DO MORE WITH
YOUR DATA.
DO MORE WITH
YOUR FUTURE.

Enterprise of the Future

Becoming an enterprise of the future begins with exponential change driven by a data transformation. This requires moving from a siloed, proprietary, and retrospective approach to a unified, available, and answer–oriented model that makes data the central focus of the business. Every decision, every pivot, every objective, and every move is driven by data.

The enterprise of the future is built on data. Organizations must use data as an asset to see, understand, and plan not only for what's happening now, but what will happen next. Business leaders and companies that recognize this critical success factor and choose to embrace it gain a huge competitive advantage, especially in times when innovation is critical to future success.

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Enterprises have seen monumental change over the last several years. Rapidly growing data volumes coming from more sources have presented both challenges and opportunities. Enterprises that rose to the challenge by using scalable technologies to capture, manage, and optimize data to drive innovation and decision making have emerged stronger.

The enterprise of the future will unleash even more power from, and accelerate the use of, their most valuable asset—data. This requires approaching data analytics with a cloud-first mindset. The approach uses a modern cloud data analytics platform that is hyperscalable to unify all data and make 100 percent of that data available for analytics.

The future of business demands new levels of speed, agility, flexibility, and innovation—and a cloud-first data analytics platform is the key to unlocking it all. A modern cloud architecture helps future-proof organizations by providing the flexibility and portability to deploy anywhere, without being locked into a single cloud or architectural choice. The cloud enables easy access to unlimited (and independent) compute and storage, delivers the capabilities and elasticity organizations need, and does all of this with less management overhead. As cloud transformation continues to accelerate, only a hybrid multi-cloud platform can equip enterprises to thrive in a future full of opportunities.

The platform gives companies the ability to serve millions of users, perform trillions of interactions per month, and drive billions of dollars in new incremental revenue (Figure 1).

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Data Transformation Advances the Business and Technology

Data transforms organizations in two ways (Figure 2). The first is a business transformation. This entails businesses shifting from a traditional approach to one focused on future capabilities. It involves moving from:

- Broad-based segment offers to real-time service personalization at the individual level

- Dealing with problems once they arise to proactive problem resolution that solves them before the customers or the business knows they're happening

- Channels being isolated to frictionless channel integration where each channel is aware of customer interactions across other channels

- An inconsistent customer experience to a seamless integrated customer experience

Figure 1: Driving Improvement Across the Enterprise

	Traditional	Best-in-Class	Future
Service	• NPS Range: -10 to +20 • Reactive, slow, uncoordinated • Painful to deal with, sometimes unhelpful	• NPS Range: 35 to 50 • Prepared and coordinated across channels • Helpful when possible, follow up on issues	• NPS Range: 70+ • Frictionless channels, first time resolution • Proactively fixing issues ahead of time
Pricing	Perceived to be expensive or same as	Based on behavioral segmentation	Perceived to be best for the money
Network	• Segment based and inflexible • Data throughput and speed issues • Multiple dropped calls in key locations	• Flexible and competitive in the market • Occasional issues with connectivity • Occasional dropped calls	• Personalization available based on data • Planned/optimized by customer value • Throughput and low latency when required
Digital	• Difficult to navigate • Abandoned processes/ channel changes	• Simple but effective navigation • Integrated with other channels	• Seamless, sophisticated capability • Contact driven, trillions of interactions per month
Enterprises	• Reactive: driven by customer contact • Transaction driven, millions per month • Isolated, single channel • Service activation slow	• Proactive: smart and ready for contact • Interactive driven, billions per month • Integrated with other channels using data • Service activation improved	• Adaptive: anticipating/ controlling contact • Context driven, trillions of interactions per month • Seamless, world-class experience and service • Service activated in real time

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A Glimpse into the Enterprise of the Future

Evolving from a traditional enterprise to an enterprise of the future entails:

- Bringing together and analyzing all available data

- Focusing on descriptive, prescriptive and predictive analytics

- Targeting a single customer with personalized service offers

- Performing more than 100 million queries per day

- Running over 1 million models, mostly in real time

- Enabling trillions of interactions each month

On the functional or technology side, this means organizations need to move from:

- Segments of many to treating customers as a segment of one and personalizing ongoing interactions with each and every segment

- Reporting what happened with descriptive analytics to combining descriptive analytics with predictive and prescriptive analytics to project what will happen and take action

