OPTIMIZED DATA ARCHITECTURE AND DATA FEDERATION

March 15, 2023

Speaker info

Ravi Bodla
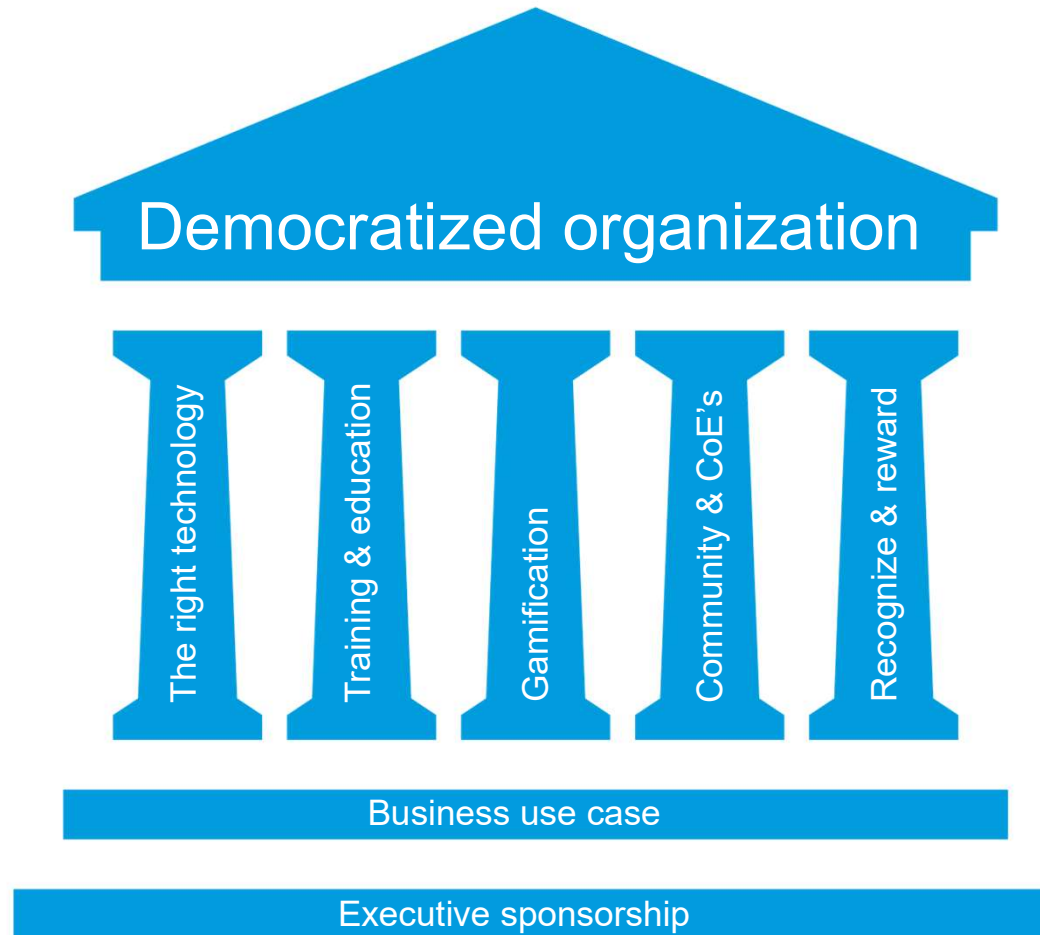
Director, Digital and Data Services

ravi.bodla@rsmus.com

Learning objectives

- Role of a modern data architecture

- Benefits of an optimized data architecture

- Best practices and critical success factors

- Key technology vendors and platforms

What is democratization?

Democratized organization

- The right technology
- Training & education
- Gamification
- Community & CoE's
- Recognize & reward

Business use case

Executive sponsorship

The Transformation Imperative

KEY FINDINGS

- Developing new products/services ranks as most important to growth in 2022

- Data analytics continues to rank as most important "technology" in driving growth

- Companies are doubling down on their ability to utilize data to inform strategy: 64 percent say their companies' effort to collect customer insights increased over the past two years

- Two-thirds of directors say their companies' ability to improve customer experience depends on their success leveraging new technologies

- The shortage of skilled labor has been the main barrier to growth over the past 18 months, having delayed or posed additional challenges for 70 percent of companies
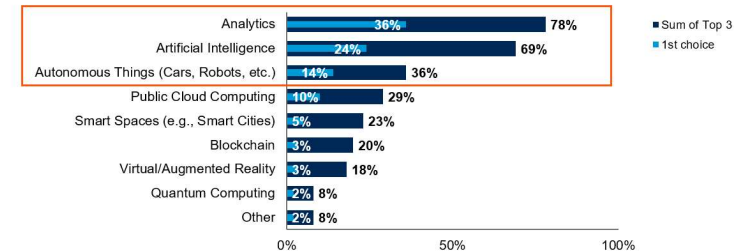
- The majority of companies have either already implemented or discussed implementing new technologies to improve their tax/accounting processes

Corporate Board Member partnered with RSM US LLP to survey 223 U.S. public company board members on their organization's digital transformation journey.

