

# The State of Graph Databases

Worldwide Adoption and Use Case Characteristics



## Survey: Graph Users Experience Tangible Benefits by Discovering Data Relationships

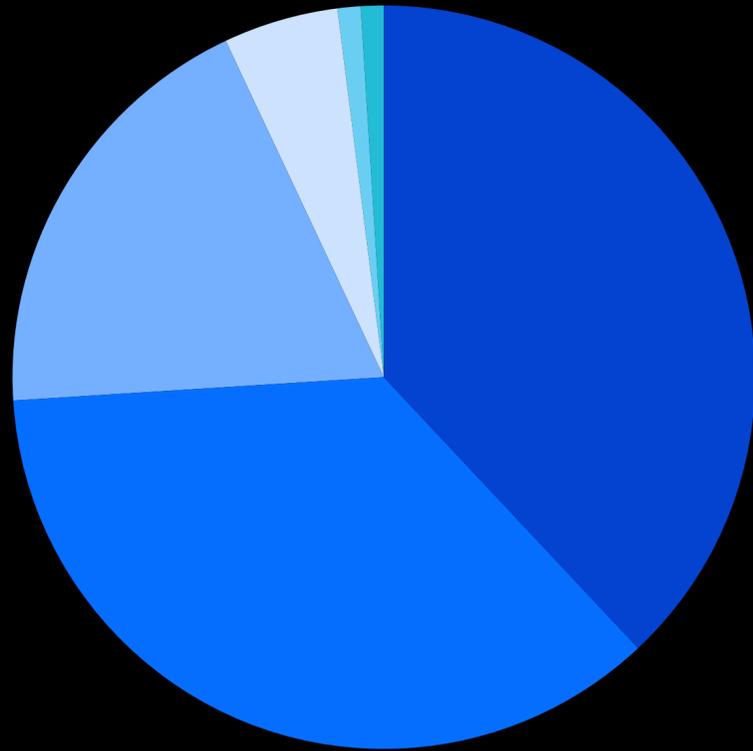
If your organization is like many, you may be taking a “store everything” approach to data. After all, storage has become more affordable than ever in recent years, and due to the accessibility of cloud-based technology, capacity has become almost limitless. The clear challenge is tapping into those massive volumes of data to derive actionable business value. That requires analytics. However, using a traditional relational database may not be the best approach, because adapting relational databases to answer deeply complex questions can create performance bottlenecks and added maintenance burden for your business.

To gain a real-world perspective on how IT professionals are addressing these challenges, IBM, in partnership with TechValidate, conducted a global survey of 1,365 entrepreneurs and developers about the potential they see for graph databases as well as their current and planned use for this technology. We also queried them about how they are using graph to address problems, the benefits they are realizing, and examined how adoption of this technology differs by company size and industry. Survey respondents spanned small, medium and large companies in diverse industries across 74 countries.

Specifically, large enterprises comprised 38 percent of the responses, with small businesses representing 36 percent, and mid-sized businesses representing 19 percent. The survey population included a wide array of professional roles, including developers, architects, IT managers and business leaders, with the largest percentages being attributed to developers/programmers (44 percent), application/software architects (13 percent) and IT directors and managers (11 percent). Respondents represented a range of industries, with the majority in technical industries: computer services (42 percent) and computer software (22 percent).

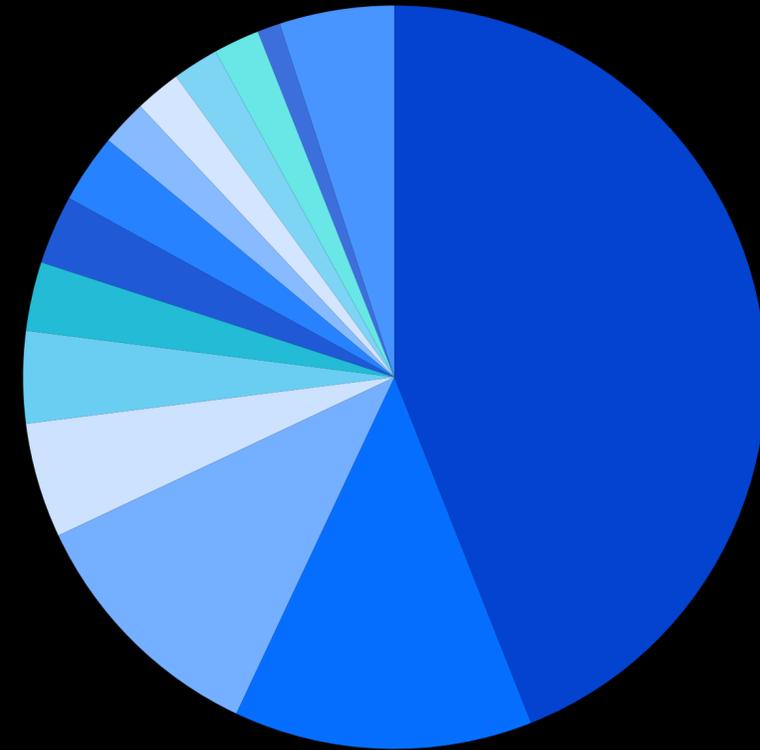
This paper provides an overview of graph technology, details the results of the survey—and highlights findings that debunk some of the most popularly held views about graph technology.