- Millions of interactions each month to trillions of interactions per month

- Hundreds of models in batch to millions of models in near real time

- A thousand queries per day to more than 100,000,000 queries per day

To be an enterprise of the future, companies must have a future-ready data analytics platform that makes these capabilities possible. The enterprise of the future

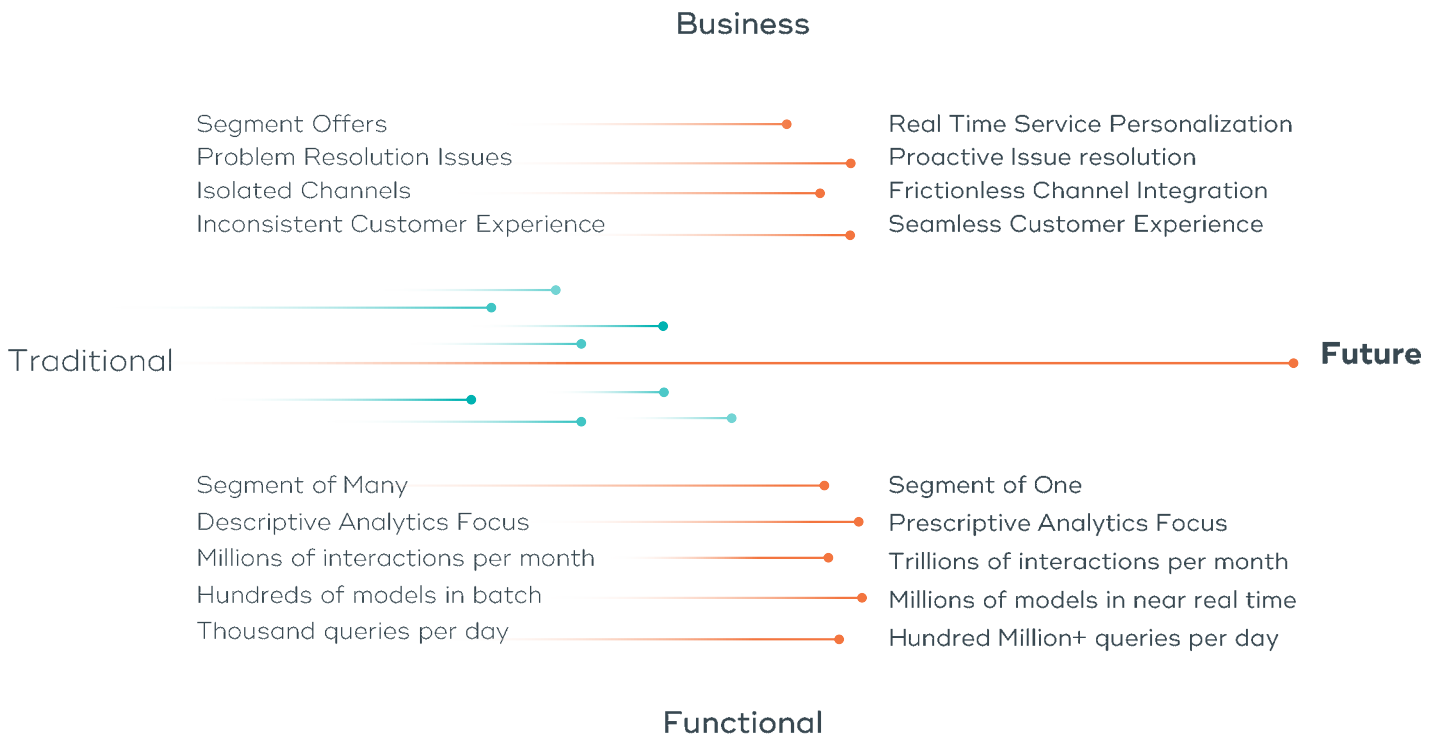## It's exponential change, driven by data transformation.

Figure 2: Advancing Business and IT

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is about the cloud, hyperscalability, and the ability to analyze all available data. These enterprises will take a cloud-first approach that utilizes premier capabilities on a modern cloud analytics platform to gain new levels of agility, compute power, and innovation. A modern cloud architecture helps future-proof organizations by enabling the flexibility and portability for deployment anywhere,

including public clouds and on-premises, without being locked into a single cloud or architectural choice.

