



To Become a Data-Driven Enterprise, Data Democratization is Essential

To optimise enterprise knowledge, organizations need a modern platform that enables data to be more easily shared, interpreted and capitalized on by internal decision makers and by business partners across the extended value chain.

Executive Summary

From the time the term 'data is the new oil' originated in 2006, interest across enterprises to become data-driven has skyrocketed. To become a true data-driven enterprise, organizations must activate the troves of data on which they sit to glean insights and foresights that drive innovation, competitive performance and better customer experience. This process is called data monetization. Though the term involves money, it does not always have to be about selling data or insights. There are two ways enterprises can monetize data:

- **Internal monetization**, which is about unlocking the value of the data through innovative products, operational efficiency or better customer experience.
- **External monetization**, which is about making data or insights available to partners or other external consumers for a price (as information services providers D&B, AC Nielsen, Experian and others do), or making data or insights freely available so that consumers can use it to build products (government entities and educational institutions often do this).

In our view, data monetization will come automatically through the democratization of data, and democratizing data requires a modern data platform.

A modern data platform helps move data from silos to a common platform, which provides the ability to bring massive quantities of bits and bytes to power inductive analytics. The platform also reduces the time required to extract insights from data, which accelerates decision-making. By bringing massive amounts of data and breaking data silos, organizations can establish a single version of truth and improve the discovery of data assets. This discovery is critical to provide data democratization.

Data democratization is the process of enabling access and availability of information across lines

of businesses to drive innovation via self-service business intelligence (BI) and predictive analytics platforms or by applying deep-dive data science. It's a departure from the traditional process, in which data is typically owned by a central IT team and the lines of business — that is, decision makers — must work through IT to access the data they need.

In this paper, we lay out our view on the ways and means of creating an insights marketplace that modernizes and frees data from its shackles and provides a way forward for organizations seeking new and vital ways to innovate and profit from existing data stores. We conclude with examples of how democratization is generating results (see Quick Take, page 9).



Overcoming Data Democratization Challenges

Building applications directly on modern cloud-based data platforms comes easily for the digitally native organizations that have emerged during this millennium. The advantage is clear: a single, unified data store that is accessible to a wide community of consumers instantaneously. However, this approach represents a huge leap for established enterprises (see Figure 1).

One goal of data modernization is the creation of a single trusted data platform that can unify existing silos, making the combined and standardised data available to a wide community with clear governance and security controls in place.

With data modernization, organizations create a cloud-enabled ecosystem that brings together data from across the enterprise. This helps teams cross-pollinate data in ways that uncover actionable insights and, importantly, makes it available for consumption on a real-time basis.

A modern data platform consists of three main capabilities:

- A responsive data architecture** that is extensible to changing business and market needs —

meaning it can process a range of the four Vs of data (volume, velocity, variety and veracity).

- Intelligent data management**, which includes proper governance mechanisms and metadata management. This provides the right level of controls on the data and renders the data trustable.

- Delivery at scale**, which encompasses automation and DevOps methods needed to truly deliver at scale.

Additionally, the modern data platform is set up with intelligent management capabilities that enable democratization and monetization of data (see Figure 2).

- Data platform:** This provides a foundation for defining a new modern data platform or for extending a legacy environment to the cloud, where it can ingest data from a variety of systems of record within the enterprise and at the desired frequency of batch, real-time, streaming — or through application programming interfaces (APIs).

- External/internal data:** This enables the ingestion of relevant data wherever it may reside into the platform via any ingestion method available (through feeds, for example, or technology-enabled data exchanges).

Typical Challenges Inhibiting Collaboration

Data and analytics shared-services organizations face myriad challenges:

