THE CHIEF DATA OFFICER'S GUIDE TO DATA DEMOCRATIZATION

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The Mindful IT Company
Born Digital . Born Agile

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EXECUTIVE SUMMARY

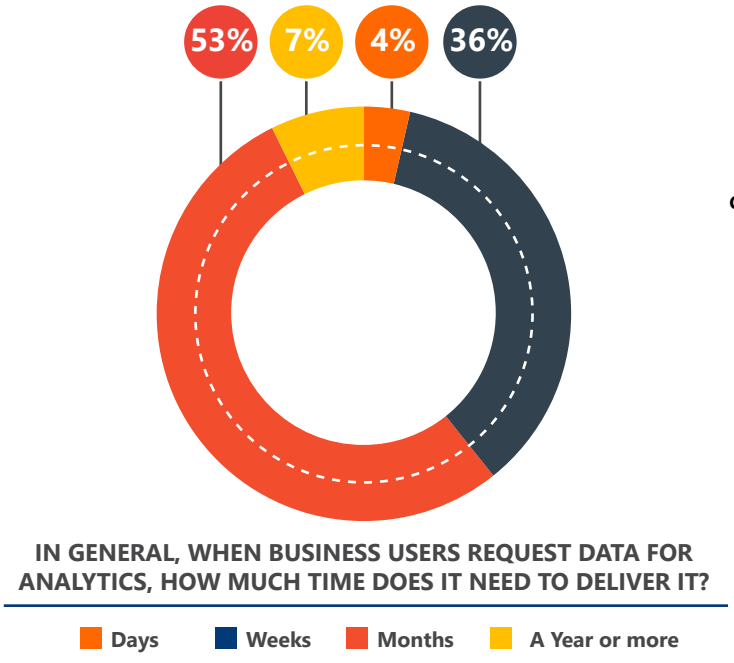
In this 21st century of Digital Transformation, Data is the new oil, which holds an immense untapped potential in it. Every second, individuals as well as organizations are generating data records in humungous amount in the form of documents, images, videos, social messages, search queries, news and so on, leading to a piling up of at least 2.5 quintillion bytes per day. This 'Big Data' is touching every business and life on earth now. It holds the potential to increase the business efficiency, augment the customer experience and reduce the cost. It is expected that by the year 2020, the accumulated digital universe of data will grow from 4.4 zetta bytes today to around 44 zettabytes, or 44 trillion gigabytes. However, various researches reveal that 90% of this data in enterprises is never analyzed and used for creating useful business insights. The major reason for this is that data resides in Enterprise Data Warehouses which are siloed in nature. In many organizations there is a gold mine of data, but they don't have the right resources to analyse it and churn insights from it. The data that resides in siloes are available only for a certain set of people say data scientists, data analysts, business teams or technical teams in that organization. The inaccessibility or unavailability of data to the larger audience in an organization limits the chance for embracing the larger benefits including data driven dynamic decision making. This pushes the business world to find alternatives to make data available for the right people at the right time to make the right decision. Welcome to the new concept of Data Democratization.

