WHITE PAPER

Data to Diamonds

Delivering valuable business insights

CGI

Experience the commitment®

In a world of uncertainty and economic challenges, data and analytics have become critical to survive. The importance of monitoring and measuring the performance of an organization, understanding customer behavior, and complying with regulatory demands is evident. Well-implemented data 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 white paper provides a guide to the world of data and analytics, discussing how organizations can leverage the power of big data to improve and innovate, reach their objectives, and outperform their competition. Industry research and CGI's experience indicate a steadily increasing need to leverage all information available to an organization to improve business results.

In this paper, we demonstrate the potential business value and key challenges to overcome, illustrated with best practices from CGI client engagements. We also define the core capabilities needed to succeed with data and analytics initiatives.

CGI's Data2Diamonds (D2D) solution portfolio is applied every day by a vibrant worldwide community of professionals in their work with clients and partners. It continues to evolve through the sharing and implementation of best practices. It is an active knowledge base for clients, partners and CGI members. We look forward to helping you transform your data to diamonds.

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Retail sales levels
Sheffield
Share of the income of participants by quarter
Quarter I
Quarter II
Quarter III
Quarter IV
IT costs
Logistics costs
Construction 160 $
Marketing 97 $
Consulting 55 $
9%
8%
RTG

Key benefits of data and analytics

There are many ways that data and analytics can be used to drive value in your organization. Making information more easily accessible to relevant stakeholders in a timely manner generates significant opportunities to reduce costs, increase quality and improve time to market.

As an organization collects and stores more transaction data in digital form, it benefits from more accurate and detailed performance data that can be used to analyze, measure and improve performance. Comparing performance results with variations in inputs creates opportunities for experimentation and the discovery of new possibilities.

Data and analytics also enable organizations to segment populations for the purpose of customizing their decisions and actions. Highly specific segmentations can be developed, enabling organizations to tailor products and services to meet each group's unique needs.

In addition, replacing and/or supporting human decision making with automated algorithms through sophisticated analytics substantially improves decision making, while minimizing risks and unearthing value insights that would have otherwise remained hidden.

Leveraging best practices

At CGI, we have learned that success with data and analytics comes from paying sufficient attention to the following:

- **Business value and adoption:** To generate real value, data and analytics must be used to support business decisions and user satisfaction and adoption must be achieved.
- **Organization and processes:** Success with data and analytics also depends on the effectiveness and adaptability of the delivery methodology, close business and IT collaboration, and strong development processes and governance.
- **Technology:** The technology side of data and analytics is likewise crucial. Organizations must successfully manage end-user facing technology, data stewardship, governance, IT infrastructure and performance.

In addition to these building blocks, the delivery of data and analytics must align with the business dynamics an organization is facing. Key aspects to consider include the following:

- **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 achieved by top-down mandates; usually they require bottom-up acceptance.
- **Collaboration:** IT and business experts must work hand in hand to achieve the same goal, i.e., delivering increased business value through improved business processes.
- **Competitive costing:** Business value must be delivered at competitive cost rates. It's important to evaluate commodity versus added-value delivery models.
- **Agility:** Any data and analytics approach must be highly adaptive to changing business environments and user needs. Flexible service scaling prevents rebuilds and technology lock-in.
- **Ongoing evolution:** It's important to leverage IT evolution to improve business services and cater to various levels of maturity within your customer base.

Business data attributes

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 methods to support informed decision-making.

Data needs to be ACCESSED: You need context-sensitive, online, open and role-based personalized information.

Data is NOISY: You need anomaly detection, filtering, pruning, cleansing and enriched data tools.

Maturing data and analytics

In today's business world, the demand for automated decision-making based on reliable predictive analytics is growing rapidly. The diagram below highlights the maturing of data and analytics, illustrating how we have moved from descriptive and diagnostic analytics to predictive and prescriptive analytics, resulting in the unleashing of the full potential of data.