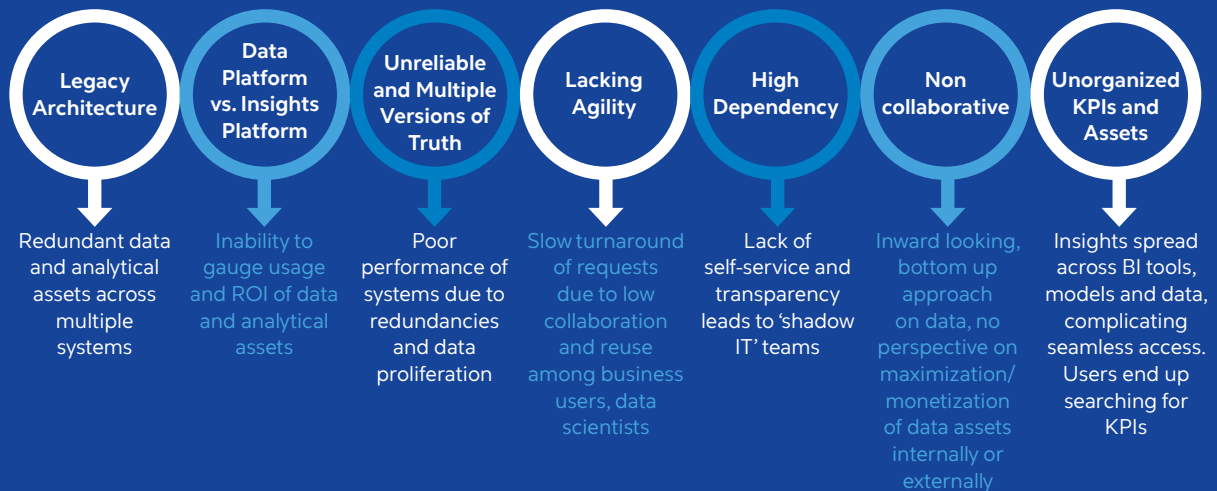


Figure 1

- I Data governance:** This enables the following critical features:
 - > Data quality, which helps define and monitor the quality of the data assets.
 - > Data catalogue, in which all data assets are made available along with metadata and lineage. The data assets also provide information on the quality service level agreements (SLAs), thus making the data more trustable. The metadata available in the data assets will also include currency stamps (“use by”).
 - > Master data, which helps create a single source of truth for shared master data assets. This reduces data duplication and increases the quality of data.
 - > Data security, which helps establish a role-based access control (RBAC) mechanism to govern data access, which must be authorised by the data owner before access is provided to the user. It also provides the audit of the users who have/had access to the data, along with their level of access.
 - > Data compliance, which helps implement data compliance requirements based on the type of data.

- I Data catalogue:** This provides a repository of the information available, its lineage, and quality metrics on the data products to enable data democratization and self-service.
- I Data products:** Data engineering principles must be applied to create data products that enable seamless browsing and consumption.
- I BI assets:** Metadata and tags for the BI and Analytics assets must be defined and built by users; they can then be re-used across the enterprise.
- I Machine learning (ML) assets.** Metadata and tags for re-usable ML models and related feature sets are defined and built by data science communities across the enterprise for search and subscription.
- I Insight marketplace:** Democratization is enabled through a marketplace interface with which users look for the data assets they need, and which enables subscription through workflows.

The typical data democratization value chain is depicted in Figure 3. The goal is to consolidate data into a modern platform on which internal and external data is made available for business users, data scientists, partners, and external consumers. Each data asset or feature made available to consumers should be in the form of a data product that can be consumed in a self-service model.

