GBM

IDC ANALYZE THE FUTURE

INFORMATION ARCHITECTURE

A Roadmap to an Insight Driven Organization

August 2020

EXECUTIVE SUMMARY

INSIGHT DRIVEN ORGANIZATIONS ACTIVELY LEVERAGE DATA COLLECTION AND ANALYSIS.

They use the data to ask questions and to answer them. They rely on actionable insights that are derived from analyzing credible, latest and exhaustive data. Such organizations not only take painstaking efforts to capture and cleanse data, but use this data to take important business decisions.

Their focus on data drives a cultural change and instills an important habit of valuing the organizational data. While an employee's or a manager's experience is important, backed by data, such experience can scale and become more sustainable across organization-wide business decisions. This is especially true for organizations that are spread across multiple geographies and follow certain levels of metrics structure.

The future of Next-generation economies will be shaped by the quality and quantity of insights driven decisions derived from the data. Data is the new oil in the digital world that fuels growth, competitiveness, and innovation for any organization. Data can be sometimes incomplete and sometimes overwhelming. However, devising a methodology to capture, cleanse and use data can have a long-lasting impact on an organization's survival and growth during uncertain times. We rarely get insights with incomplete data and it is often risky to take a business decision when we don't have enough reliable data to back that decision.

In this whitepaper GBM in collaboration with IDC's research analysis attempt to throw light on the science of decision making in insight driven organizations. Highlighting the key aspects of creating an organization wide Information Architecture to build a sustained and disciplined methodology to take insight-based decisions across the hierarchy and encourage extensive usage of credible and latest data. While being an Insight Driven Organization is a continuous journey, the rewards far outweigh the efforts.

A NEW ERA OF TRANSFORMATION

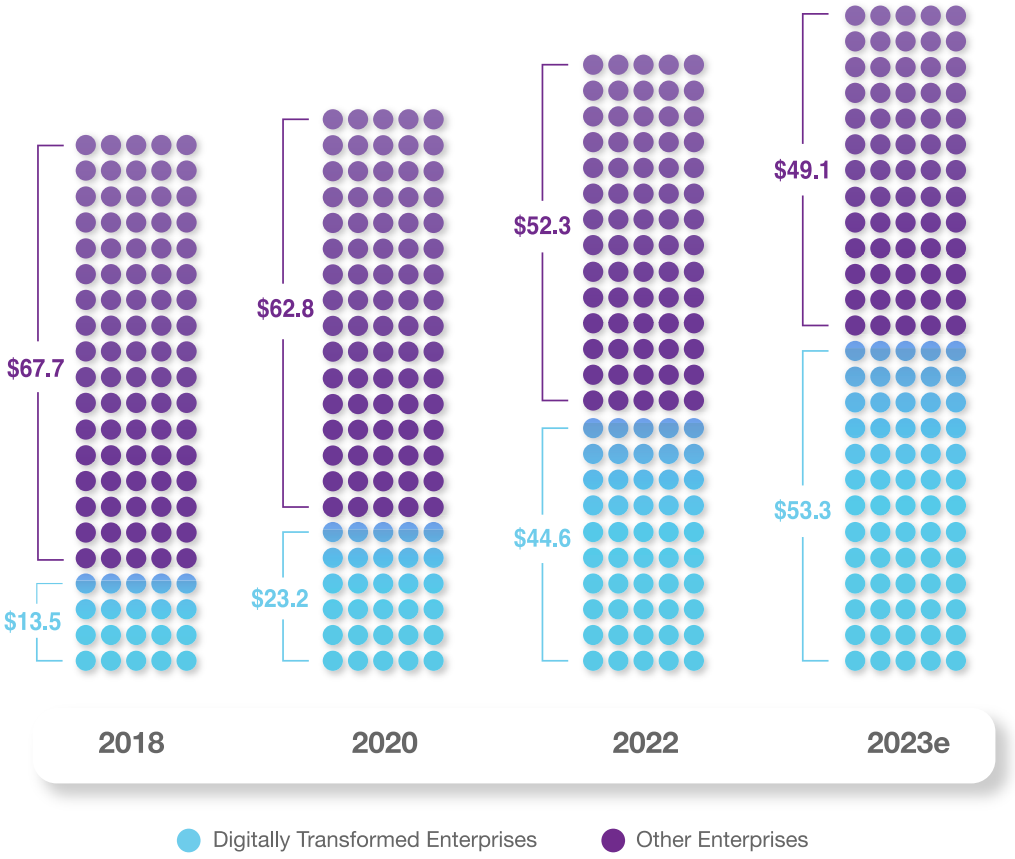
The Gulf region is at the cusp of innovation-led growth, with focus on using technology to transform the lives of residents ,visitors, and attracting investors.