Best-in-Class Is Not Good Enough

Investing in data analytic solutions to become best-in-class is the wrong approach when the demands of hyperscale, complexity, and speed increase exponentially each year. Organizations that design for best-in-class and are trying to figure out the best way to store data at the cheapest cost, focusing on improving the capabilities of a single departmental silo, or looking at a specific feature are not planning for the future.

An enterprise of the future re-envisions the ongoing data journey. These enterprises equip themselves now for the rapidly expanding demands ahead. They design the data journey with the future in mind—a future where levels of personalization drive all the way down to everything from stores to SKUs to customers.

The various ranges of data drive millions of models each day to deliver relevant interactions (Figure 3). That's why companies need both insights and outsights to be future-ready versus being best-in-class. There is already a significant gap between traditional companies and best-in-class companies.

For example, data analytics deployments for traditional companies typically support about six major applications along with active users measured in the hundreds. The total user population is measured in the thousands, with a typical query load in the tens of thousands to hundreds of thousands range.

Traditional systems often have 98 percent availability. Many companies are experiencing a step-change across all measures. They require even higher availability because their mission-critical systems are directly embedded in operational processes.

Enterprises of the future such as retailers will go beyond best-in-class to process hundreds of millions of queries per day just to generate demand and out-of-stock forecasts. Their data and analytics platform will need to be open to partners and suppliers—and potentially to

When is the Right Time to Invest in Innovation? Now

One positive of a crisis like COVID-19 is that it drives new business practices and innovation. McKinsey & Company says that mastering "innovation essentials" is important right now as companies prepare to return to growth coming of the crisis caused by the pandemic.

"Crises are like adrenaline for innovation, causing barriers that once took years to overcome to evaporate in a matter of days," according to McKinsey. "Entrenched orthodoxies on 'the way things are done' are replaced with 'the new way

we do things' almost overnight." The company notes that 90 percent of executives believe the COVID-19 crises will fundamentally change the way they do business over the next five years.

This chart from McKinsey shows how organizations can benefit by investing in innovation:

History suggests that companies that invest in innovation through a crisis outperform peers during the recovery.

Normalized market capitalization, index (Q1 2007 = 100)

McKinsey & Company

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customers—with total numbers of users measured in the millions, even if some users are infrequent.

The Future Belongs to Those Optimizing All Data

Global companies have realized the benefits of shifting from traditional analytics to predictive and other advanced analytics such as artificial intelligence (AI) and machine learning. The enterprise of the future takes the next step. It not only employs analytics to alert the company about what's going to happen next, but it uses prescriptive analytics to take autonomous action.