DATA DEMOCRATIZATION

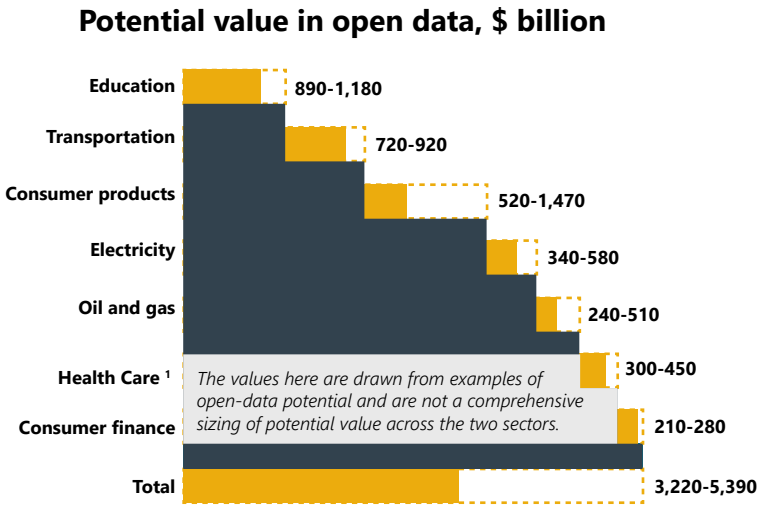
Impact and Relevence

In the organizational environments, if the data resides in siloes, owned by an individual or group of individuals, the analysis or usage of this data will happen only from their perspective, limiting the larger opportunities of sharing it with the other stake holders. However, on the flipside if without any proper platform or plan these large chunks of data are shared with everyone in the organization, it leads to varied interpretations, results, incorrect decisions from all the sides affecting the larger decision making in the enterprise board rooms. In traditional enterprise data warehouses, the data management is happening instead of the proper usage of it, which needs to be changed. This change can be achieved through the new concept of Data Democratization. Data Democratization is all about providing access to relevant type of data to all or any type of users for benefits of people, groups of people, organizations, societies, nonprofit organizations and the government bodies. The below survey exhibits or represents on how data availability periods are, and this could change with better and effective decision making through Data Democratization.

During a Forrester webinar, a poll was conducted on, how long business users wait for data availability. With Data Democratization the waiting period is reduced to make business processes more efficient.



As per the Mckinsey reports, the industries that will benefit from Data Democratizations are:



Data Democracy in society is called as Open Data. Such implementation has enabled accessing right data, by right users to produce reports from different data sources, of different format. The City of Colleges of Chicago adopted the framework and were able to churn in reference and training data directly for each leadership to take right decisions for the college.

Source: Poll during webinar "Empowering Business users through Data Democratization" | 1Includes US values only. | Source: Mckinsey Global Institute analysis

ACHIEVE DATA DRIVEN ORGANIZATION THROUGH DATA DEMOCRATIZATION

In the world of data, there are organizations in each field that collect data extensively, analyse it, derive insights from it and use it for the potential gains including financial growth as well as increased efficiency and better decision making that would lead to the overall growth of the organization.

Inside an organization there are departments and group of users who have access to different type of data as owners, integrators or as consumers. This data is utilized for the insights which is usually restricted to the meaning or value that each group wanted to arrive at. After the process of data valuation by the teams, the data could be shared, and used in a unique way. The sharing of data at initial stages or later stages gives the power to the teams to view the data closely but at different angles thus bringing greater benefits.

The purpose of sharing the data owned or accessed by multiple functions in an organization is a cultural change at the organizational level, and to the existing processes in businesses. This is basically called as the "data – driven culture".

The organizations that are on the path of data-driven culture would need to decentralize the data systems, with respective roles, and teams holding the ownership on sharing of the data. This will in turn lead to democratization of data with appropriate policies, procedures, and security applied.

Data – driven goal could be applied at level of nonprofitable organizations by providing access of data to the consumers so that they can make better decisions.

The benefits of Data Democratization could be in the form of providing better customer experience, operational efficiency, good governance, well-structured health care, national and personal security, agriculture and farming growth, and many others. All and many of these will lead to some great socio-economic transformations to poorest societies through richer nations, equally, and unquestionably.