According to IDC, the Gulf region's total IT market stands at $25.4 Bn and is expected to be $27 Bn by 2024. The growth in the IT market is currently dampened by COVID-19's impact, however, IDC expects the forecast to get positively revised over the next couple of years. Powered by 5G and governmental incentives, IT spending in key countries in the Gulf region is expected to grow.

Over 50% of medium to large organizations in the Middle East, Turkey and Africa region are currently undertaking digital initiatives, while about 40% are planning to do so over the next 1-2 years

3rd platform technologies such as Big Data, IoT, cloud, and Innovation Accelerators such as Intelligent Applications, Blockchain and Artificial Intelligence are transforming organizations in the Gulf to achieve these futuristic initiatives. Over 50% of medium to large organizations in the Middle East region are currently undertaking digital initiatives, while about 40% are planning to do so in the next 1-2 years. Digital Transformation (DX) means different things to different people: IDC considers a DX as an opportunity to either improve business through optimization, using technology-led transformation or innovate to create new digitally enabled products and services or platforms. IDC expects 52% of the nominal GDP worldwide will be contributed by Digital Transformed companies by 2023.

Worldwide Nominal GDP Driven by Digitally Transformed vs. Other Enterprises



While futuristic initiatives are taking shape in the Gulf region, we see organizations are being slow in taking data-driven decisions. Most organizations across the region operate with silos of information and decisions are taken sporadically and often myopically keeping in mind the department's or section's goals. Relevant, complete and latest data is often not shared systematically and in real-time across the enterprise. IDC has informed us that only 3% of the CIOs and IT Leaders viewed data as a strategic asset and was available to their business units. Only 13% of the participating CIOs agreed that data was managed effectively to give returns and significantly contribute to the quality of their business decision.

Around 34% of IDC's survey participants mentioned that they use rudimentary analytical models with some consistency for major decision making whereas 42% of participants mentioned that they use unintegrated or isolated analytical models to support decision making. It appears that CIOs across the Gulf region have embarked on the journey in the last few years, however, they have lost their way somewhere in the middle of this journey.

Q. Which one of the following statements best describes your organization's approach to decision-making?

42% Some standard but unintegrated/isolation analytics models to support decision-making

34% Standard processes for major-decision making using rudimentary analytics models, with some consistency

8% Sophisticated analytics models for decision making, with some integration accross strategic, tactical, and oprational decisions

5% Decision-making supported by real-time economic model, with all decision-making phases integrated (closed-loop control mechanism) and cognitive analytics used to suggest actions

11% Decision-making in isolation based on sparse and latent data of uncertain accuracy

BREAKING THE DATA DEADLOCK

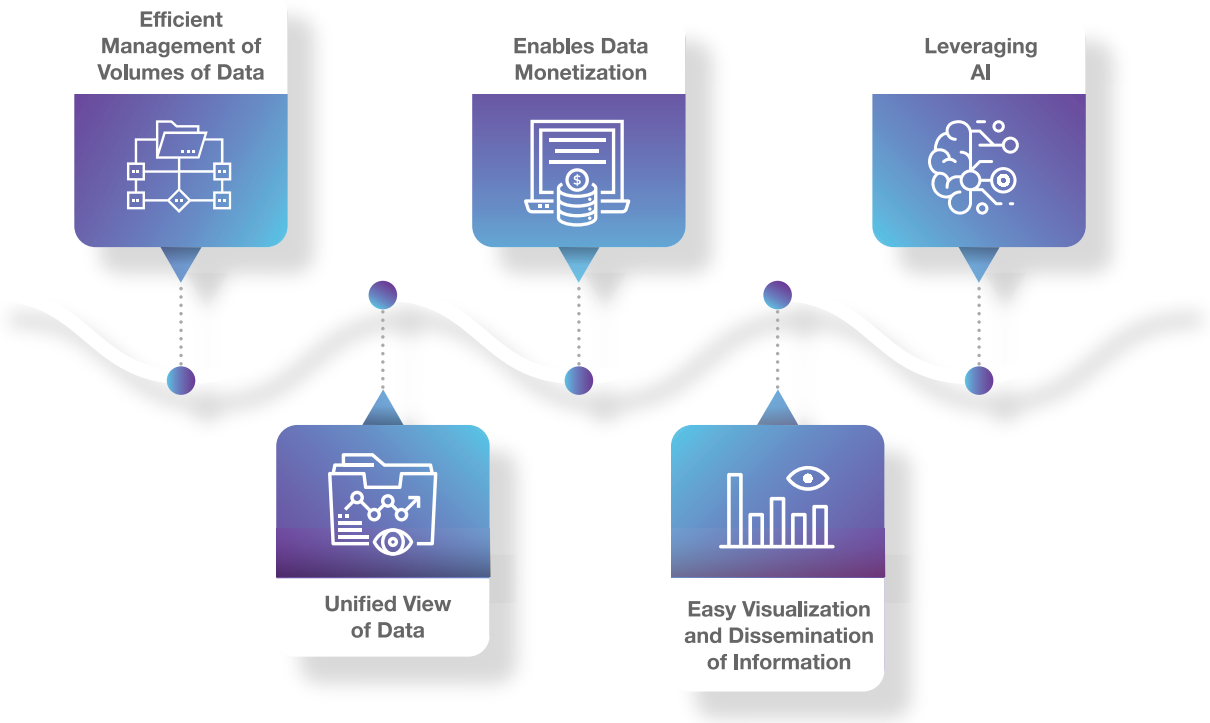
Organizations need to shift from a "Data-Driven" approach to an "Insight-Driven" and real-time AI-backed decision-making business model.