The Heat Is On — Boards of Directors Place Analytics and AI as the No. 1 and No. 2 Priorities

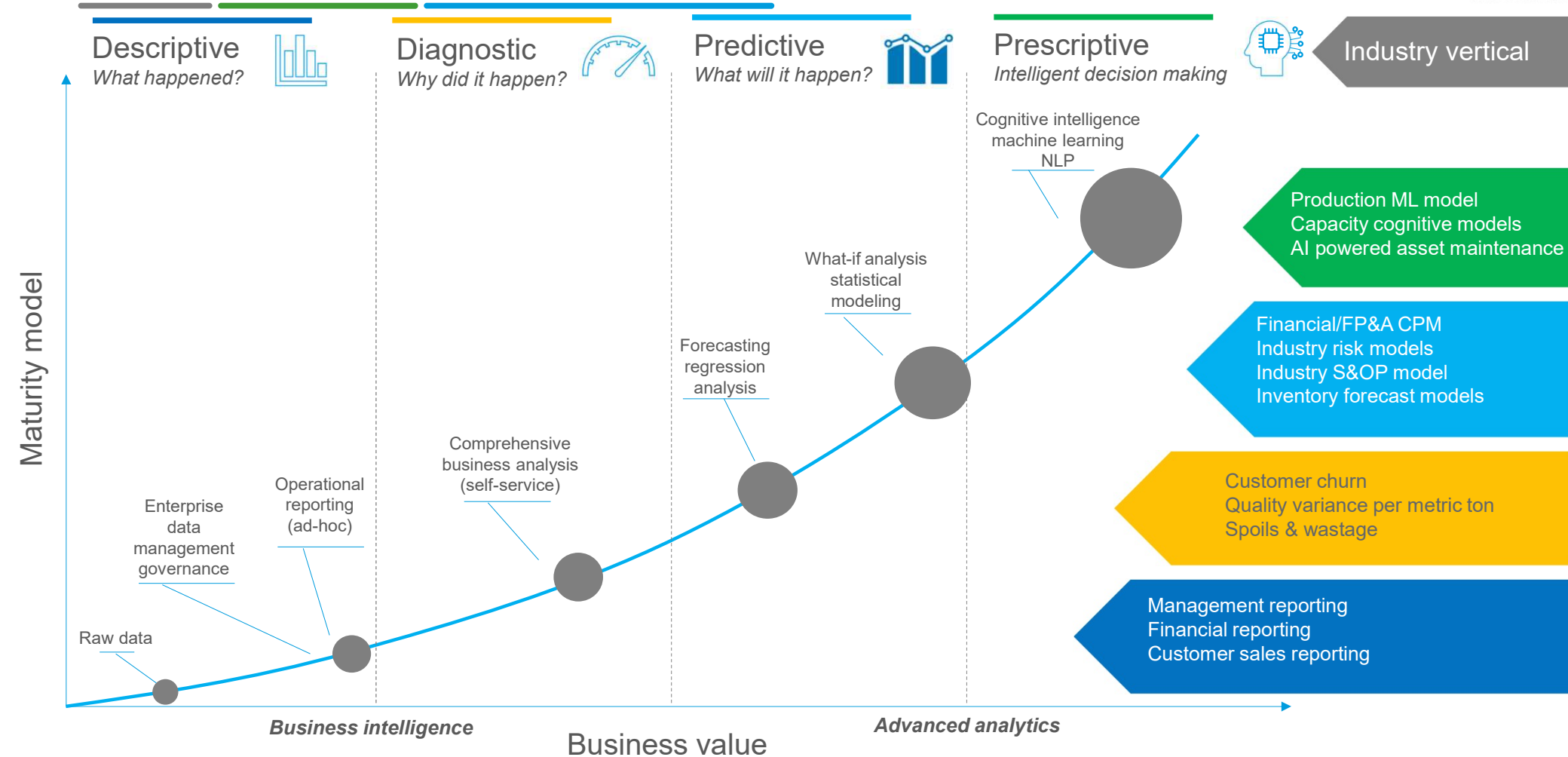Top Game Changer Technologies to Emerge Stronger From COVID-19 Crisis