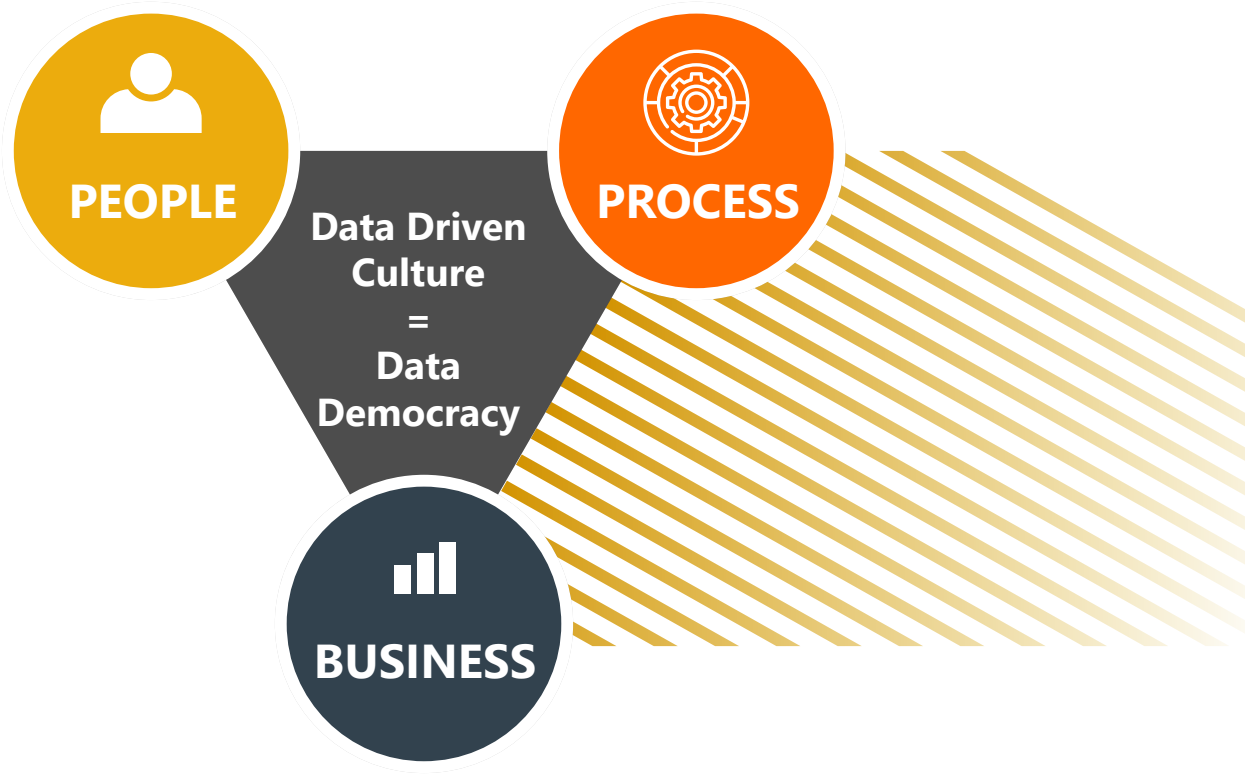
In the political-administrative world the concept of data democracy is known as "open government data", and inside the organizations it is coined as "open data". Data being the "oil", the benefits should be shared freely with relevant of users in an understandable format. This data could be further refined or consumed for appropriate data – driven decisions.

However, the challenges lie in providing benefits for social good, without breaking the privacy or political – legal rules of a group, society, organization or governments.

In a nut shell "data democracy" is all about "free access to data, relevant type of data, for relevant type of users".

THE IDEA OF DATA DEMOCRACY

A diagram on traditional processes that could be changed or transformed with inclusion of people, process, and business. The diagram represents Data Democratization with its value.



ROLES INVOLVED TO BUILD DATA DEMOCRATIZATION

CHIEF DATA OFFICER	Chief Data Officer brings in the data unification, and the data – driven culture inside the organization.
DATA ANALYSTS	Data Analysts are the "data discoverers" who identify the data, and its worth by considering the insights provided.
DATA SCIENTISTS	Data Scientists along with the team of Data Analysts and Big Data Architects bring meaning of the identified data through statistical algorithms.
DATA ENGINEERS	Data Engineers would work with the Big Data Architects, and Data Scientists to create the pipelines, the APIs, interfaces that would expose the data freely in a structured format, so that the data is consumed for bringing those benefits.
BIG DATA ARCHITECTS	Big Data Architects would decide with all the above teams on how to architect, solution the Big, Fast Data solution so that a meaningful common business insight is derived. They would also decide on the engineering solution, tools and technologies that would be adopted for implementing a unified modern data architecture.
INTEGRATION ARCHITECTS	Integration Architects would play a complementary and highly supportive role in building the framework where the data flow would be outbound from a source system to a persistence layer.

