

WHITE PAPER

Data to Diamonds

Turning Information into a Competitive Asset

Introduction

This whitepaper provides a guide to the world of BI and Analytics and how organizations can leverage the power of Big Data to improve and innovate, to reach their objectives, and to outperform their competition. Industry research and experience from CGI's day-to-day customer engagements indicate that there is a steadily increasing need to leverage all information available to an organization to improve business results.

In a world of uncertainty and economic challenges, Information Management (IM), Business Intelligence (BI) and Analytics have become critical to survive. The importance of monitoring and measurement of the performance of an organization, knowing customers behavior and complying with regulatory demands has become evident. Well-implemented BI and Analytics solutions deliver competitive advantage to an organization. Conversely, organizations that do not use information effectively to guide decision making are at a distinct disadvantage, and the gap will only grow wider.

This whitepaper demonstrates the potential business value and key challenges to overcome, illustrated with best practices from CGI client engagements. It will define the core capabilities needed to succeed in IM, BI and Analytics initiatives.

The CGI Data to Diamonds Portfolio is applied every day by a vibrant worldwide community of professionals in their eco-system of clients and partners. It continues to evolve by sharing best practices and putting them to use. It is an active knowledge base for clients, partners and members of CGI.

We look forward to working with you, transforming your data to diamonds.

Key Challenges

CREATE VALUE WITH BI AND ANALYTICS

There are many ways that BI and Analytics can be used to create value in your organization:

- Creating transparency – simply making data and information more easily accessible to relevant stakeholders in a timely manner can create tremendous value. In addition making relevant data more readily accessible creates significant opportunities to save costs, increase quality and improve time to market.
- Enabling experimentation to discover new possibilities, expose variability, and improve performance - as they create and store more transactional data in digital form, organizations can collect more accurate and detailed performance data, and correlate performance results with variations in inputs.
- Segmenting populations to customize actions - BI and Analytics allows organizations to create highly specific segmentations and to tailor products and services precisely to meet those needs.
- Replacing/supporting human decision making with automated algorithms - sophisticated analytics can substantially improve decision making, minimize risks, and unearth valuable insights that would otherwise remain hidden.

LEVERAGE OUR BEST PRACTICES

At CGI we have found that success with BI and Analytics comes from paying sufficient attention to three primary types of components and conditions, addressing:

- **Business Value and Adoption** – managing value of BI and Analytics in support of business decisions, user satisfaction and adoption.
- **Organization and Processes** – managing effectiveness and adaptability of delivery Methodology, Business-IT Collaboration, development process and governance.
- **Technology** – managing end-user facing technology, data stewardship and Governance, IT infrastructure and performance.

In addition to these building blocks, delivery of BI and Analytics must align with the business dynamics organizations are facing. Key aspects to consider are:

- **User Experience** – users will adopt what they can use and what brings them value. The converse is also true. Best-practice organizations recognize that adoption and value cannot be assured by top-down mandates, usually they require bottom-up acceptance.
- **Proximity** - IT and Business experts working hand in hand on the same goal: to achieve success and increase business value by improving business processes.
- **Competitive Costing** - delivering business value against competitive cost rates. Differentiate delivery models for commodity versus added value services.
- **Agility** - highly adaptive to changing business environment and user needs. Flexible scaling of service supply preventing re-builds and technology lock-in.
- **Sustainability** - leverage IT evolution to improve business services. Cater for various levels of maturity in your customer base.