Digital Transformation and Digital initiatives are incomplete without structured, systematic and data-driven decision making. GBM believes organizations need to rely upon insights while taking business decisions. According to IDC's worldwide research, 90% of organizations agree that their corporate executives rely upon their experience instead of using insights derived from organizational data.

We believe that it is critical for organizations to develop a robust information architecture that enables visibility into all the data within the organization, supports the integration of structured and unstructured data, enables real-time decision making and provides a unified and trusted view of data. IDC had published a thought leadership whitepaper in 2019, sponsored by GBM, that talked about how to break the deadlock and accelerate Digital Transformation.

Decentralized and automated decision making is essential for an organization's sustained success, mainly because decentralized and automated decision-making empowers various sections and departments. While the analysis and distillation of data can happen centrally, decentralized and automated decision making, especially at the operational level, frees an employee's bandwidth to perform more meaningful activities.

A robust information architecture that supports digital transformation should have the following features:



Source: Breaking The Digital Deadlock And Accelerating Digital Transformation – IDC 2019

CHARACTERISTICS OF AN INSIGHT DRIVEN ORGANIZATION

Data Availability

Unlike their traditional counterparts, Insight Driven Organizations store the enterprise information centrally, in a structured way, and within respective departments, so that they can retrieve the data whenever they need. While Traditional companies too have abundant information, their inability to store systematically and retrieve it when they need it, impacts their decision making.

Data ingestion and storage capabilities

This is an important element about how an organization accepts and stores information. Insight Driven Organizations give utmost importance to using the latest tools and technologies to capture data: Data lost is Insight lost. Often incomplete data impacts decision making and recreating certain datasets costs more than capturing it in the first place.

Organization's culture

Insight Driven companies carefully create a culture by constantly communicating with their employees about the value of capturing information and adhering to processes. Creating and maintaining a culture of insight driven decisions is not easy as it demands committed and persistent efforts. Top leadership needs to keep in mind that employees are going to emulate their day to day behavior because behavior travels from top to bottom. These organizations need to incorporate data-driven decision making into everything: their structure, their policies, and their business and operational decisions.

Decision Making process

Unlike traditional organizations where the decision-making process is often ad-hoc or is based on the manager's experience or based on the incomplete, obsolete or questionable quality of data, insight driven organizations take a holistic approach. They take their business decisions by combining the insights derived from exhaustive and latest data and complementing it with their experiences and intuition.