And it's not just about companies using their own data. Enterprises of the future will ingest, integrate, and incorporate external data along with internal data.
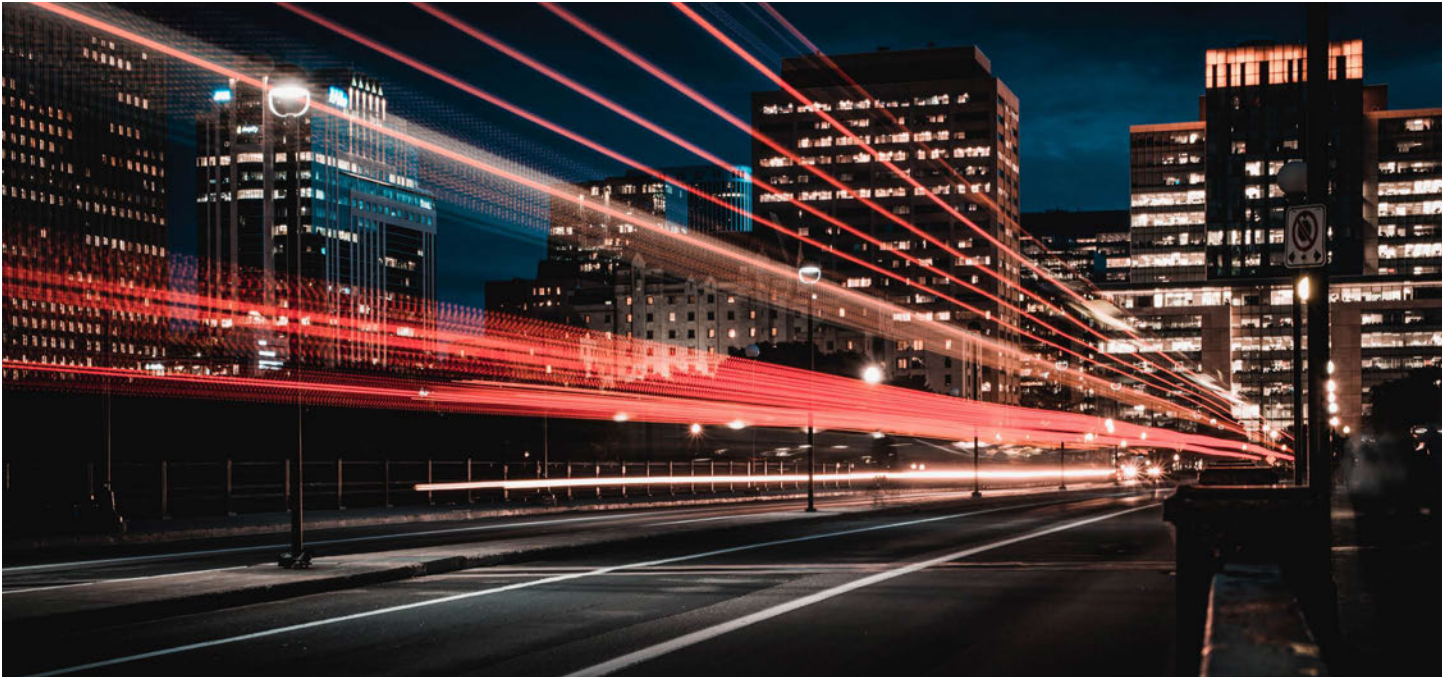
This allows organizations to get both "insights" and "outsights." Insights are achieved when companies analyze their own data, which helps drive the business. The drawback is these insights fail to put an organization's operations, situation, or future into the global context where it belongs.

Outsights are even more valuable. They're derived from more data from more data sources for richer insights. The difference between insights and outsides is the like the difference between a microscope and a telescope. Microscopes are great for diagnosing, but telescopes provide the ability to anticipate and plan ahead.

A shift to integrating all data, inside and outside the organization, and getting insights from a modern data analytics platform that enables companies to hyperscale their business, will enable enterprises of the

Figure 3: Business Analytical Characteristics

Traditional	Best-in-Class	Future
Management: Analytics is not a priority	Management: C-level top priority	Management: CEO top priority
Data operating in silos	Key processes are partly integrated	Normal part of the business
Product centric	Transformation in progress	Customer-centric operation
Knowledge is power	Fragmented customer experiences	
Reactive and based on gut feeling		
Data is in silos	• Data: partly integrated customer experience in operation • Data integrated: extended supply channel across channels	• Analytics: understand the customer journey across multiple channels • Hyper-localized and contextual interactions • Personal, relevant, and contextual interactions • Securing stock availability across all channels
10,000+ users	Millions of users and customers	Billions of users and devices
Reporting analytics	Descriptive analytics	Prescriptive analytics

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future to harness their data and take actions that were not possible until now. All types of industries can benefit:

Retail

To compete with more customers shopping online, retailers need to understand customers in greater detail and deploy more personalized, targeted offers. Online shopping fulfilment is typically a costly process, driving down margins. Retailers of the future need to optimize the fulfilment processes, including click, collect, and home delivery, using data analytics to reduce costs and improve efficiencies. Otherwise, the growth in online shopping and fulfilment will seriously impact their long-term profitability.

Those still going instore have reduced their shopping frequency and reduced the number of stores they visit. Many retailers have seen "loyal" customers defect to secondary stores where queues may be smaller, availability may be better, or prices seem lower. Many retailer supply chains have struggled to deal with the perfect storm of extreme demand volatility and supply disruption, which exposed the weaknesses in supply chains to manage risk.

Data will lead the way for retailers of the future by driving forecast accuracy down to the store and SKU

levels, and drive real-time personalized offers. For a retailer with 3,000 stores and 40,000 SKUs, being able to forecast daily demand would drive 120 million models per day. Adding personalizing offers in real time would drive 142 million models per day. Delivering enhanced customer experiences and operational excellence would require more than 250 million models per day.

