must by necessity drive change to some process, function or even a belief held within the organization. Even in the face of compelling evidence from a pilot, resistance and denial can scuttle your efforts.

Likewise, those who try to impose data on unready or unwilling organizations discover that the effort soon becomes about compliance and not engagement. This can be felt in spades when the data places an organization or area in a bad light. Mere compliance and hidden resistance can sink a Big Data and Analytics program.

To the degree possible, especially in the early stages, try to ensure that the data you are providing is welcomed and is used to achieve results by an engaged if not enthusiastic group.

2. Measures of Success

At the outset of this paper, we noted that the success of Big Data and Analytics is dependent on ‘insight leading to action’. We have examples of some of the key areas where results can be achieved. What is absolutely critical is that these results —whether early pilots or ongoing programs—be measured and reported. Too many implementations fail to pass on the insights and results they achieve. This requires not just measurement, but visible measurement. It is important to set goals but it is equally important to measure them.

Figure C – a sample from an IBM presentation on Big Data shows the power of measurable results.

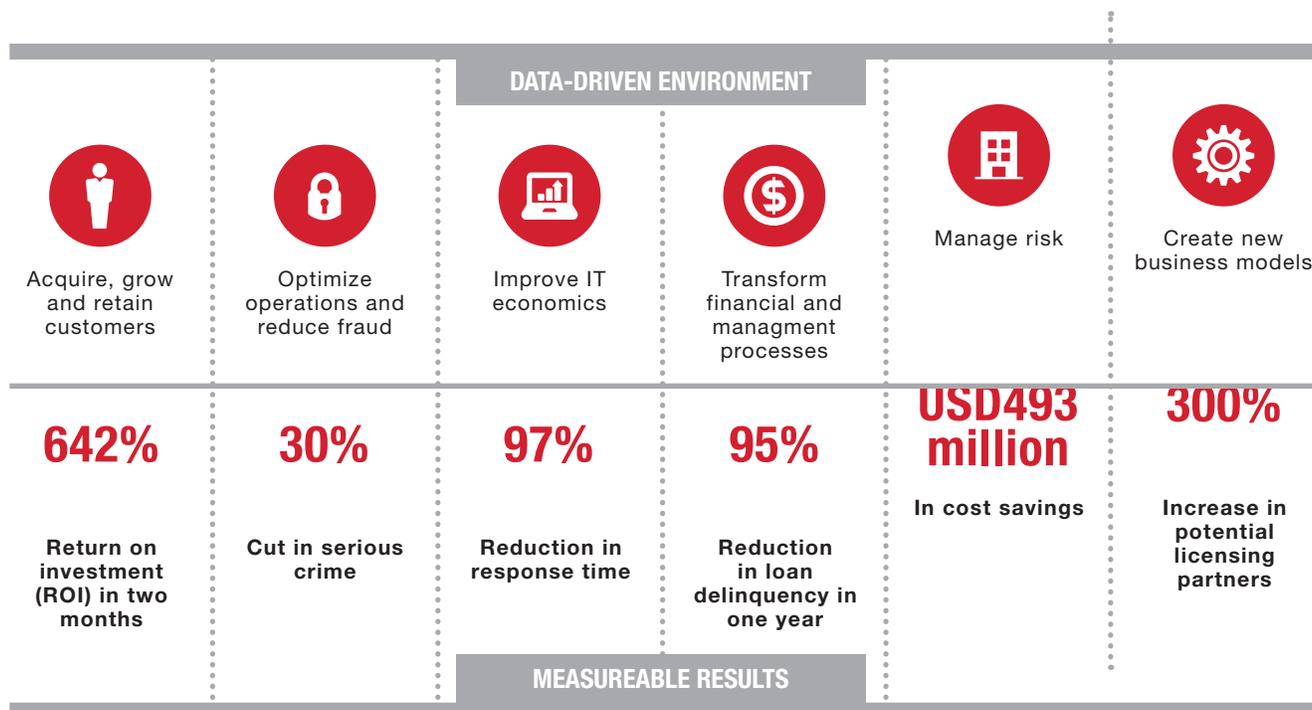


Figure C: The Power of Measurable Results

3. The Right Tools

As we talked to CIOs and CMOs about their results from Big Data, we were frequently cautioned to look towards the business results before considering the tools. But at some point in the exercise the right tools do matter.

For example, in our discussions, one of the major impediments to rolling out self-service in data analytics was the lack of user-friendly tools. It was felt that the existing tools were too complex for business users to understand.

In other examples, we found that organizations could be victims of success from tools that could not scale or meet the real needs of the company. Big Data and Analytics is driven by business need and focused on user experience but there are also complex technical implementations requiring sophisticated tool sets.

Fortunately, for many organizations the maturity of SaaS and Cloud-based alternatives allows some chance to experiment and prove out new tools before committing to massive investment.

But there is no substitute for knowing your needs by either building an internal capability or finding a partner who can assist you in ensuring that you have the right tools for the job at hand. Remember too that these relationships will need to play out over time. Big Data and Analytics today is akin to a shopping centre. There are Big Box locations that are large fixed structures with established processes.

There are also a lot of boutiques that cater to a specific need or challenge. The Big Box stores tend to be long lasting, but the boutiques can come and go. You often need some of both in your arsenal—the established and the exploratory. Again, knowing your needs, finding the expertise, and making a plan are essential steps.

IV. Summary

We began this journey several months ago with a look at how CIOs and CMOs could more actively collaborate on the journey to Big Data and Analytics. As we carried out those discussions we found that more and more of that collaboration was facilitated by keeping everyone's 'eye on the prize'.

That prize – the promise of Big Data and Analytics was increasingly drawn back time and time again to that single phrase: insight leading to action. That insight, the actions that it encouraged and the results achieved could work to create a virtuous cycle that would establish the value of Big Data and Analytics in the organization.

As for the need for collaboration? As Harry Truman was reputed to have said, "It is amazing what you can accomplish, if you do not care who gets the credit." Not one of the executives we talked to believed that there would never be challenges. But this is a journey and challenges are to be expected. We hope we've shared some key findings that will help you develop your journey map.

About ITWC

ITWC is a privately-owned digital media and content services company. Building on over three decades of solid relationships with Canada's technology decision-makers through award-winning excellence in journalism, ITWC delivers incisive, relevant information to executive and managerial audiences. It also provides leading, integrated marketing content strategies to clients, including over 200 global Fortune 1000 companies.

ITWC, formerly IT World Canada, is the exclusive Canadian affiliate of International Data Group (IDG) which publishes more than 300 publications worldwide.

www.itwc.ca