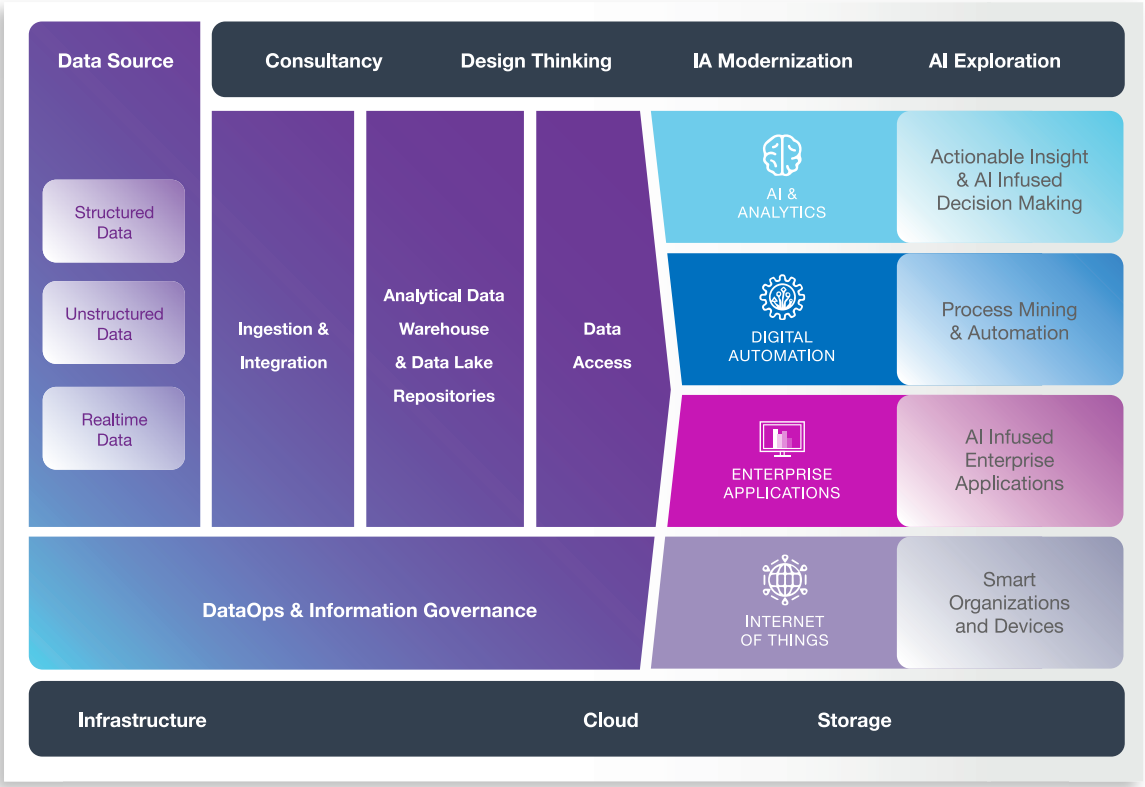
Ability to respond in crisis

Covid-19 has underscored the importance of capturing and retrieving information through secure, online media. Traditional organizations that had been struggling to capture relevant information couldn't act in time. This lack of agility impacted their business continuity. On the other hand, Insights Driven organizations were able to respond quickly by enabling secure access to their applications for remote employees. This ensured they achieved business continuity faster than their competitors.

A ROBUST INFORMATION ARCHITECTURE

"There is no AI without IA" is a statement that has been established most recently promoting the fact that while the ultimate use of data by an organization is in the form of Artificial Intelligence (AI), such status cannot be attained without a proper Information Architecture (IA).

A framework that allows organizations to collect, cleanse, process, analyze, view and reinject data as insight into their decision-making processes. While this is an iterative process the following figure attempts to define key aspect of such framework and engagement models that allow organizations to structure their approaches.



Consulting Services

Defining a Strategy, and the Roadmap towards achieving it, is essential to the success of the implementation of the Information Architecture. Information Architecture Modernization and AI Exploration workshops, using Design Thinking methodologies, can help organizations assess their current and future data sources their analytics landscape, their AI use cases specific to their lines of business, and then define the right steps and components for implementing their end to end Information Architecture.

Ingestion & Integration

The data ingestion and integration layer are about capturing the data at various organizational touchpoints with different formats generated at varying frequencies. Those could be hits to your websites or a mobile app or transactions through multiple POS systems or consumption of your services through kiosks. The higher the volume and quality of the data, brighter will be the insights.

Analytical Data Warehouse and Data Lake Repositories

Creation of Data Warehouses (DWH), Data Lakes or Big Data Platforms helps your organization bring a variety of data together. It acts as the single source of truth for your AI and Analytics requirements. Take an example of a surface transport authority or a government organization availing essential services to its citizens, or a bank offering a new mobile app to its customers.

Different departments of these organizations will have different views of their customers. They will have some data captured about their customers in their systems but not complete data. A department will rarely have a 360-degree view of the transaction history and preferences of their customers. A Data Warehouse and a Data Lake avail an opportunity to aggregate multiple views from different departments in a central location. Organizations then can create customer personas based on their demographics and create business use-cases and then test them on the data collected in the central data lake. The Data Warehouse and Data Lake technologies now support running your analytics and data science models within the platform, reducing time to business and enabling faster decision making.

Data Access

Data Access is essentially about providing users, internal or external, with secure access to relevant information through business solutions. Different data access options are available to enable seamless integration of your applications using different technologies. Lack of access can create dissatisfaction and similarly unnecessary access can create security and data privacy issues.

Infrastructure

The advancement in infrastructure technologies helped AI applications become a reality by enabling the storage of large volumes of data and processing it in a fraction of time. Building the right infrastructure is an integral part of the Information Architecture, taking into consideration the required storage tiers to manage the different datasets generated and accessed at varying frequencies, the processing power to support the DataOps and Data Science needs, and the flexibility to deploy on-premise, on cloud, or as a hybrid model.