Insights Marketplace Needs a Dedicated Platform

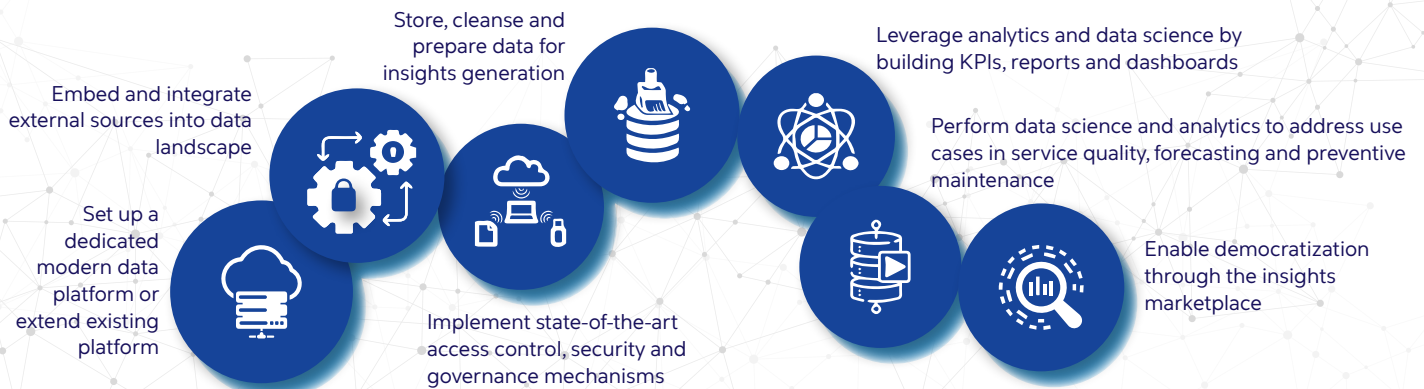


Figure 2

The Insights Sharing Value Chain

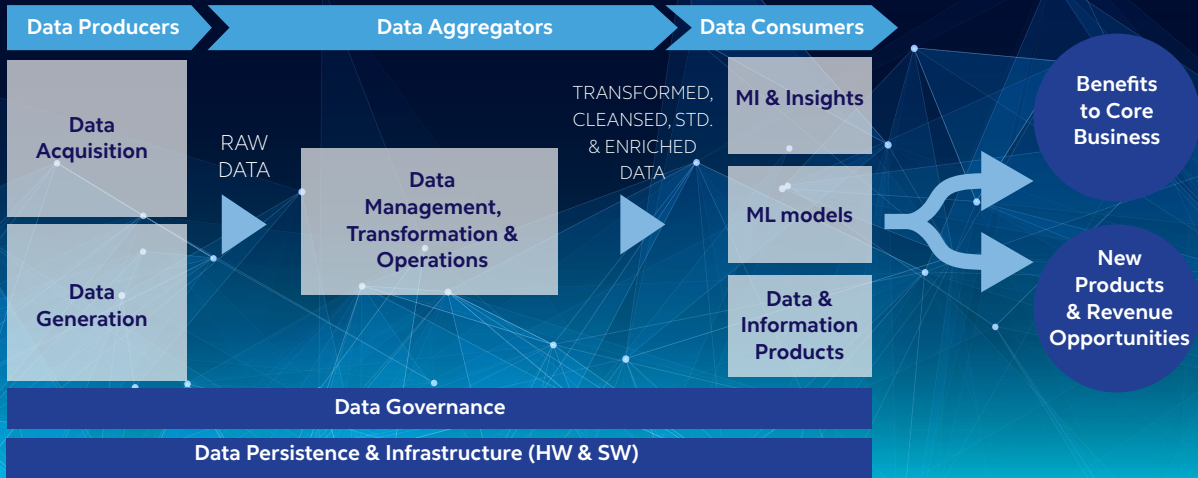


Figure 3

Creating an Insight Marketplace

Online retailers such as Amazon and eBay have perfected the model of self-service in the world of

shopping. A typical online marketplace for products works as shown in Figure 4.

Multi-Vendor Marketplace Structure

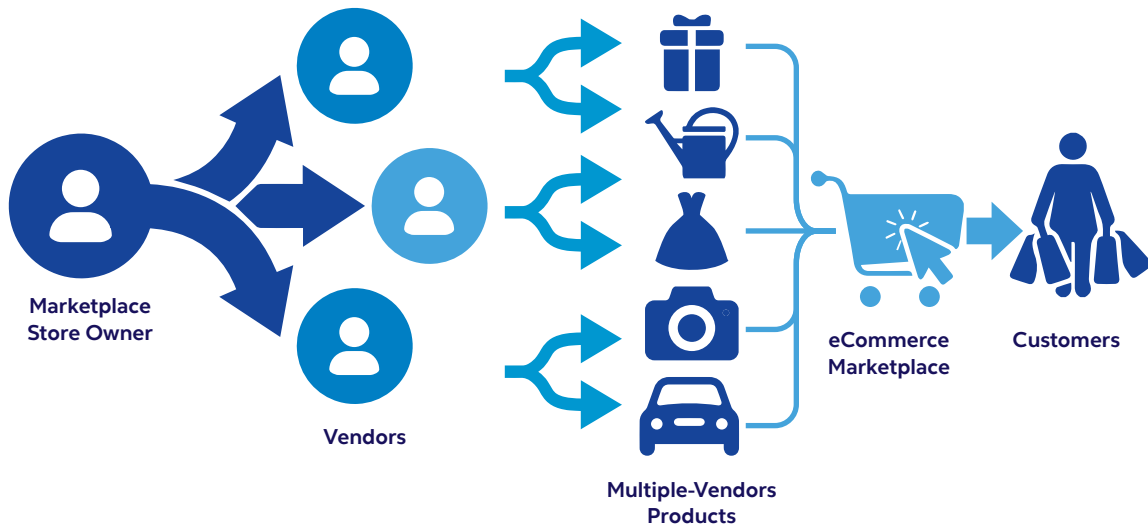


Figure 4

This model can be applied directly to a data-driven enterprise to enable self-service of data products, as illustrated in Figure 5.