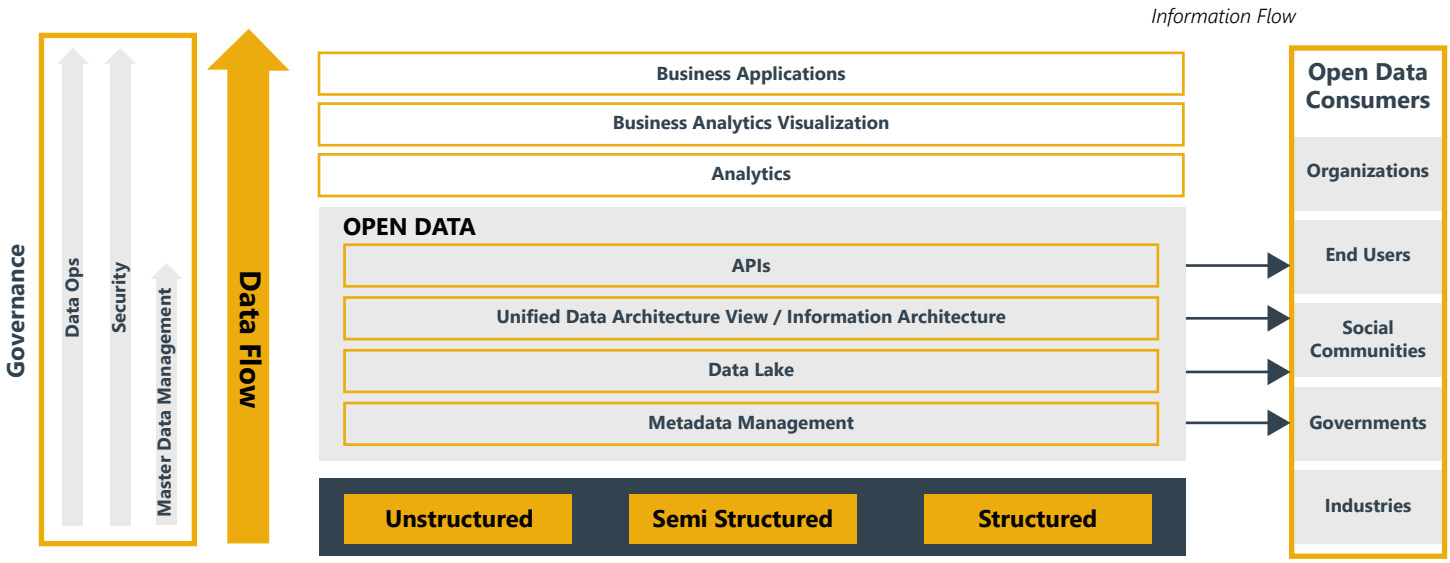
The complete organization under the management of the CDO should adapt to a data driven culture, where data becomes the focal point of decision making and there is a 'single source of truth' across the processes and teams with flexibility in data sharing to implement data monetization.

BUILDING DATA DEMOCRATIZATION FRAMEWORK FOR YOUR ORGANIZATION

The process of data democracy starts with nurturing a data driven culture in an organization where the principle would be "data for everyone, acquire, process, leverage the value, and share structured, and reusable data legally" for multiple benefits.

Data Democratization doesn't happen in isolation with a framework built, data lake implemented, and a group of users or line of businesses making use of it. It is a process and has to be embedded and called out into the regular Big Data Development Life Cycle. It involves people, process, and technology to arrive at the innovative, valuable business decisions from the insights gained. To bring shape to this entire lifecycle, practices like DataOps could catalyze the ability of democratizing, which mostly focuses in streamlining the goals of business and bringing in more collaboration across teams. All this is monitored and mentored by CDO in an organization, and this would be the goal of the Data Driven cultured organization.

The below picture is a reference view of how Data Democratization could be achieved.



The enterprise data lake is the core and future of the Modern Data warehouse architecture which is complemented by the components of metadata management, master data management, data governance, and security across the layers.

The data lake is the layer that will be exposed to different users, groups of users inside the organization, outside the organization through a service layer.

Data lake layer is supported by metadata management below, and above with a unified data architecture or view that cuts across domains, subject areas persistence thus exposing the concept of data federation or virtualization without known the fact of what lies underneath to share the type of data. The unified data model will be consumed by enterprise service bus or API. The data consumed by different users will tap the potentiality of the API hub, and is the connecting path to the external world.

The entire reference view is tied with the layer of security and the practice of DataOps to ensure that all data that gets in is processed, used, and shared.