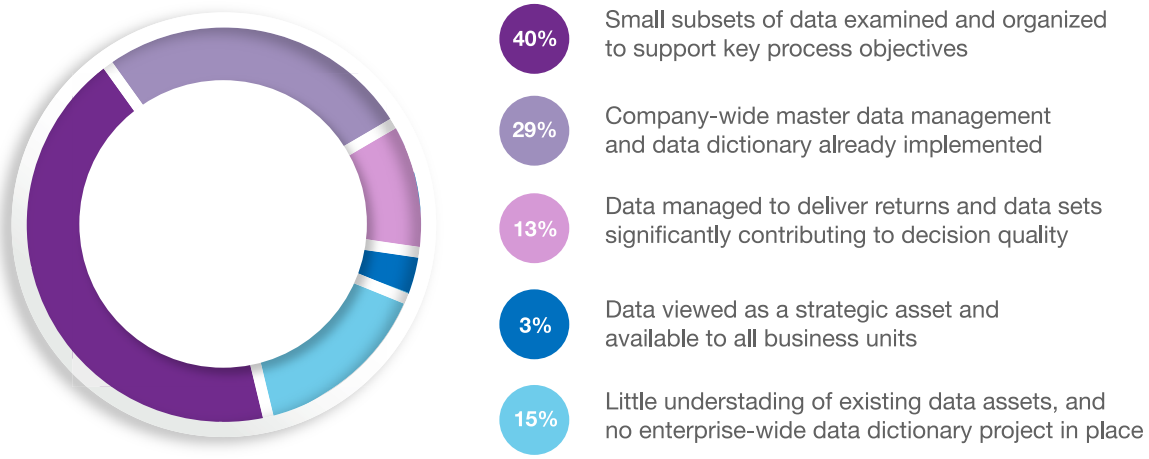
IDC believes cloud is at the foundation of digital transformation and innovation and, as per GBM, Hybrid-cloud is at the foundation of a robust Information Architecture. Around 74% of the organizations in the UAE and other key countries in the Gulf are willing to explore public cloud if the Hyperscalers meet data residency compliance. However, not all organizations are able to consider public cloud for all their workloads. We are seeing a hybrid-cloud environment evolving in the region with certain workloads being on public cloud, other being on private cloud or customers' own data centers. Seamless interoperability in the hybrid-cloud platform will enable organizations to ingest, store, cleanse, and access data in real time and without physical boundaries.

DataOps and Information Governance

A robust Information Architecture is incomplete without effective and structured DataOps and Information Governance. To deliver trusted business-ready data you need to have it organized, maintain data quality, and enable collaboration throughout the data lifecycle. DataOps provides the platform to sustain continuous high-quality data across the business by implementing governance rules satisfying regulatory compliance requirements. This platform acts as a catalog to map the technical architecture to business terms to ease the communication between IT and Business, enhancing the collaboration towards the successful delivery of business goals.

IDC had asked CIOs of organizations in the Gulf region to describe their organization's current capabilities in information management and data governance. To this, 40% of them agreed that they examine and analyze data in silos. While most did not say it directly, IDC's survey highlights that 84% don't have structured processes to capture and analyze data at an enterprise-level and derive insights from them.

Q. Which One of The Following Statements Best Describes Your Organization's Current Capabilities in Data Governance?



Governance is an ongoing exercise. Having a structure for governance infuses discipline and goes a long way in the organization's culture.

Business Solutions

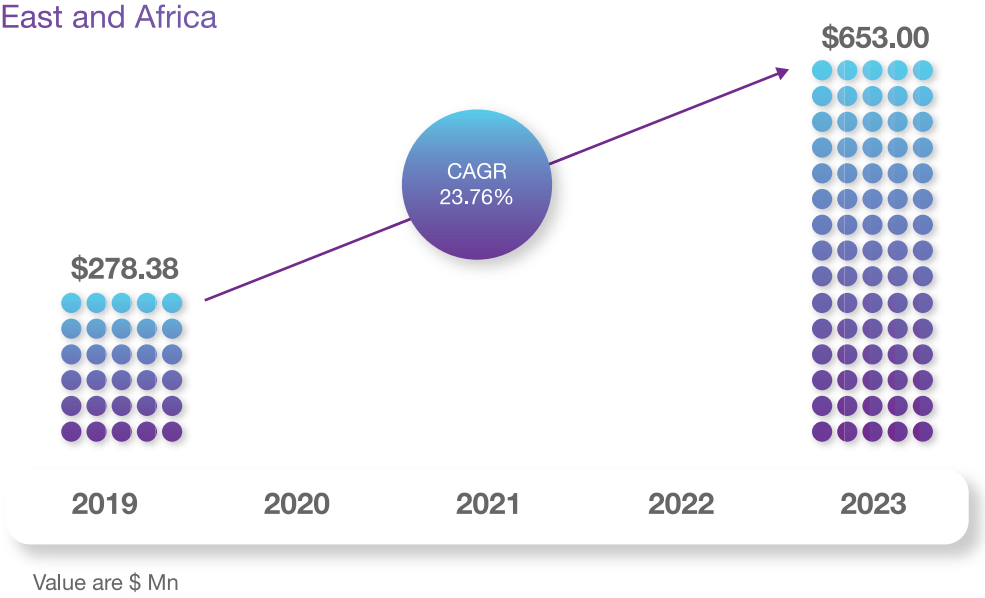
Artificial Intelligence and Analytics: Actionable Insights and AI Infused Decision Making.