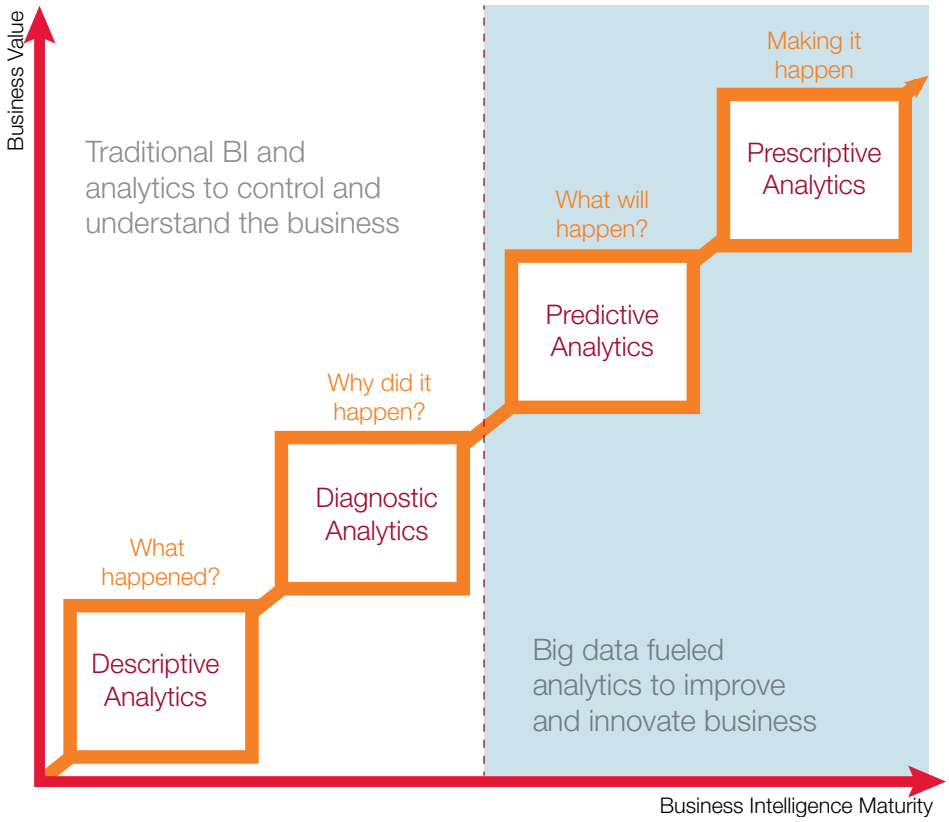


Fig 1: Data and analytics evolution

Adopters of these maturing technologies and methods generate better business results than their competitors. In doing so, they are able to continually look forward, evolving and maximizing their data and analytics investment for greater gain.

Descriptive analytics

Provide insights via data summaries and performance indicators shown in fixed-format and in ad-hoc reports created to answer, "What has happened?" type questions. Typical formats include dashboards, columnar tables and graphical dashboards.

Diagnostic analytics

Derived from drilling down into the various components of performance measures, including ratio terms and segments (e.g., customer types, regions, divisions, time periods, etc.). Allow analysts and decision makers to go from, "What happened?" to "Why did it happen?" Typical format used is cross-tabulations.

Predictive analytics

Involve time sequences and history (e.g., 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 include 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 formats include combinations of predictive models and hypothesis testing reports.

Leveraging the power of data and analytics

Across sectors and regions, several trends have fueled the growth in data generation and will continue to propel the rapid expansion of data pools. These trends include the following:

- Growth in traditional transactional databases
- Continued expansion of multimedia content
- Increasing popularity of social media
- Proliferation of the Internet of Things

The number of devices capable of automatically gathering and storing digital data is increasing fast. Our mobile phones, medical devices, home appliances, digital televisions, cars, industrial monitoring systems, e-mail systems, web browsers, social media applications, traffic and security cameras, and numerous other sources of digital information produce vast amounts of data continuously.