HOW ARE INDUSTRIES BENEFITING FROM DATA DEMOCRATIZATION?

The below classification identifies the critical and beneficial applications of Data Democratization.

BANKING

Fraud Detection | Financial Reporting | Loan Risk Management
Discovering customer portfolios | Record Keeping
IoT enabled Account Security | Credit Worthiness

RETAIL (ecommerce)

Customer Segmentation | Marketing Response | Demand-Sales Response
Store Floor Management | Supply Chain Automation | Loyalty Strategy
Customer Profiling Actions | Customers Store Actions

SMART HOMES

Demand Response | Fire Detection | Temperature Monitoring
Security Systems | Social Network Supporting

SMART PARKING LOT

Number of cars | Departure & Arrivals | Environment Monitoring
Mobile Ticketing | Traffic Congestion Control

HEALTHCARE

Tracking | Identification | Data Gathering | Sensing

WEATHER & WATER SYSTEMS

Weather Condition | Water Quality | Water Leakage
Water Level | Water Contamination

TRANSPORTATION & VEHICULAR TRAFFIC

Camera Monitoring | Environment Monitoring | Travel Scheduling
Traffic Jam Reduction | Assisted Driving

ENVIRONMENTAL POLLUTION

Green House Gas Monitoring | Energy Efficiency Monitoring
Renewable Energy Usage | Air Quality Monitoring | Noise Pollution Monitoring

SURVEILLENCE SYSTEMS

CCTV | Violent Detection | Public Place Monitoring
People & Object Tracking | Traffic Police

BANKING AND FINANCIAL SERVICES

The BFSI sector holds a massive amount of data which has built over time on customer front and in operational domains. Data is pertinent in this sector owing to huge customer interactions and compliance requirements. The data in BFSI is critical not only from utilization point of view but also from a security point of view. Making the right data available to the right person is a critical function as per the Data Democratization process. On the flip side, ensuring the required security for sensitive data is also equally important for Data Democratization. While data can help in credit scoring, loan risk management, discovering customer portfolios, it also helps in fraud detection, AML/BSA checks, financial reporting, record keeping, and IoT enabled security checks. The role of data democracy, therefore, becomes even more significant in the BFSI sector.

RETAIL

The Retail sector with a focus on customer engagement is getting benefitted immensely from Data Democratization. Democratization of data not only helps in enhancing customer experience at a broader level but also acts as a catalyst in the sub functions of retail as a sector. By making right data available to the right team, data democracy can play a critical role in adept decision making based on facts and insights. It can help in market segmentation, customer profiling for having better personalized promotions, loyalty management and improved sales strategy. IoT and insights- driven Data Democratization can also improvise the supply chain management and operational back office efficiency. Apart from all these, Data Democratization helps in overall strategy by analyzing customer response, demand sales response and marketing response. This helps in ensuring that the strategy is well defined as per the trends projected, based on customer and business data.

SMART HOMES

The revolution of IIoT and IoT is going to bring several types of data and information. This data could be gathered by the agencies that install the IoT devices at homes, and could be utilized by the company for improvement of services of the products, introducing a new line of products, enabling end user consumption and optimization as self-service. However, if this data is opened up with appropriate privacy and security parameters applied, there will be other agencies, organizations, governments, local bodies, societies who could get an abstract or granular data for reusing. For e.g. a local government body or council could read the usage of the air conditioning units of a centralized ac society, and predict on when the usage could go high or low based on the weather conditions that are affecting the area. A summer weather could obviously increase the air conditioning needs, and if the data collected by the organization that monitors the utilization is shared openly, the local body could ask for lesser power cuts, and also advise the users to monitor and maintain individual AC units for better sharing of the benefits.

HEALTHCARE

There is tremendous amount of data that is and has been generated and logged in different medical centers. Unraveling the data that has been captured as an initiative of Big Data implementation has farfetched benefits not only for the patients, but to the medical science field who will have better insights, access on kind of medicines, and the treatments that have to be administered to the patients. The sharing of this data across Government agencies will help in nurturing healthier societies.