About this document

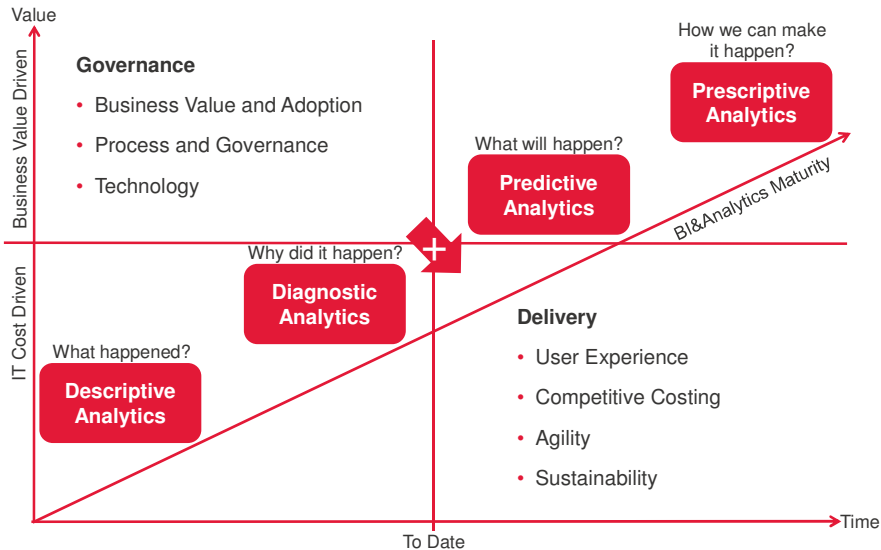
This whitepaper is part of the Data to Diamonds portfolio. This is the product of collaboration between members in the Information Management (IM), Business Intelligence (BI) and Analytics practices of CGI worldwide. Over 4,000 members are working worldwide on a daily basis with customers to sustain and improve the business value of Business Intelligence and Analytics application across industries.

Why CGI

- Practical focus: successful implementation and demonstrable value, understanding the „realpolitik“ of BI and IM.
- The depth to consult, build and run significant BI – IM initiatives.
- Domain expertise in our core focus industries: government, finance, health, telecom & utilities, oil & gas, manufacturing/retail/distribution
- Proven success applying the CGI BI Framework methodology within the CGI Management Foundation
- Thorough technical understanding & experience in complex BI, advanced analytics and Big Data DWH initiatives
- Strong and deep international community (4,200 BI-consultants worldwide) led by an interdisciplinary Practice Council
- Able to optimize client intimacy and cost efficiency with combined local and global delivery capabilities
- We build long-term value and long-term relationships with our clients

Maturing BI and Analytics

In today's business dynamics, the demand for automated decision making, based on reliable predictive analytics is growing rapidly. The diagram shown below represents the maturing of BI and Analytics, moving from descriptive and diagnostic analytics to predictive and prescriptive analytics, unleashing data's full potential.



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Adaptors of these technologies and methods tend to create better business results than their industry peers. In doing so, they are able to transition from looking backwards to looking forwards, leveraging the power of BI and Analytics.

Descriptive Analytics -

provide insights via data summaries and performance indicators shown in fixed-format reports and in ad-hoc reports created to answer “what has happened?” questions. Typical formats: dashboards, columnar tables and graphical dashboards.

Diagnostic Analytics -

come from drilling-down into the components of performance measures including the terms of ratios, segments including customer types, regions, divisions, and time periods. This allows the analysts and decision makers to go from “what happened” to “why did it happen”. Typical format: cross-tabulations..

Predictive Analytics -

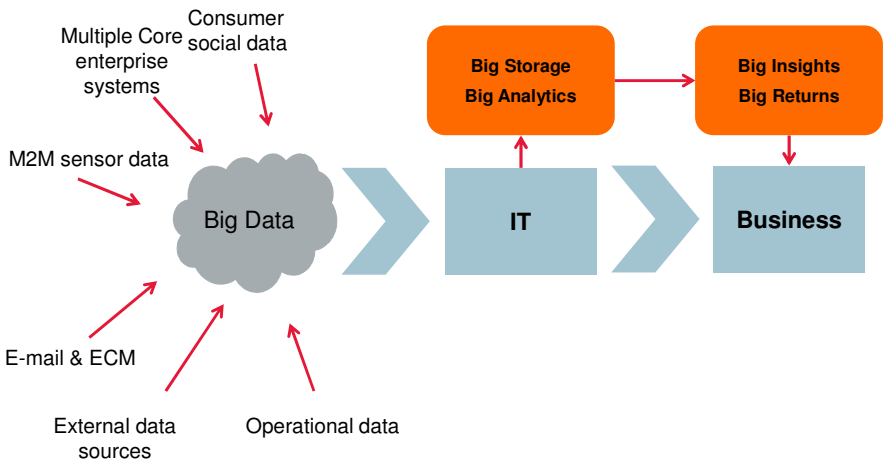
explicitly involve time sequences and history: if A occurs before B, and the two are statistically correlated, then A can be used to predict B. Sophisticated predictive analytics applications include the creation, calibration and use of multiple-variable models in business processes, moving from “why did it happen” to “what will happen”. Typical formats: scatter plots all the way to regression and neural models.