Let's have a quick look at how Artificial Intelligence led innovations are transforming organizations.

Human in the Loop		No Human in the Loop	
Assisted Intelligence	Augmented Intelligence	Automated Intelligence	Autonomous Intelligence
Helping people to perform tasks faster and better	Helping people to make better decisions	Automation of manual/cognitive and routine/ non-routine tasks	Automating decision making processes without human intervention

IDC is seeing an uptake for Artificial Intelligence led solutions in the Gulf region and forecasts that the AI market alone will reach $653 Mn. However, the AI-led ecosystem of technologies will be much higher than $653 Mn. Here is a quick look at the forecast for the region.

Artificial Intelligence Market Growth Forecast
Middle East and Africa



Value are $ Mn

Source: IDC's AI Spending Guide 2019 H1, MEA.

AI for Process Mining & Automation

We believe AI can be used to ease certain business processes either by eliminating manual intervention or by minimizing manual efforts. AI led tools can act as a first level customer support function for both internal as well as external customers. Some of the low-hanging fruits of AI such as chat-bots, voice-bots, and RPA can be implemented within the organization without the need for specialized data science skills.

The impact of Artificial Intelligence is not limited to assisting humans perform certain tasks or to a certain extent 'think' on behalf of a human, but to drive new ways of living in this world. Traditional jobs that are getting optimized due to intelligent machines are paving ways for new types of jobs – more creative and intelligent jobs for humans.

AI Infused Enterprise Applications

Artificial Intelligence accelerates application development timelines when AI-led microservices and containerization get used for the application development.

Similarly, AI enabled technologies make substantial impact in the lifecycle of the data in an organization. Right from capturing the data to cleansing, analysis and visualization become increasingly interactive and intelligent with artificial intelligence.

Internet of Things: Smart Organizations and devices

By 2023, the overall number of "connected" IoT devices worldwide will increase to over 35.2 billion, and by 2025, the number will be almost 42 billion as per IDC. While the data produced by an individual "thing" now will most often be measured in bytes, cumulatively and over time, connected things will produce vast quantities of data that will need to be collected and analyzed.

Even if the number of IoT devices installed across organizations may be quite limited to access control, temperature and atmospheric sensors, it is still an important element in the overall Information Architecture. Organizations across the Gulf region have been exploring smart devices over the last few years. Be it a smart lighting, smart parking booth, smart machines that can deliver a driving license, or kiosks availing access to certain government services, we are seeing organizations adding IoT or "connected" devices in their asset registers.

Data Monetization

We recommend organizations to monetize their data provided it falls in the ambit of data privacy law.

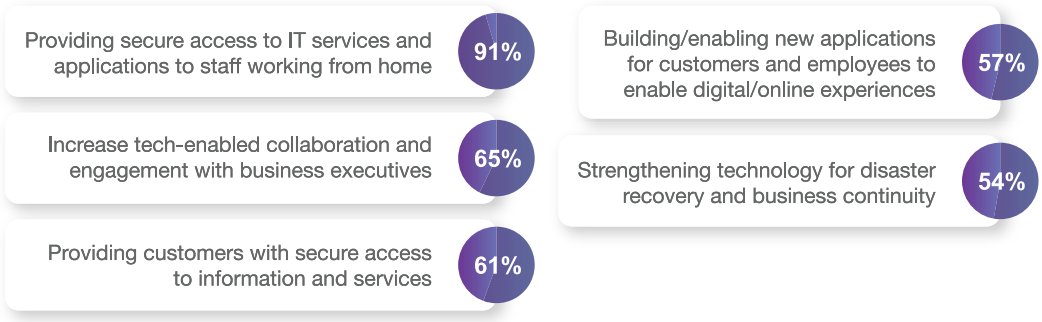
Consider an example of transport authorities. They can use the information about the number of new licenses issued through kiosks quite innovatively. The day and time at which licenses are issued, type of license and location can avail multiple options to the authorities to use this data from a commercial standpoint. The custodian of that data can use it to further support these customers with new services or provide commercial comforts such as opening a small coffee shop or add another kiosk if the foot fall is consistently higher.

A result of the "Collect-Organize-Analyze-Infuse" process is the availability of trusted data and analytics that can be leveraged not only by the organization but can also be shared externally as a service. Imagine a hospital that can use its video/ image analytics capabilities to detect cancer in record time. Further imagine the power of AI if this model was to be shared with other stakeholders (other hospitals / insurers), while, at the same time, monetizing the knowledge. Within the ambit of the data privacy law, commercial organizations can monetize their data.

COVID19- IMPACT: ACHIEVE BUSINESS CONTINUITY DURING UNCERTAIN TIMES WITH A ROBUST INFORMATION ARCHITECTURE

The world will not be the same as it was before the COVID outbreak.