TRANSPORTATION AND VEHICULAR TRAFFIC

The developing and developed world face lot of traffic and vehicular movement issues, and all the cars, trucks, buses are being installed with GPS systems that are tracked by the parent organizations for optimizing the routes, fuel efficiency, monitoring performance of the vehicles, predicting the avoidable failures or break downs, and conducting a preventative maintenance. If this collected data is shared with city bodies local vehicle traffic system management, the whole traffic and vehicle movement could be well managed with traffic diversions, signal management, and proper maintenance.

Although there are several other use cases, or subject areas that are mentioned in the above diagram, the overall benefits have advantages at socio-economical-political level. Data Democratization enables building smart cities with appropriate traffic management, health management, optimal energy management, cross selling and up selling products that are built by product companies, and building eco system of products or services around these products, and finally giving the end consumer complete transparency of the usage, and charges which will at the end eliminate corruption, and bring clean administrative governance into the system.

HOW WE HAVE SUCCESSFULLY IMPLEMENTED DATA DEMOCRATIZATION: USE CASES

1 Improving operational efficiency and monetization for a managed service provider

The goal of the initiative was to bring in Digital Transformation through eCommerce. A large enterprise data hub was built and ingested with well-structured data from legacy systems, unstructured data from the social media systems, streaming data from the websites. The processed and transformed data in the enterprise was abstracted to the unified data model, and all the processes were governed by master data management, data security driven through policy engines. The final reusable business data was exposed through enterprise integration layer which orchestrated the reads and writes between systems. The business users and the end consumers had well analyzed data exposed through Business Analytics visualizations.

The entire framework materialized as a product, and was "monetized" by hosting multiple other clients. The operational efficiency improved by **30%** because of the Data Democratization.

2 Driving Business Efficiency through Data Democratization in Internal IT environment

The implementation was about bringing business efficiency by adopting the data democratization framework, stepping into the modern IT or data warehouse system where the above framework was adopted yet again. The enterprise data hub consisted of multiple operational data stores, a layer of data federation, data virtualization and the data was consumed by IT teams, and business users through collaborative tools hosted on cloud environment.

The business efficiency of sales leads, tracking, follow up through closures for products improved by **85%**. The underlying reasons being, the data to business decisions cycle improved by **70%**.

OUR FOUR PILLARS TO IMPLEMENT SUCCESSFUL DATA DEMOCRATIZATION

Data Democratization is changing the way data is consumed, analyzed and applied in an organization. It makes data available to more people which they can analyze and get insights with the help of software applications. Organizations that are ready to embark on the journey of Data Democratization needs the support of the people, technology and processes guided by the right strategies and implementation plans. They need to consider the following elements to implement a successful Data Democratization strategy.

Business and IT Processes

There needs to be a shift in the process of Business, and IT where the business is dealt by many stakeholders which is the nature of data-driven organizations. The data acquired by a business or an IT team needs to be shared through agreed policies that are amenable for both the sides. The role of IT teams shouldn't be diluted during this process, and shouldn't also be rigid that would cause an impasse of not sharing the data with many other teams in the organization.

Tools and Technologies

To attend the latest Business requirements, and to achieve the data – driven culture everyone in the organization need those necessary tools and technologies for quick access of data, make sense out of it quickly, and then make it available for anyone to use. Today's technologies provide those tools which the data analysts, data engineers, scientists and the architects can utilize. A strategic focus on the business value to be derived will determine the road map of tools, technologies and process that need to be adopted. A systematic training of all the teams will help in achieving the goal.

Security and Privacy

The challenge of security and privacy is the core of Data Democratization. The CDO office and the IT teams should work in tandem with the internal and external legal departments to understand the impact of sharing data that could be in the privacy zone. The policies, framework and, guidelines should be built along these lines so that appropriate tools, technologies are used to encrypt shared data which is sensitive in nature.