Prescriptive Analytics -

take predictive models one step further by using cause and effect relationships discovered in data to determine the best courses of action, moving from “what will happen” to “how can we make it happen”. Typical format: combinations of predictive models and hypothesis testing reports.

Leveraging the power of Big Data

Across sectors and regions, several cross-cutting trends have fuelled growth in data generation and will continue to propel the rapidly expanding pools of data. These trends include growth in traditional transactional databases, continued expansion of multimedia content, increasing popularity of social media, and proliferation of applications of sensors in the Internet of Things. The number of devices capable of automatically gathering and storing digital data is increasing fast: our mobile phones, home appliances, digital televisions, cars, industrial process monitoring systems, email customers, web browsers, social media applications, traffic and security cameras, and numerous other sources of digital information produce vast masses of data all the time.



As data and its levers becomes an increasingly valuable asset, their intelligent exploitation will be critical for enterprises to compete effectively. Organizations that understand and embrace the use of data are pulling ahead of their peers in tangible corporate performance measures. The use of data will become a key basis of competition across sectors, so it is imperative that organizational leaders begin to incorporate managing data into their business plans.

CGI strongly believes Big Data is a game changer, but will not replace the existing Data Warehouse and Information Foundation concepts and capabilities. Big Data provides us with the opportunity to open up the average one-size-fits all Enterprise Data Warehouse architecture to become more cost effective as well as more aligned with business demands. The importance of Data Governance becomes even bigger when moving from today's rather monolithic data warehouse approach to a more federated data infrastructure.

Data is BIG - you need automated predictive big data analytics.

Data is HETEROGENEOUS - you need methods for integrating heterogeneous and parceled data sources.

Data is HARD TO UNDERSTAND – you need visualization/summarization to support informed decision-making.

Data needs to be ACCESSED – you need context-sensitive, on-line, open and role based personalized information.

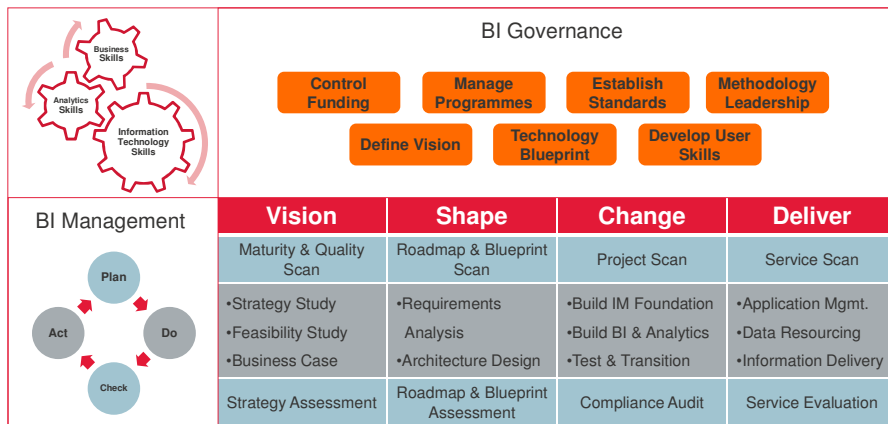
Data is NOISY – you need anomaly detection, filtering, pruning, cleansing and enriched data.