Technology	1st choice	Sum of Top 3
Analytics	36%	78%
Artificial Intelligence	24%	69%
Autonomous Things (Cars, Robots, etc.)	14%	36%
Public Cloud Computing	10%	29%
Smart Spaces (e.g., Smart Cities)	5%	23%
Blockchain	3%	20%
Virtual/Augmented Reality	3%	18%
Quantum Computing	2%	8%
Other	2%	8%

n = 255, All Respondents, excluding "can't say"
Q. Which will be the top three game changer technologies for your industry to emerge stronger from the COVID-19 crisis?
Source: View from the Board of Directors 2021, CIO Research, July 2020

RESTRICTED DISTRIBUTION
2   © 2020 Gartner, Inc. and/or its affiliates. All rights reserved.

Gartner.

"Rapidly accelerating technology advances, the recognized value of data, and increasing data literacy are changing what it means to be "data driven." McKinsey

Data analytics maturity model

Descriptive
What happened?

Diagnostic
Why did it happen?

Predictive
What will it happen?

Prescriptive
Intelligent decision making

Industry vertical

Maturity model (y-axis)

Cognitive intelligence machine learning NLP

What-if analysis statistical modeling

Forecasting regression analysis

Comprehensive business analysis (self-service)

Operational reporting (ad-hoc)

Enterprise data management governance

Raw data

Production ML model
Capacity cognitive models
AI powered asset maintenance

Financial/FP&A CPM
Industry risk models
Industry S&OP model
Inventory forecast models

Customer churn
Quality variance per metric ton
Spoils & wastage

Management reporting
Financial reporting
Customer sales reporting

Business intelligence

Advanced analytics

Business value (x-axis)

Key Characteristics of Modern Data Architecture

RSM

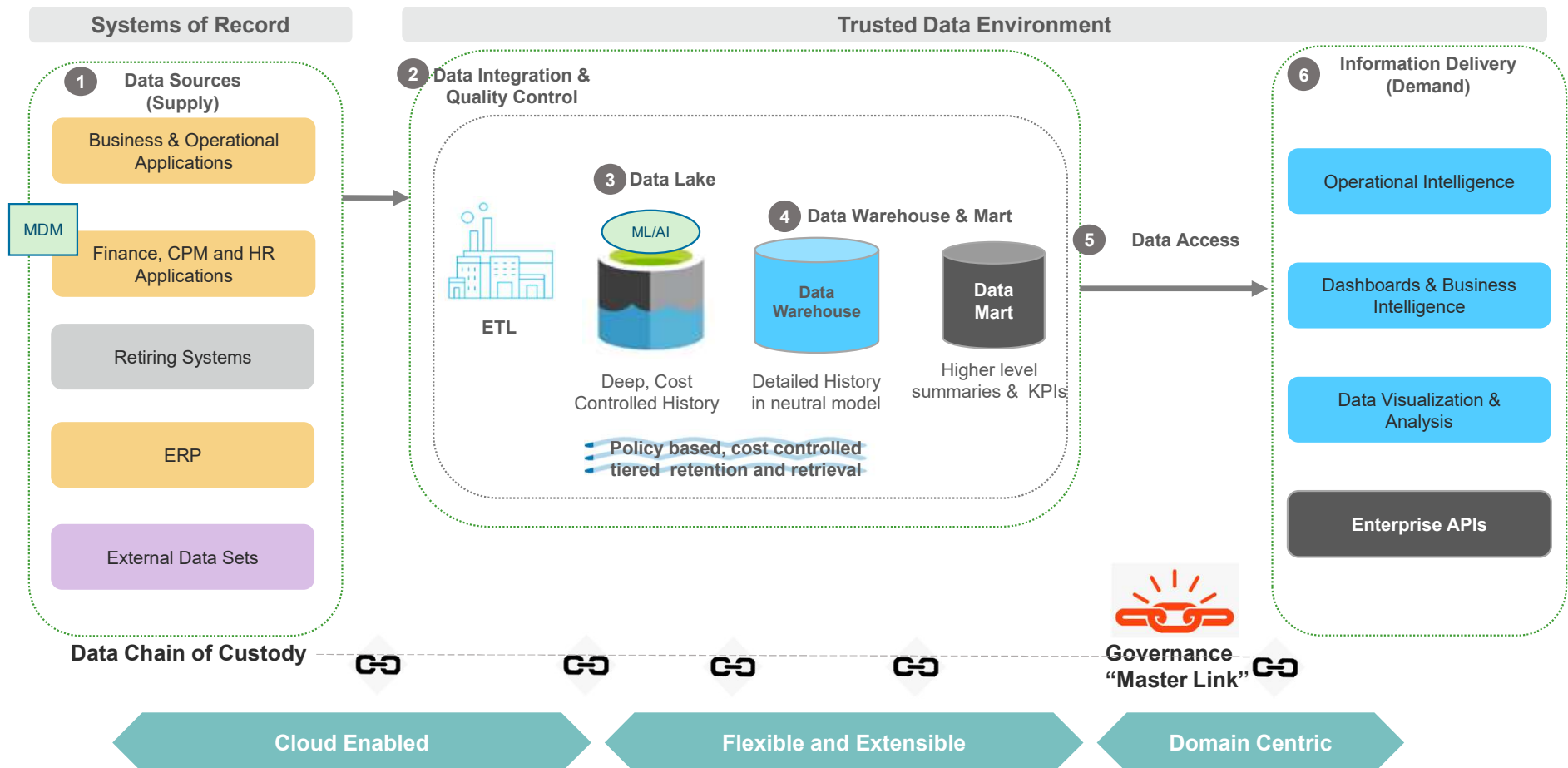|		
Cloud enabled	Enables data access via multiple channels to support business use cases	Prioritized and automated Data Management with focused on security and privacy
Treated like a product	Supports a wide diversity of data types	Enables streaming and "near real time" use cases