Practices

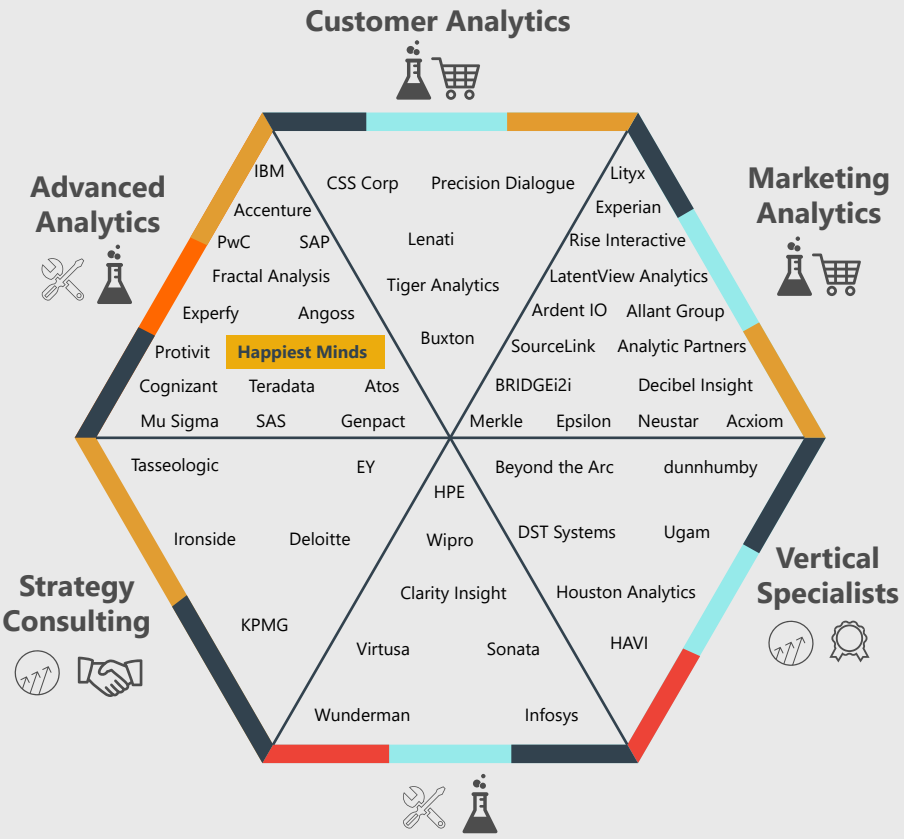
All the changes above need a large-scale culture change and this could be brought in by well-planned policies based on the business goal strategy. The policy should define the business goal, the goal targets and how to evolve the practices, processes. Based on this, the advanced technologies need to be adopted, practiced, and implemented. Proper training should be imparted for the employees on these new technologies as well. One such practice that will bind with such implementations is DataOps, 'a data management method that emphasizes communication, collaboration, integration, automation and measurement of cooperation between data engineers, data scientists and other data professionals'.

FUTURE OF DATA DEMOCRACY

Why it should be a part of your business strategy

The challenges with Data Democratization lie in sharing the data without breaking the legal and privacy policies of an individual or organization. The way to go about it is to draw the front lines, agree all the way from individuals through the Governments adhering to the well laid broad policies, and make these implementable in every "digitalized or digitized" data that will benefit the social – economical – political landscape. The future is "democracy" and "data democracy" is one of the paths for "better living, healthy living, and prosperous living" in this digitally driven world.

Happiest Minds was identified in the
Vendor Landscape: Customer Analytics Service Providers, Q2 2017, Advanced Analytics Section