Using a proven Framework

CGI designed its BI and Analytics Engineering Framework to enable your organization to leverage the power of Big Data and to deal with the challenges it brings. Applying the framework secures delivering the promised benefits in all stages:

- **Vision** – control risk and costs by formulating expectations exactly. Puts initiatives on the right track and mobilizes stakeholders.
- **Shape** – control risk and costs by comprehensive and feasible needs. Allows removing business dependent question marks before commencing with a project.
- **Change** – control risk and costs by methodical system development. In build verification and validation processes during development.
- **Deliver** – secure business continuity. Allow improved decision making within the operational or managerial processes.

The CGI Data to Diamonds Framework™ considers BI as a lifecycle, implemented by a continuous business improvement program. The Framework provides a comprehensive inventory of the activities, models and products needed in the full BI lifecycle. This inventory is based on well-established principles in the ICT architecture arena and supports structured and consistent delivery of BI. Standardized scans identify bottlenecks and opportunities, and allow planning for next steps. Standard reviews secure the projected value.



With the CGI Data to Diamonds Framework™ a holistic approach to BI and Analytics is offered, enabling evolving from traditional BI based on primarily internal and structured data, to a comprehensive BI and Analytics environment leveraging the power of Big Data. As part of the continuous development and management of our Framework, CGI developed accelerators to highly automate the development of key components in a modern Information Warehouse environment. Based on best practices in large implementation projects accelerators have been developed and integrated to save costs and increase quality and stability of complex environments.

“The CGI BI Framework is the most comprehensive BI methodology I have seen, after meeting lots of BI vendors and systems integrators worldwide.”

“A large European Insurance Company improved agility of Business Intelligence solutions and saved over 25% in Business Intelligence Application Development and Maintenance implementing CGI BI Framework”

50% reduction in development effort – due to the automation of process generation developers can focus on the 20% of complex processes and generate the remaining 80% with a push on the button.

25% reduction in testing effort - due to number of test cases already covered within the accelerators themselves, preventing repeating testing of the same logic time and time again.

30% reduction in operation - due to reduced number and severity of incidents and problems in the data integration process execution.

Improving the BI Cost-Benefits ratio

COST DRIVERS

Organizations keep on investing in BI solutions, but what value does it add and what is the origin of this thrive for expansion. Growth is fed by three factors: a technology push, an information demand and the maturity of the BI governance culture within organizations.

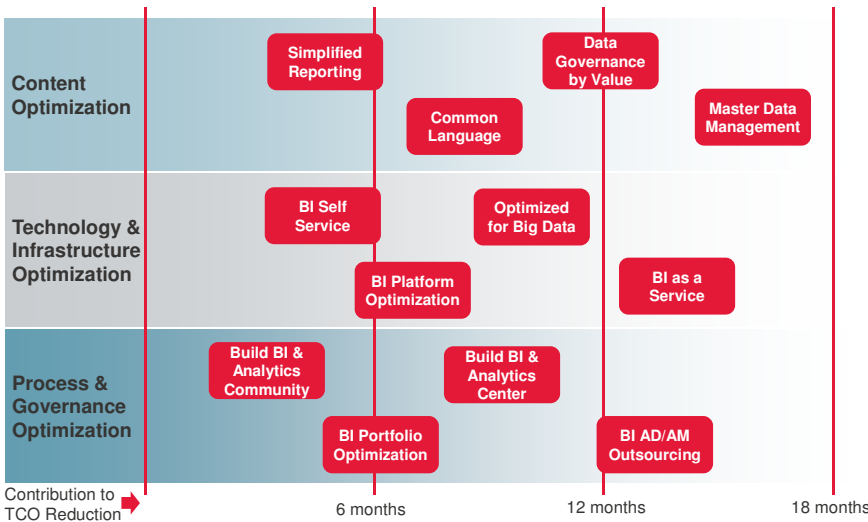
- Technology Push – more, bigger, faster and flashier, technology offers so much more nowadays. With the current state of development BI can deliver more and at a faster pace.
- Information Demand – give me the information now, insight in the actual company situation is getting increasingly important, especially considering the current economic climate and business dynamics.
- BI Governance Culture – being in control, when the BI solution has entered an organization, it has the tendency to get a life of its own. This is due to a lack of governing the information supply process and all its instruments.