The pandemic has literally crippled economies with lockdown and restricted mobility across the world. IDC predicts the overall ICT spending of Middle East to contract from +2.3% to -3.5% as per its May 2020 forecast.



Source: IDC COVID-19 Market Impact Survey, META (N = 258 - Mar 18-Apr 6)

IDC has been surveying CIOs and IT leaders since March to get their pulse on the impact of Covid-19. Around 91% participants' top priority was to provide their employees who will be working from home with secure access to IT services and applications. Second comes collaboration, with 65% participants and 61% highlighting the importance of availing secure access to information and services to their customers. Business continuity and sustained, secure access to critical business applications demand a clear organizational strategy for Business Continuity.

It also takes us back to disciplined information management because organizations need to decide:

- *Who will access what type of business applications from home?*
- *What level of access needs to be provided to users outside the organization's network?*
- *What level of data will be accessed?*
- *Will this be compliant to data privacy laws such as GDPR?*

We don't have enough credible information about the new normal yet. The situation is still evolving, and organizations will react or respond in their own ways. However, a few companies were able to minimize the impact of COVID-19 on their business continuity. IDC sees that the companies who have quicker access to information were quick to respond and ensure business continuity while others struggled.

GBM'S CAPABILITIES TO HELP ITS CUSTOMERS BECOME INSIGHT-DRIVEN

It is important to have an independent and experienced technology partner to help your organization become Insight Driven. The partner can bring in experience, subject matter expertise, implement and support technology, introduce best practices, frameworks and methodologies towards your organization's success, while you focus on your core business.

GBM has been working with clients right from advising to designing and building solutions that create robust Information Architecture for our customers. We start with helping our customers link their business-related challenges to the data they need, utilizing Design Thinking. The Information Architecture workshop will help you design a platform that supports your journey from Data to AI by discovering your data, defining governance needs, understanding analytics and visualization requirements, and exploring AI use cases.

To give an example, a leading bank in the region had its business users complaining about the massive efforts spent accessing, integrating, and interpreting data – while only a small percentage was spent on actual analysis.

We started the Information Architecture roadmap by building a Data Warehouse using IBM Netezza appliance to act as a single source of truth. Our services led to an Integrated Financial and Risk information architecture, better serving the Business Users by availing the MIS reports early morning, reducing query execution time from 9 hours to few minutes, and increasing performance and vcvdecision making within the Bank.

GBM implemented a Big Data platform to act initially as an archive repository for the Data Warehouse, then extended this with a Streaming Analytics solution using IBM Streams to explore new use cases like social media analytics, handling issues that might be raised by an ATM, or real time marketing by showing offers to customers while performing transactions on the ATM. Lately the bank has been exploring AI applications, like a chatbot, using IBM Watson Assistant & Discovery to help answer legal queries raised by their employees and customers. GBM has also been proactively working to minimize the impact of COVID-19.

Since the start of this crisis, we have taken immediate steps to help our stakeholders. We have enabled our employees to transition to work from home by giving them the right tools to access the required data and systems so that they are able to support our customers. We have launched several focused solutions for our customers that are low cost and swiftly deployable: a COVID-19 Chatbot built using IBM Watson Assistant & Discovery for them to manage their clients, a Scenario Planning solution using IBM Planning Analytics to help them take the best decision regarding their assets, an Employee Optimization solution using IBM Decision Optimization to help them manage their workforce most efficiently, an e-Signature solution for them to process their paperwork while working remotely, and an Express IT Helpdesk to manage all their support requirements. Other AI infused solutions include a Social Distancing solution to help implement strict protocols for social distancing and face mask detection using IBM Visual Insights and IBM Video Analytics, and a COVID-19 Diagnosis solution to recognize pneumonia patterns on lung x-rays to speed up COVID-19 re-testing using IBM Visual Insights.

ESSENTIAL GUIDANCE

GBM believes organizations need to create a cohesive Data Strategy to store and distil the data and derive insights. Here are a few important points to consider while you embark on the journey to become insight driven.

1. **Watch out for the pitfalls of islands of information**

   People tend to hold data close to their chest, and, as we know, islands of information may lead to multiple versions of truth, which often leads to valuable time getting wasted in collecting the data, poor insights, and hence poor business decisions.

2. **Adopt AI**

   Adopt AI to create and maintain a sustainable, scalable and robust Information Architecture. We have repeatedly highlighted the importance of Artificial Intelligence in this paper. Start small and scale up your AI adoption.

3. **Identify key stakeholders**

   People need to be given clear responsibility and accountability of collecting, analyzing and deriving insights from the organization's data. While it is a collective responsibility, leadership needs to clearly segregate roles and responsibilities. Otherwise, the ball gets dropped: when everyone is responsible, nobody is responsible.