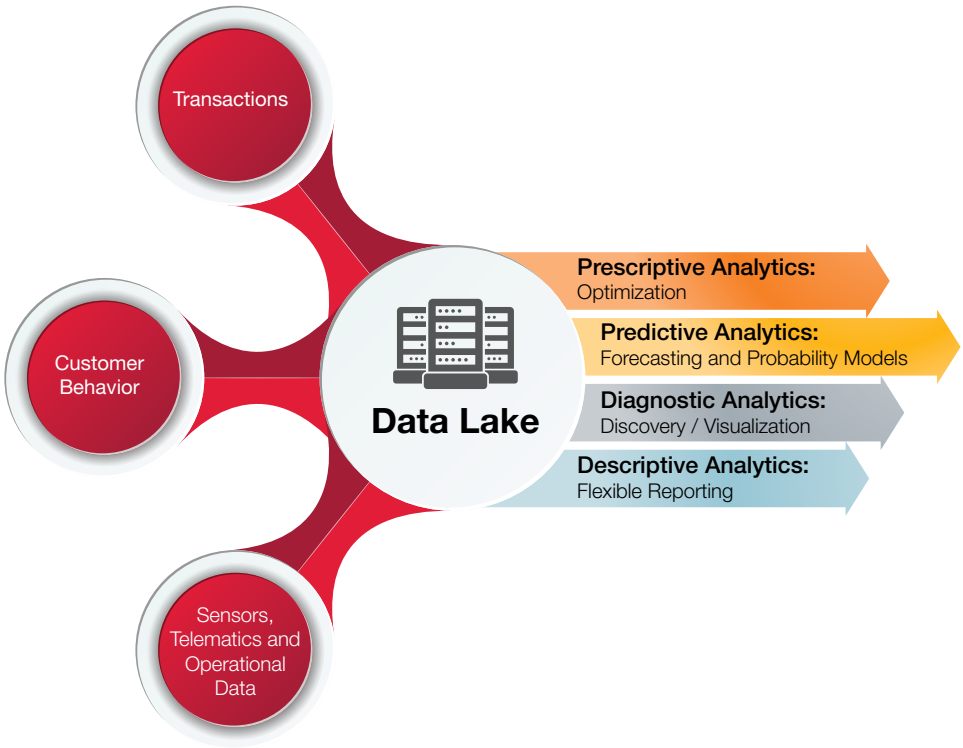


Fig 2: Data In - Insight Out

As data and its levers become increasingly valuable, 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 data management into their business plans.

CGI strongly believes data and analytics are game changers, but will not replace existing data warehouse concepts and capabilities. They will, however, become part of the enterprise data lake, a next generation data repository to take advantage of structured as well as unstructured data generated from social media and other digital devices. Data and analytics provide us with the opportunity to adapt the average one-size-fits-all enterprise data lake architecture to become more cost effective, as well as more aligned with business demands. The importance of data governance increases when moving from today's rather monolithic data warehouse approach to a more federated data infrastructure.

Case study

By implementing CGI's D2D framework, a large insurance company was able to transform its business intelligence function from being perceived as costly and never on time and on budget to a value-added service center for the entire business. Savings included the following:

- Cost savings of 10% for new projects
- 20% reduction in labor cost
- 40% reduction in total cost of ownership

Improving the data and analytics cost-benefit ratio

Organizations continue to invest in data and analytics solutions, but what value is their investment adding and what is motivating it? The growth is being propelled by three factors: new technology, increasing information demands and the maturity of the data and analytics governance culture within organizations.

- **New technology:** More, faster and flashier technologies such as Hadoop and Spark offer so much nowadays. With these new technologies, data and analytics can deliver more value and at a faster pace.
- **Information demand:** Immediate and accurate insight across the business is increasingly important, especially considering the current economic climate and business dynamics.
- **Governance culture:** When a data and analytics solution is introduced in an organization, it has the tendency to take on a life of its own. This is due to a lack of governance over the information supply process and all its components.

MANAGE THE TOTAL COST OF OWNERSHIP

Reversing the current approach of implementing ad-hoc data and analytics solutions in the organization starts with understanding the total cost of ownership (TCO) of data and analytics. This involves the following:

- Defining the current cost of the overall data and analytics environment and assessing the potential for cost reduction
- Benchmarking data and analytics costs with industry best standards and estimating the potential of cost reduction
- Data and analytics cost analysis and an overview of cost reduction opportunities

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

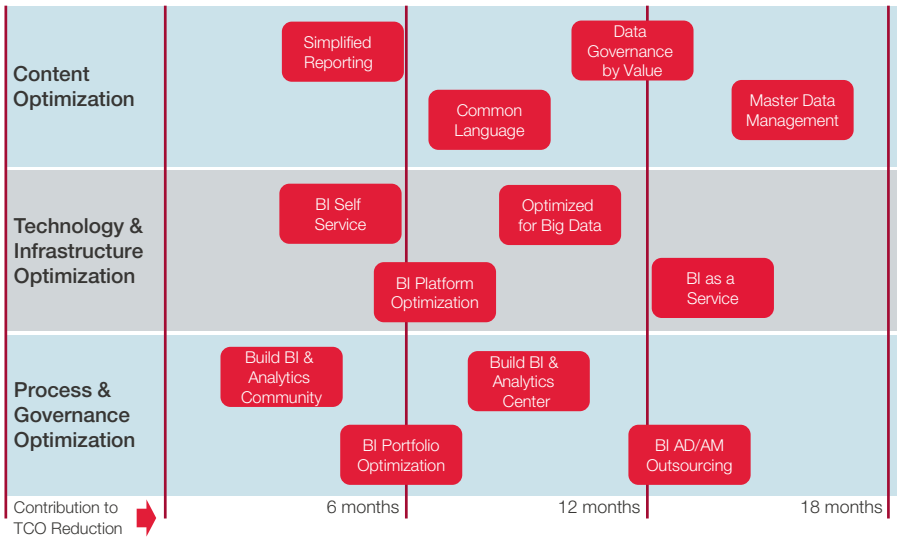


Fig 4: Data and analytics evolution

Why CGI

Using a proven framework

CGI designed its data and analytics engineering framework to enable clients to leverage the power of data and to deal with the challenges it brings. Applying the framework ensures the delivery of the promised benefits at all key stages, including the following:

- **Vision:** Control risks and costs by precisely formulating expectations. This ensures initiatives are on the right track and mobilize stakeholders.
- **Shape:** Control risks and costs through a comprehensive and feasible need assessment. This removes business-dependent question marks before a project is started.
- **Change:** Control risks and costs through methodical system development. Build in verification and validation processes during development.
- **Deliver:** Secure business continuity for improved decision making within operational or managerial processes.

CGI's Data2Diamonds framework considers data and analytics as a lifecycle implemented through a continuous business improvement program. The framework provides a comprehensive inventory of the activities, models and products needed throughout the lifecycle. This inventory is based on well-established principles in the ICT architecture arena and supports structured and consistent delivery of data and analytics. Standardized scans identify bottlenecks and opportunities, and allow planning for next steps. Standard reviews secure the projected value.

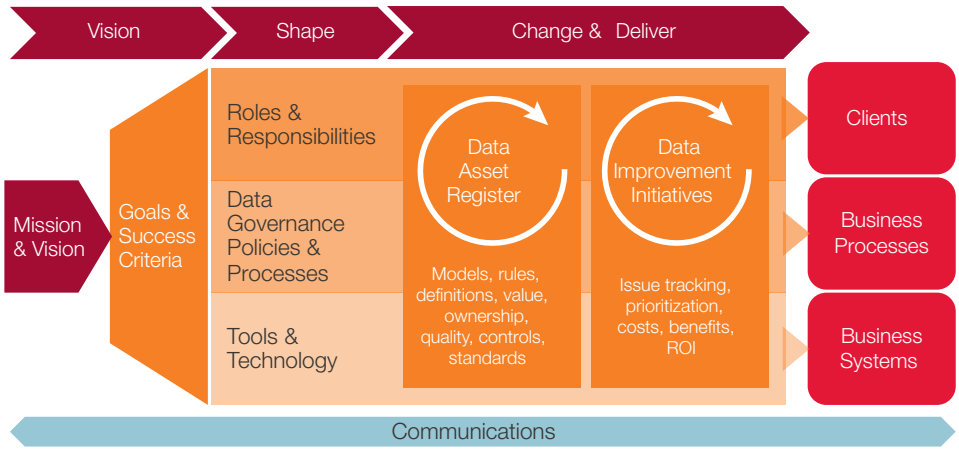


Fig 3: Data governance function

With the CGI Data2Diamonds framework, a holistic approach to data and analytics is offered, enabling organizations to evolve from traditional approaches based primarily on internal and structured data, to a comprehensive data 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 developed through large implementation projects, accelerators have been developed and integrated to save costs and increase the quality and stability of complex environments.

CGI data and analytics client results

Early wins implemented with proven increases in revenue, leveraging CGI's revenue collection solution.

Large Tax Board in U.S.A.

BI and analytics implemented by CGI provide insight into cause/ effect relationships and enable measurement of treatment strategy effectiveness.

Fortune 50 manufacturer

Collection analysis and the calculation of various indicators to improve marketing and sales information facilitated.

Large entertainment company

The limitations and Inherent risks associated with sun- setting the old reporting environment eliminated by introducing new technology with enhanced performance and functionalities.

Global health insurance provider

Experience the benefits

As part of our Data2Diamonds portfolio, we recommend taking the following initial steps in your move toward experiencing the full benefits of data and analytics.