Retailers of the future with the core capabilities to use all of their data will be able to:

- Drive 1.42 million daily communication opportunities
- Deliver 100 relevant product offers per customer
- Identify shifting buying behaviors from in-store to online
- Determine customer shopping frequency and loyalty

Telco

In the future, telcos will look like big tech companies. Moving to 5G is fundamentally changing how telcos operate, making them resemble big tech. That's because 5G is significantly advancing how telcos capture and use data, and serve their customers. In today's environment, telcos are experiencing:

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- Determining 5G strategies and optimizing investments
- The need to optimize network capacity through dynamic allocation against consumer demand
- A move to rethink revenue mix based on new customer behaviors; with customers consuming more streaming services from home while still leveraging mobile on home networks

One focus area delivering immediate benefits for all parties is the utilization of integrated, operationalized analytics to roll out the next generation of fixed and mobile networks at a segment of one level. This dramatically improves the customer experience and personalization across all touchpoints and channels.

Data will lead the way for telcos of the future by driving five star experiences from 5G services, enabling behavioral segmentation, and providing one-to-one interactions. A telco with 20 million network subscribers and 5,000 interactions per day has more than 100 billion data points. It executes trillions of interactions per month, runs 100 million queries per day, and has millions of models, mostly running in real time to better understand consumer behavior changes and deliver other benefits.

Finance

The finance industry is driving digitization, improving the customer experience, and mitigating financial risks. The industry is also facing:

Figure 4: The Revenue Impact of a 1-Point Improvement in CX Index™ Score

	Annual incremental revenue per customer*	×	Average number of customers per company[†]	=	Total revenue
Auto manufacturers (mass market)	$58.51	×	18 million	=	$1.1 billion
Retailers (general retail)	$4.96	×	100 million	=	$496 million
Wireless service providers	$4.74	×	82 million	=	$388 million
Hotels (upscale)	$8.07	×	44 million	=	$355 million
Auto/home insurers	$14.36	×	15 million	=	$215 million
Airlines	$3.77	×	48 million	=	$181 million
Hotels (midscale)	$3.89	×	30 million	=	$117 million
Banks (multichannel)	$7.15	×	15 million	=	$107 million
Rental cars	$2.29	×	40 million	=	$92 million
Auto manufacturers (luxury)	$128.75	×	350,000	=	$45 million
Credit card insurers	$0.57	×	61 million	=	$35 million
Banks (direct)	$8.20	×	3 million	=	$25 million

How Customer Experience Drives Business Growth, 2019, Forrester Research, Inc., December 13, 2019

Base: 101,341 US online consumers (18+) who interacted with a specific brand within the past 12 months
Source: Forrester Analytics Customer Experience Index Online Survey, US Consumers 2019
* The effect on revenue potential of increasing CX Index scores by 1 point from the average score of the largest brands in the industry. Curves for individual brands differ from that of their industry. For brands without a linear relationship between CX and revenue, the revenue effect of improving CX by 1 point will vary greatly depending on the CX Index score that serves as the starting point for this analysis.
† The number of customers represents that of a big player in the industry based on data from Forrester Analytics Consumer Technographics® surveys, Forrester analysts, and publicly available industry sources.

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- Economic pressures based on vulnerable groups that are significantly impacted financially during the pandemic

- Increasing number of consumers moving to digital with a core focus on incumbent brands

- Growing regulatory pressure with underlying stress testing of bank's balance sheet did not expect a pandemic. The impact of the pandemic exceeds worst case scenarios

- Regulators may require more flexibility in banks' models to incorporate the unknown and respond in a more agile manner

Financial organizations are experiencing new pressure to grow top line revenue, optimize cost-to-serve while ensuring access to vulnerable groups, and increase loan provisioning. Banks and other financial companies are also seeing a change in customer behaviors. Use of FinTech apps is declining rapidly as customers stay safe with incumbent brands. In addition, customer are now moving from branch to digital channels.

Financial services companies of the future will optimize data to understanding consumer behaviors in an online world. A commercial bank with 30 million customers, an average of six main products, and four types of activities will gain significant insights with a modern data analytics platform that is hyperscalable. Data mapped against a buyer's journey of acquisition, services, upsell, and churn will drive nearly 720 million models per day.