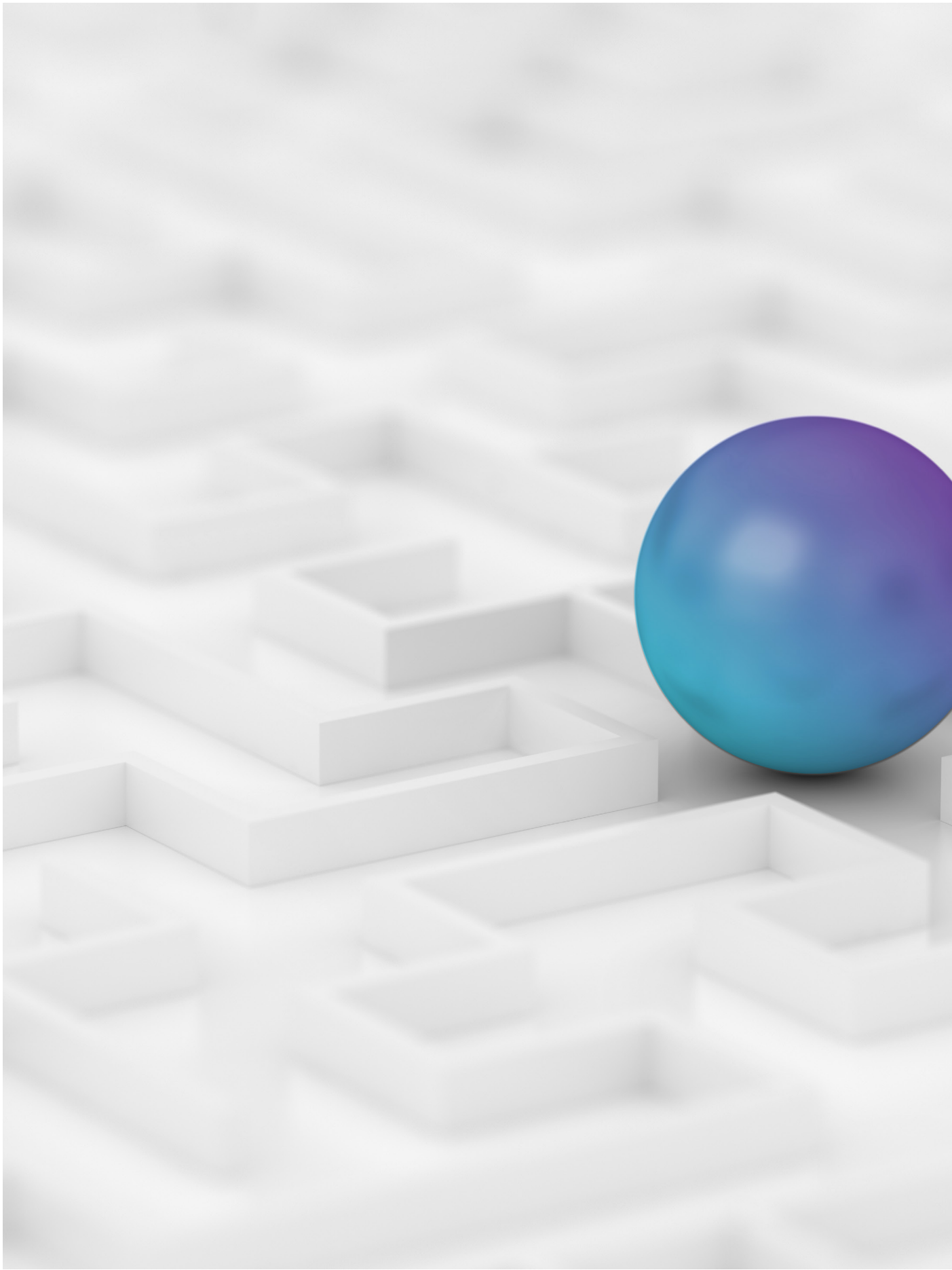
4. **Reward discipline**

   Have a disciplined and systematic approach to create an integrated Enterprise-wide Information Architecture for business continuity and reward discipline.

5. **Pursuit of an Insight Driven Organization is a never-ending journey**

   Balance the standardization and speed of execution while progressing towards an Insight Driven Organization. We will never have 100% data-points to take a critical business decision. A decision taken using a combination of insights received from latest and exhaustive data and on-field experience will likely be more accurate than those based on experience and intuition alone.

We need to certainly rely upon data however, the combination of experience, business judgment and insights derived from the available data is the best recipe to balance the speed of execution and standardization.



ABOUT GBM

With 30 years of experience, 7 offices and over 1500 employees across the region - Gulf Business Machines (GBM) is an end-to-end digital solutions provider, offering a broad portfolio, including digital infrastructure, digital business solutions, security and services. GBM has nurtured deep partnerships with some of the world's leading technology companies and have invested in skills and resources to assist their customers on their path towards digital transformation.

ABOUT IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.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