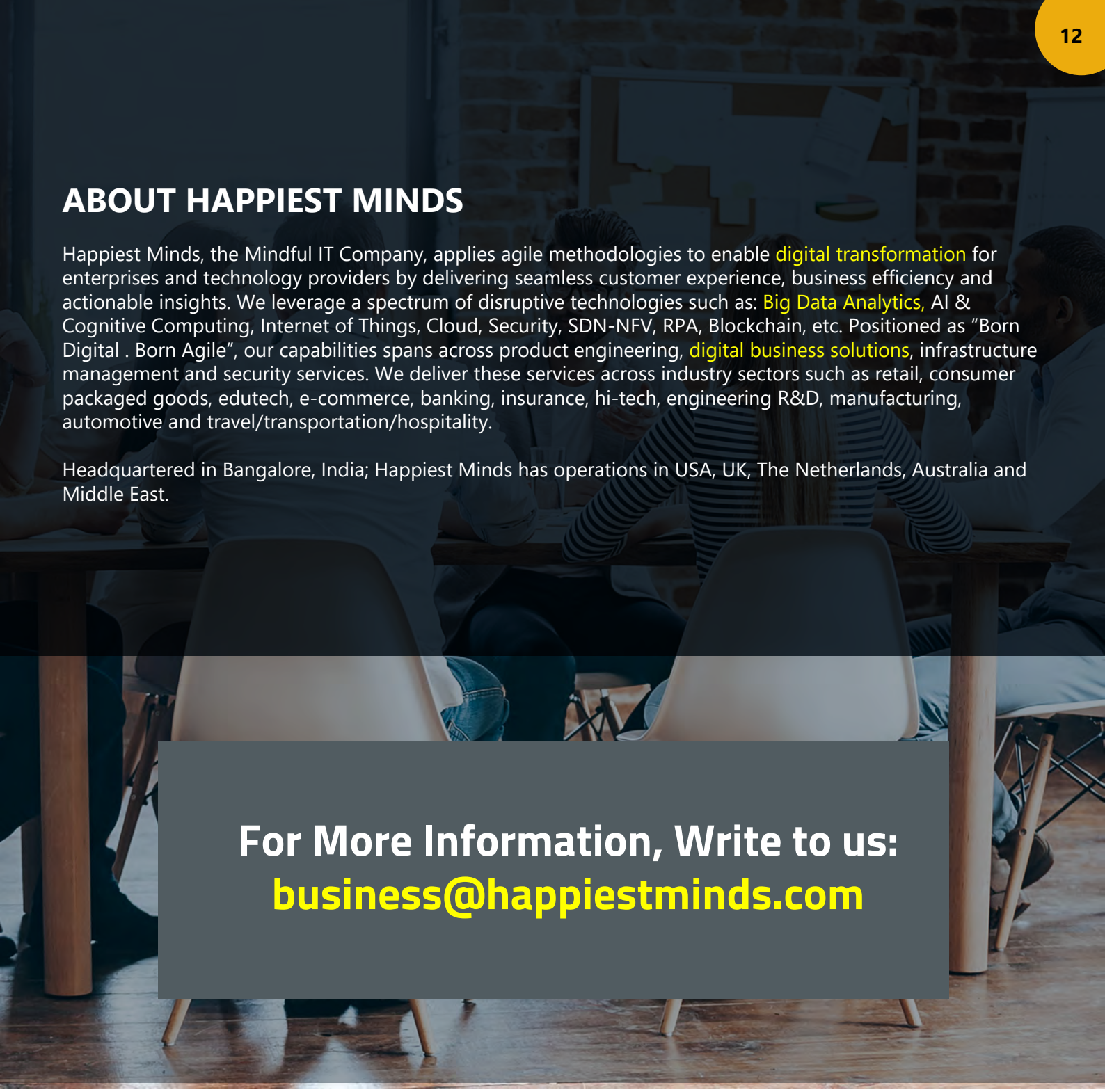


Majority Buyers	
Head of CX	Customer Insights Org.
CDO	CMO
Chief Analytics Officer	

Majority Personas	
Data Engineers	Marketing Specialists
Business Analysts	Strategic Consultants
Data Scientists	Industry Specialists

Note: These categories are not mutually exclusive. Many vendors offer capabilities in several of categories that appear above.

Forrester Research, Inc., Vendor Landscape: Customer Analytics Service Providers, Q2 2017, May 16, 2017



ABOUT HAPPIEST MINDS

Happiest Minds, the Mindful IT Company, applies agile methodologies to enable digital transformation for enterprises and technology providers by delivering seamless customer experience, business efficiency and actionable insights. We leverage a spectrum of disruptive technologies such as: Big Data Analytics, AI & Cognitive Computing, Internet of Things, Cloud, Security, SDN-NFV, RPA, Blockchain, etc. Positioned as "Born Digital . Born Agile", our capabilities spans across product engineering, digital business solutions, infrastructure management and security services. We deliver these services across industry sectors such as retail, consumer packaged goods, edutech, e-commerce, banking, insurance, hi-tech, engineering R&D, manufacturing, automotive and travel/transportation/hospitality.

Headquartered in Bangalore, India; Happiest Minds has operations in USA, UK, The Netherlands, Australia and Middle East.

For More Information, Write to us:
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