An insights marketplace offers a nice way to democratize the data within an organization in its journey toward becoming a data-driven enterprise. An insights marketplace is an interface whereby users across the enterprise can search for data products, BI, analytics and ML models that have been produced across the organization. The insights marketplace also makes the process of getting access to the data seamless by automating many data governance

activities, such as data security and provisioning. Users will be able to request data assets that are not available in the marketplace, as well. The insights marketplace can drive the following (see Figure 6) (next page):

- Collaboration across teams and business units.
- A reduction of duplicated efforts to ingest data and create data products.
- Secured data democratization.
- Internal monetization of data.

The Data-Driven Enterprise

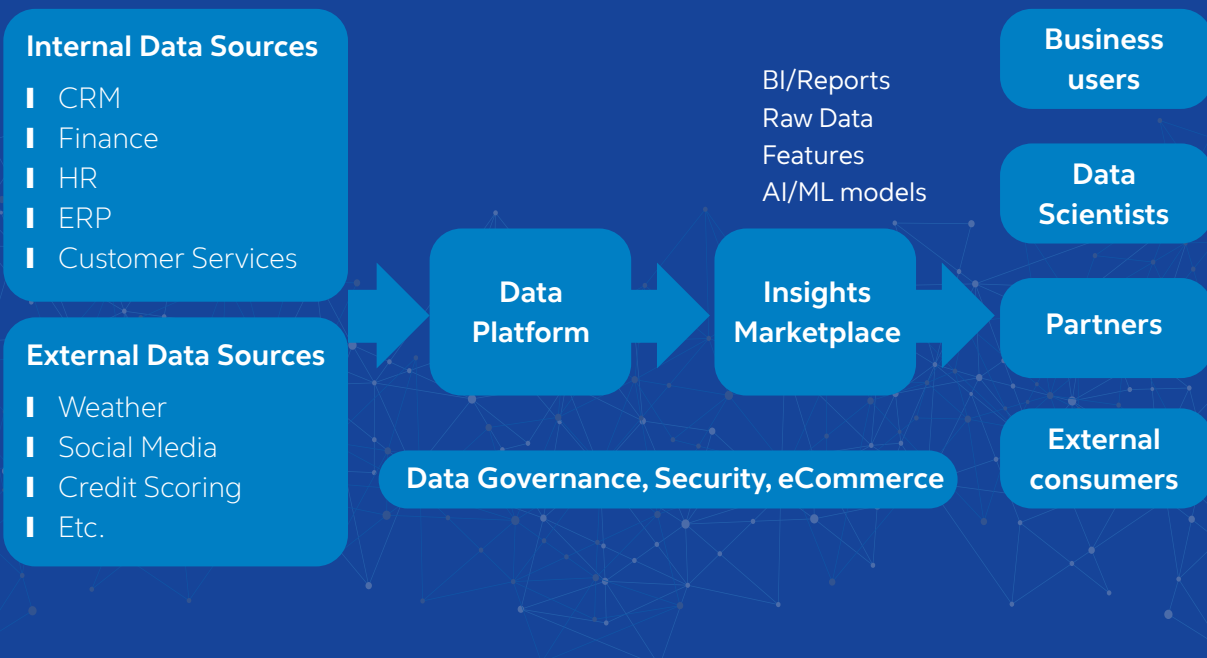


Figure 5

What an Insights Marketplace Begets

A marketplace for enterprise users enabling collaboration and reusability of information management and analytics assets

- **Publish Insights** – Authors can publish raw data/reports/dashboards for consumption by other users
- **Advanced Search** – Search results shows suggestions of published raw data, reports, dashboards
- **Request Insights** – Recommended authors can be reached for placing insights request that are not available after search
- **Notifications** – Personalized notifications when insights requests are completed by authors
- **Data Driven Culture** – Asks users to contribute and rates contributors and their content (top rated)
- **Collaboration** – Enables users to share and comment on the insights
- **Narrative Sciences** – Insights about the raw data/report/dashboard are automated and done through Narrative Sciences
- Ability to **download** the raw data/report/dashboard
- **Subscription feature** enabling users to get notified on insights being refreshed
- **Productivity**
 - Subscribed insights are summarized to highlight key messages without need to click down for details
 - Chatbot lets users ask questions, returns specific information and charts
- **Personalized Experience**
 - Users see subscribed, recommended, most downloaded, and top-rated insights as well as recent searches

Figure 6

Enterprises can use the data, which they have collected and curated, to monetize through external partners and other consumers. Data sharing can be based on subscription and agreement between the

enterprise and a specific partner. This sharing can be done through APIs or data snapshots. This method of data sharing can be used to add an additional stream of revenue.