MANAGE THE TOTAL COST OF OWNERSHIP

Reversing the current process of creating ad-hoc BI solutions in the organization starts with understanding the current situation by understanding the current Total Cost of Ownership (TCO) of BI and Analytics:

- Define the current cost of the overall BI environment and assess the potential of cost reduction.
- Benchmark BI cost with industries best standards and estimate potential of cost reduction.
- BI cost analysis and overview of cost reduction opportunities.

Based on the understanding of the current TCO profile a cost management and reduction roadmap can be compiled, identifying clear cost benefits for the short-, mid- and long term. Based on CGI's knowledge and experience in the BI marketplace opportunities to reduce cost in BI to consider are identified below.



Early Wins implemented with proven increases in revenue, leveraging CGI's revenue collection solution. - *State of California Franchise Tax Board*

BI and Analytics implemented by CGI, provide insight into cause/effect relationships and enable measurement of treatment strategy effectiveness. - *A Fortune 50 Manufacturer*

Facilitating the collection analysis and calculations of various indicators to improve Marketing and Sales information. – *Large Entertainment Company*

Eliminate the limitations and Inherent risks associated with sun setting the old reporting environment, introducing new technology with enhanced performance and functionalities. – *Cigna Group Insurance*

Experience the benefits

As part of the Data to Diamonds portfolio we offer quick starters, to experience the value we bring.

D2D BI INSPIRED DAY

We will prove the advantages of BI to your people and get them engaged. In several break-out sessions they will discuss and build consensus around your BI topics. Delivering proactive BI Ambassadors within your organization, that really want to use Business Intelligence. Providing guidance towards BI Solutions, Processes and Elements that fit best in your organization.

D2D BI QUICK SCAN

CGI measures the maturity and quality of the existing BI landscape, involving all relevant stakeholders on IT, Analytics and Business side of the organization. Delivering a shared and objective understanding of current maturity and quality of BI, setting the baseline for measuring future performance of BI initiatives, providing recommendation for improvements and cost savings

D2D BIG DATA PROOF OF VALUE

Create visibility and awareness of your use case, utilizing our Big Data Lab. Providing an expert overview of Big Data solutions and potential benefits for you. Discover the potential business value of Big Data. Addressing Big Data challenges with key stakeholders. Establishing shared view on your Big Data Business Case.

D2D FUTURE BI ROADMAP

Setting the ambition for your next generation Information Warehouse. Design roadmap to reach the ambition, in feasible and affordable steps. Establishing shared view on current maturity and quality of BI and Analytics Services. Identified potential TCO & Business Value improvements, leveraging Big Data concepts.

We look forward to working with you, transforming your data into diamonds. For more information about CGI, visit www.cgi.com or email us at info@cgi.com.

Based on the results of the BI scan the BI strategy was adjusted, optimal buy-in and commitment from all stakeholders was created - *Vattenfall*

CGI provided the platform enabling alignment of analytical activities and improved collaboration, improving individual and collective efficiency and effectiveness. - *Alberta Health & Wellness*

Continuous improvement of business value of BI and Analytics as the strategic partner (over 15 years) for this client to develop and maintain all IM, BI and Analytics applications. – *Bell Canada*

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With 69,000 professionals operating in 400 offices in 40 countries, CGI fosters local accountability for client success while bringing global delivery capabilities to clients' front doors. Founded in 1976, CGI applies a disciplined delivery approach that has achieved an industry-leading track record of on-time, on-budget projects. Our high-quality business consulting, systems integration and outsourcing services help clients leverage current investments while adopting new technology and business strategies that achieve top and bottom line results. As a demonstration of our commitment, our average client satisfaction score for the past 10 years has measured consistently higher than 9 out of 10.