D2D QUICK SCAN

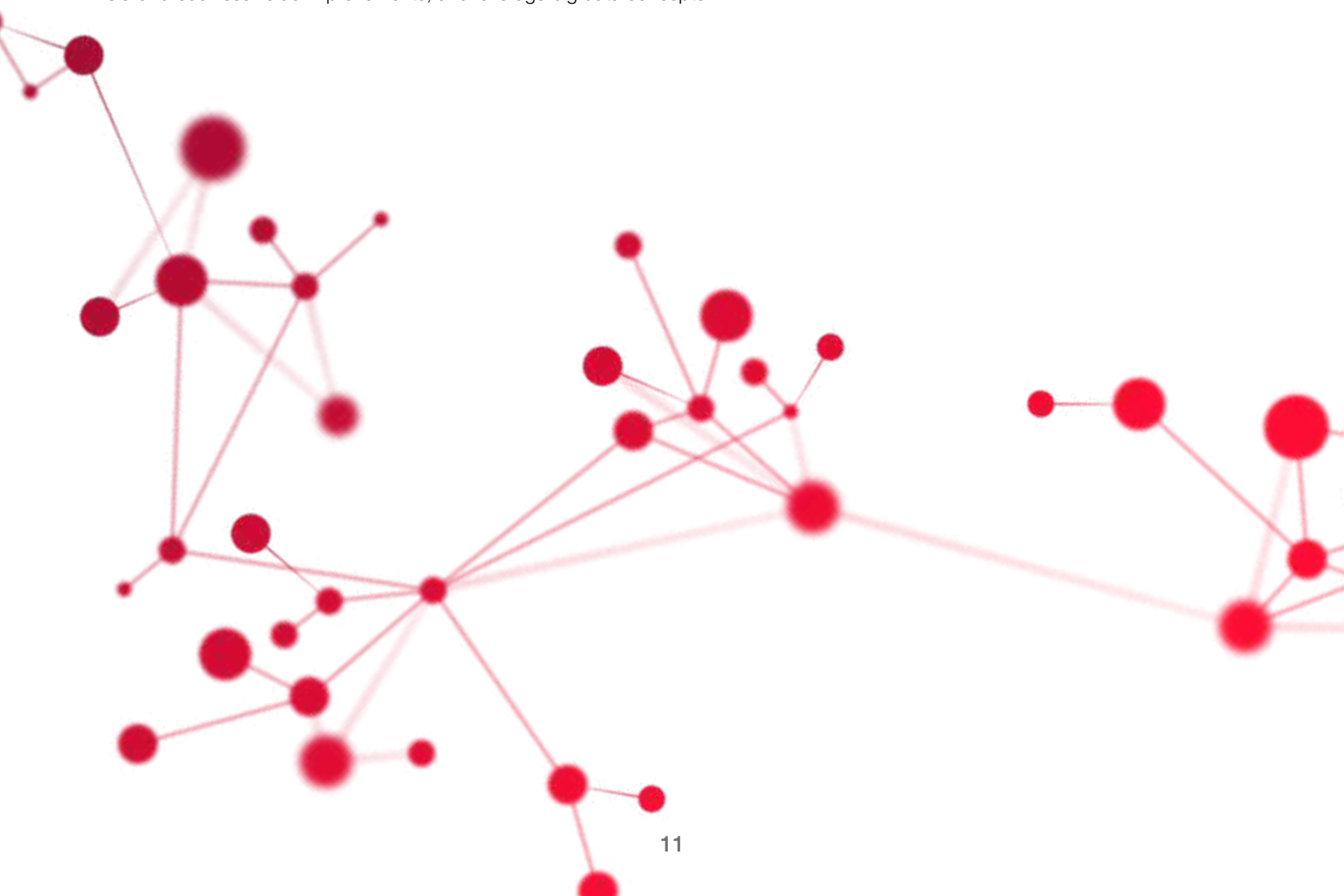
CGI measures the maturity and quality of your existing data and analytics landscape, working with all relevant stakeholders on the IT, analytics and business side of the organization. This results in a shared and objective understanding of the current maturity and quality of your data and analytics environment, setting a baseline for measuring the future performance of data and analytics initiatives and providing recommendation for improvements and cost savings

D2D PROOF OF VALUE

Visibility and awareness of your data and analytics use case can be generated using Data Lab. We provide an expert overview of big data solutions and potential benefits for your organization, enabling you to discover the potential business value of data and analytics, addressing data and analytics challenges with key stakeholders, and establish a shared view on your data and analytics business case.

D2D FUTURE ROADMAP

At this stage, we help you to set the goals for your next generation information warehouse or Data Lake depending on the existing information management maturity scale. We design a roadmap for reaching each goal through feasible and affordable steps. This helps to establish a shared view on the current maturity and quality of data and analytics services, identify potential TCO and business value improvements, and leverage big data concepts.



We welcome the opportunity to help your organization transform your data into diamonds. For more information, visit **www.cgi.com/data2diamonds** or email us at **data2diamonds@cgi.com**.

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Founded in 1976, CGI is one of the largest IT and business process services providers in the world, delivering high-quality business consulting, systems integration and managed services. With a deep commitment to providing innovative services and solutions, CGI has an industry-leading track record of delivering 95% of projects on time and within budget, aligning our teams with clients' business strategies to achieve top-to-bottom line results.