Benefits of the Insights Marketplace

Democratizing data assets through an open environment like an insights marketplace enables collaboration between the suppliers of data assets and the consumers of those assets, who could be internal or external to the enterprise (see Figure 7).

Key benefits of the marketplace to internal consumers through internal monetization include:

- Increased collaboration between teams across the enterprise.
- Complete visibility of all data assets available in the enterprise.
- Availability of all types of data assets in the enterprise (raw data sets, BI and insights, features, AI/ML products, and more).
- Reduction of the duplication of efforts by multiple teams.
- Quicker innovation, and the ability to build data products using assets built by different teams in the enterprise.
- Personalised experiences, such as the ability to associate data product use with personas/ roles to permit recommendations for roles; and usage billing, which allows data products to be

billed according to their value (in the case of data monetization) and to be monitored for usage in all sharing modes.

As noted above, in addition to internal users and teams, an insights marketplace can provide benefits through external monetization. Among the key benefits:

- A standard framework to share data with partners, who can then use the data and insights to improve their own services or products.
- The potential to unlock a data asset, creating a new revenue stream through sharing data with different partners or external consumers.
- Strong adherence to data security/compliance rules when sharing the data with external partners/consumers.

The initial step to unlock the value of the data and utilise the benefits mentioned above is by bringing a culture change across the organization in driving innovation through collaboration and self-service powered by seamless availability of data. The key is to make information for business purposes as available as possible, which enables the business benefits to quickly accrue.

Key Ecosystem Synergies

Data Products Creation

Create data products from internal and external data sources and register the assets through the catalog

Configure and Record Assets

Configure search criteria, description of the asset, validity duration

Cost Visibility

Cost information availability and easy access for intended parties

Personalization of Services

Provides feature to let supplier personalize response/interactions with customer for improved and enriched service experience.



Assets Catalog

A catalog of all available assets by category

Search

Search for data assets based on popularity or other criteria

Privilege Biased

A given user sees only what they are authorized to access

Fast & Easy Access Control

Requesting access in some cases happens without approval while some go through Org Governance chart for approval