Data Orchestration at Hyperscale Is the Key to the Future

The results illustrated from Forrester's CX Index™ research demonstrates that companies can drive incremental revenue per 1 percent improvements in customer experience, per 1 million customers, each year that can up to hundreds of millions of dollars (see Figure 4). To achieve these results, enterprises of the future must take an orchestrated approach to data analytics to solve current and future problems, and drive informed, actionable decision making. This approach allows the enterprise to reuse data as part
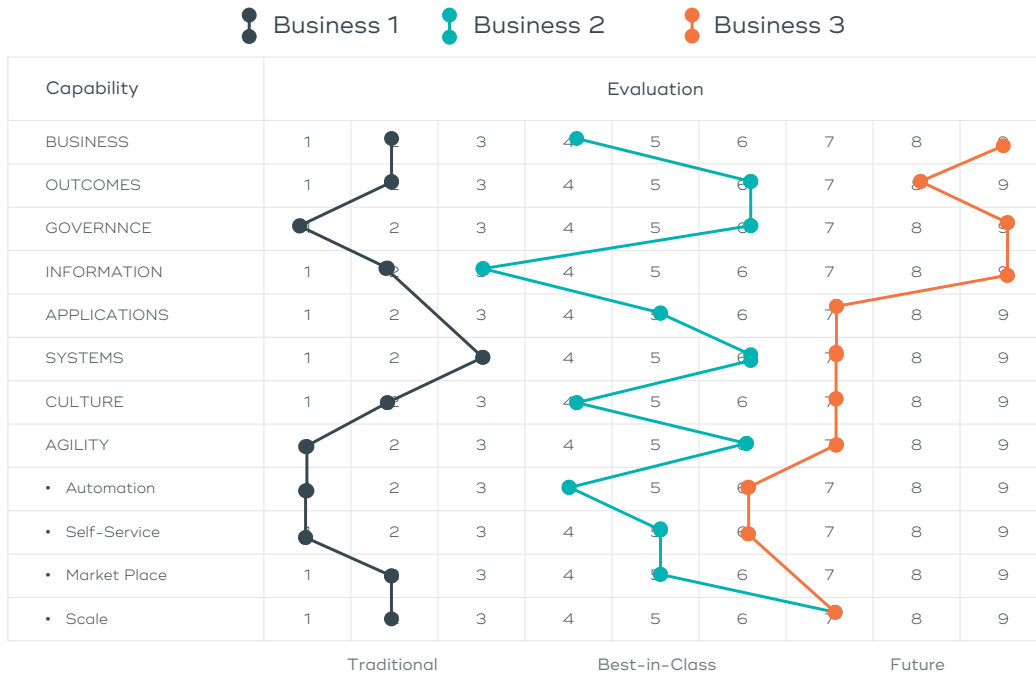

Figure 5: Traditional vs. Best-in-Class vs. Future

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of a modern, powerful data analytics ecosystem that orchestrates every action and initiative to drive growth and value.

Traditional approaches use partial, siloed, or incomplete data. Enterprises of the future will integrate all data. They'll make decisions based on the data, then act on those decisions.

Enterprises will become 100 percent data driven with end-to-end automation. Figure 5 shows the capability differences between traditional, best-in-class, and future enterprises. Companies can see where they fall across this spectrum by asking themselves these questions:

- **Business:** How well are the organization's data analytic capabilities aligned to the business strategy and objectives?

- **Outcomes:** What areas of use and level of value are data analytics currently delivering?

- **Governance:** What scope of controls, management, and processes enable the organization's data analytic capability?

- **Information:** To what extent does the organization's data capability meet analytics objectives?

- **Applications:** How do the organization's applications affect the ability to deliver meaningful analytics?

- **Systems:** What capabilities of the system's infrastructure deliver effective analytics outcomes?

- **Culture:** To what degree is the organization evolving into a data-driven business?

- **Agility:** To what degree is the organization able to adapt to changing business circumstances?