What is a modern data architecture?

RSM

Systems of Record

Trusted Data Environment

1 Data Sources (Supply)
- Business & Operational Applications
- Finance, CPM and HR Applications
- Retiring Systems
- ERP
- External Data Sets

MDM

2 Data Integration & Quality Control

ETL

3 Data Lake
- ML/AI
- Deep, Cost Controlled History

4 Data Warehouse & Mart

Data Warehouse — Detailed History in neutral model

Data Mart — Higher level summaries & KPIs

Policy based, cost controlled tiered retention and retrieval

5 Data Access

6 Information Delivery (Demand)
- Operational Intelligence
- Dashboards & Business Intelligence
- Data Visualization & Analysis
- Enterprise APIs

Data Chain of Custody

Governance "Master Link"

Cloud Enabled   **Flexible and Extensible**   **Domain Centric**

Why a modern data architecture?

RSM

Accelerated decision making

- Introduce automation into business decision-making processes

Business process transparency

- Access and blend data within and across enterprise value chains

Streamline & automate

- Dynamically scale with intelligent data acquisition and curation capabilities

Big data

- Scale up and down with varying data volumes
- Need for flexibility to store a variety of data

More analytics

- Analyzing bigger data volumes, with self-serve analytics for end-users
- Simplifying predictive capabilities and ad-hoc data analysis

Agile

Platform that allows for swift business changes to the data estate

Defined data ownership and governance capabilities

Generating business value

RSM

Business Value	How it's Achieved	ROI to the Organization
Increase revenue & margin	• Data and process driven decision making • Build and deploy AI/ML applications across the business	• Greater customer engagement • Cost optimization • Improved business process efficiency
Speed to market	• Scale/cloud-enable existing big data lake and analytics applications • Transition to agile data & ModelOps frameworks	• Differentiated products and services • Faster time to market • Timely insights and monetization
Faster and higher adoption	• Composable fit for purpose data and analytics • Automated analytics & insights pipelines • Single version of truth	• Accentuate faster vision to modern data • Data Insights driven enterprise
Reduce regulatory & compliance risks	• Modernize data governance controls • Data governance & data quality initiatives • Establish data curation policies & practices	• Controlled and trustworthy data • Minimize breaches and creditability risks

Business excellence	Business agility	Operational excellence	Cultural change / mindset change

Representative business opportunities

Drive revenue	Reduce and prevent loss	Improve customer service	Enable better financial processes	Reduce costs	Develop innovative new opportunities
• Assess specific buying patterns / customer behavior • Identify profitable customers from risky customers • Enable personalized marketing, sales and care tactics • Proactively influence the customer journey	• Evaluate causal analysis (intentional and unintentional) • Monitor leading indicators • Operationalize early detection • Predict and act upon loss drivers in real-time	Customer segmentation Tailor service based on customer value and transactional activity Optimize use of self-service tools to drive better outcomes and reduce customer effort	Optimize reconciliation process Enable rigorous tracking of progress to plan and enable root cause of deltas	Eliminate wasted time validating data Reduce redundant data systems Gain headcount efficiency through reducing "data pulling" and increasing true business analysis	Identify new customer segments Spawn ideas for new products, services, partnerships Turn data and customer insights into a marketable or sellable asset

…leveraging data that is integrated, readily accessible, trusted and "fit for business".