Figure 7

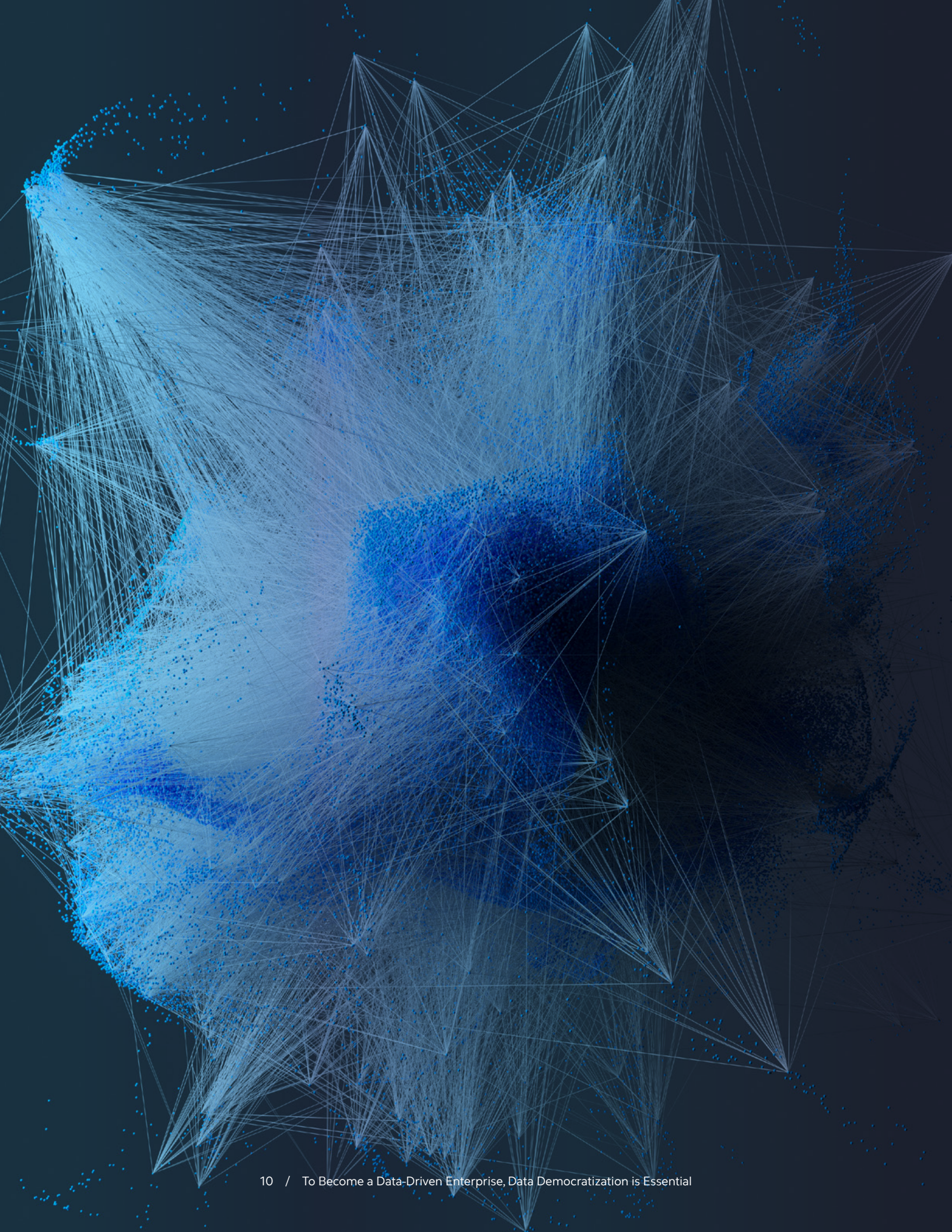
Quick Take

Data monetization in action

One example of cultural change and data monetization is taking place at Transport for London (TfL). TfL makes its data available to businesses through its Open Data initiative, and the results have been nothing short of extraordinary. Through mobile apps, developers in the public domain access the data to build products (such as route planners and traffic disruption notifications) that not only provide essential services but help their businesses to build consumer loyalty.

Another example is in the educational sector. The EU's Open Data initiative is helping educational institutions understand job demand and skill gaps in the workforce. This data is used by educational institutions to create courses that can be utilised by students, thereby closing the skills gap and meeting job demand.





About the authors



Vinod Kannan

Data Modernization Consultant, AI & Analytics, Cognizant

Vinod Kannan is a Data Engineering, AI and analytics, and enterprise architecture specialist within Cognizant's AI & Analytics practice. With more than 20 years of experience, he has driven several transformational data modernization programmes for strategic customers across multiple industry sectors. He has a degree in Engineering. Vinod and can be reached at vinod.kannan@cognizant.com | www.linkedin.com/in/vinod-kannan-1519562.



Madhusudhanan Padmanabhan

Enterprise Architect, AI & Analytics, Cognizant

Madhusudhanan Padmanabhan is an Enterprise Architect within Cognizant's AI & Analytics practice. He has over 22 years of experience architecting and building digital platforms for enterprises, as well as in-depth experience and expertise in building distributed applications and data analytics solutions. Madhu has a master's degree in computer application and is a Microsoft Certified Solution Architect Expert. He can be reached at Madhusudhanan.P@cognizant.com | www.linkedin.com/in/pmadhu/.

About Cognizant

Cognizant (Nasdaq-100: CTSH) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build and run more innovative and efficient businesses. Headquartered in the U.S., Cognizant is ranked 194 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at www.cognizant.com or follow us @Cognizant.



World Headquarters

500 Frank W. Burr Blvd.
Teaneck, NJ 07666 USA
Phone: +1 201 801 0233
Fax: +1 201 801 0243
Toll Free: +1 888 937 3277

European Headquarters

1 Kingdom Street
Paddington Central
London W2 6BD England
Phone: +44 (0) 20 7297 7600
Fax: +44 (0) 20 7121 0102

India Operations Headquarters

#5/535 Old Mahabalipuram Road
Okkiyam Pettai, Thoraipakkam
Chennai, 600 096 India
Phone: +91 (0) 44 4209 6000
Fax: +91 (0) 44 4209 6060

APAC Headquarters

1 Changi Business Park Crescent,
Plaza 8@CBP # 07-04/05/06,
Tower A, Singapore 486025
Phone: + 65 6812 4051
Fax: + 65 6324 4051