Data analytic orchestration will incorporate many systems, functions, and data types. It will rely on a platform that enables multidimensional scalability across eight core dimensions (Figure 6). The dimensions are:
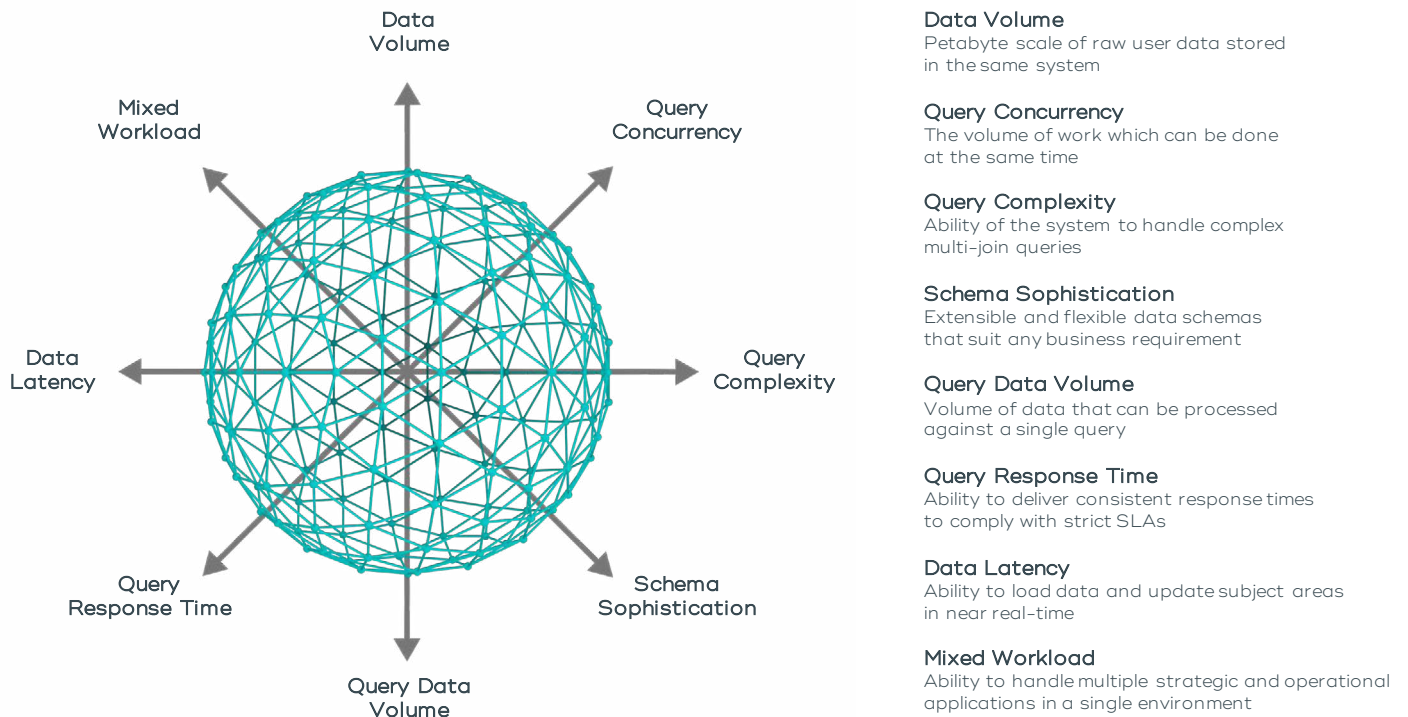
Multidimensional scalability

Data Volume
Petabyte scale of raw user data stored in the same system

Query Concurrency
The volume of work which can be done at the same time

Query Complexity
Ability of the system to handle complex multi-join queries

Schema Sophistication
Extensible and flexible data schemas that suit any business requirement

Query Data Volume
Volume of data that can be processed against a single query

Query Response Time
Ability to deliver consistent response times to comply with strict SLAs

Data Latency
Ability to load data and update subject areas in near real-time

Mixed Workload
Ability to handle multiple strategic and operational applications in a single environment

Figure 6: Eight Dimensions of Scalability

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- Data volume
- Query concurrency
- Query complexity
- Schema sophistication
- Query data volume
- Query response time
- Data latency
- Mixed workload

This multidimensional scalability delivers the advanced capabilities enterprises of the future need to run millions of productionized models on trillions of interactions, every second of every day. This gives companies insights and answers that were previously impossible to achieve.

Organizations can accomplish this with the Teradata Vantage™ data analytics platform. It has the essential ability to hyperscale to support the business models and the larger, more complex data sets of the future. The platform delivers value at a scale that's unlike any other technology.

The future belongs to enterprises that put data at their heart of their business and let it drive every action. Enterprises that continue to integrate more data and push it harder for more insights can see their future and chart their own course.

About Teradata

Teradata is the cloud data analytics platform company, built for a hybrid multi-cloud reality, solving the world's most complex data challenges at scale. We help businesses unlock value by turning data into their greatest asset. See how at **Teradata.com**.

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