So how do we get there…

Establishing guiding principles

Before embarking on any digital transformation effort, we believe it is important to align on a set of principles that are aligned to the vision and strategy of the enterprise and serve as guidance throughout the journey.

- A set of **concepts and shared truths** about what and **how the organization wants to operate and grow the business**

- **Framework for strategic, architectural and procedural decisions** that will be made both in planning and execution of the business transformation

- **A "guide" for evaluating decisions** across the project and for establishing specific requirements and designs and for establishing prioritization

- **Tool to focus discussions and help to remediate disputes** by rooting conversations in a common baseline understanding

- Method for framing discussions but **not intended to prevent mindful deviations after careful consideration**

- **Provides authority and air cover to business units** as they drive individual decisions to align with the Guiding Principles

Focus transformation on comprehensive operating model

RSM

Target Operating Model is the blueprint for an enterprise to enable its strategy execution; operating model decisions are unique to each entity given their business goals, market dynamics, underlying culture and business model. There is no "one size fits all"

01 **E2E process definition and alignment**
Clearly aligned business processes and activities with clear ownership in order to execute business objectives with efficiency and effectiveness

02 **Enterprise system & data architecture / governance**
Integrating transactional, storage and reporting systems end to end to drive automation across critical business processes and data elements

03 **Organizational delivery service**
Structuring of teams to deliver value to internal / external customers efficiently and effectively

04 **People, strategy, and workforce of the future**
Aligning people and their responsibilities to an organizational model that is responsive to change with clearly articulated plans for talent acquisition, development, retention, and succession planning

05 **Policy, controls, and compliance**
Defining a common business language that is disseminated across the organization and identifying proper segregation of duties to balance cost, risk, security and privacy, and quality of output
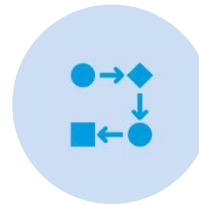
06 **Operational efficiency measures**
Developing KPIs that align to strategic goals and enable operational efficiency and performance improvements that create enterprise value

SUSTAIN

TRANSFORM

INNOVATE

01 E2E Process

System & Data Architecture / Governance 02

Organizational Delivery Service

RSM
Strategy / Vision

06 Operational Efficiency Measures

05 Policy, Controls, Compliance

People, Strategy, and Workforce of the Future

03

04

Building a Modern Data Architecture

Use reference architectures and frameworks

Leverage the scale and capabilities enabled by the cloud

Start with an MVP, iterate and scale

Organize your data function into data platform and data product teams (Capabilities and Business Use)

Streamline time to market via ML and Data Ops processes

Critical success factors

RSM

Executive sponsorship	Assess and define	Plan	People	Investment
Strong commitment from top management team	Understand your vision and goals	Develop the plan	Project management office	Ensure right funding and IT infrastructure are in place to drive tactics and sustain initiative(s) long-term
Clear communication of objectives to engage stakeholders	Assess the current state	Drive value quickly	User champions	Ensure funding to invest into tech and infrastructure is in place to drive chosen tactics and to sustain them
Organizational readiness plan defined to change culture and behavior	Define the target state	Build small and scale	Existing external partners	

Platform Opportunities

RSM

Tool	Description	Data Management & Governance	Simplified Data Architecture and Federation	Data Democratization
Azure Synapse Analytics	Brings together data integration, enterprise data warehousing and big data analytics for immediate BI and ML Needs	●	●	
Profisee	Data management platform that helps enterprises solve data quality issues holding back strategic initiatives	●	●	
Alteryx	Data Analytics platform that covers every data type and source and delivers democratized analytics	●	●	●
Snowflake	Advanced data platform that enables data storage, processing and analytic solutions	●	●	●
Tableau	Reporting tool that allows users to connect to their dataset and explore descriptiove, prescriptive and predictive analytics	●		●
Microsoft PowerBI	Reporting tool that supports descriptive, prescriptive and predictive analytics and allows users to model their data	●		●
Microsoft D365 Customer Insights	Customer data platform that helps deliver personalized customer experience and holistic view of customers	●		●
Azure Machine Learning	Provides an all-in-one platform to create and manage the end-to-end lifecycle of ML Models			●

Contact info

Ravi Bodla

Director, Digital and Data Services

ravi.bodla@rsmus.com

RSM US LLP

30 South Wacker Dr
STE 3300
Chicago, IL 60606

T 312.634.3400
rsmus.com