### Company size of people surveyed



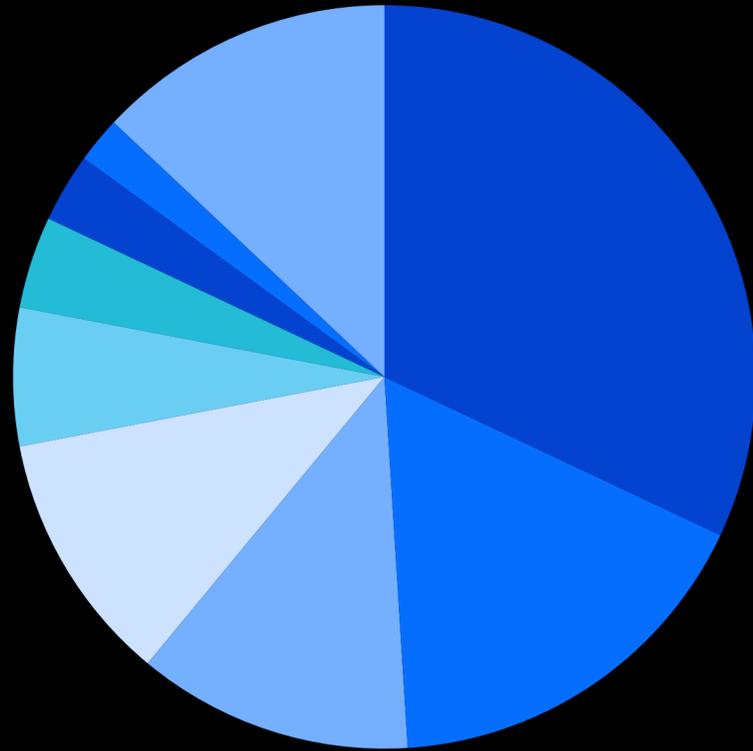
- 38% Large enterprises
- 36% Small businesses
- 19% Medium-sized enterprises
- 5% Education
- 1% Government
- 1% Other

### Roles of people surveyed



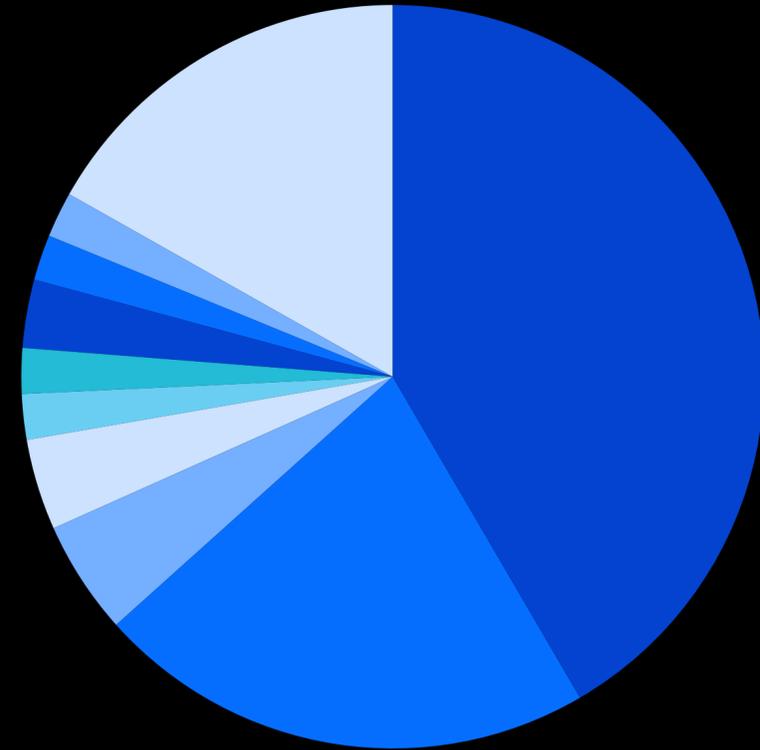
- 44% Developer/Programmer
- 13% App/Software Architect
- 11% IT Director/Manager
- 5% Consultant
- 4% Database Architect
- 3% CEO
- 3% CTO
- 3% Business Leader
- 2% App Dev Manager/Director
- 2% Project Manager
- 2% QA Manager/Tester
- 2% Systems Programmer
- 1% Designer
- 5% Other

Geographic distribution of people surveyed



- 32% United States and Canada
- 17% Europe
- 12% Asia
- 11% India
- 6% Middle East
- 4% Australia and New Zealand
- 3% Africa
- 2% Latin America
- 13% Unknown

Industry of people surveyed



- 42% Computer services
- 22% Computer software
- 5% Education
- 4% Professional services
- 2% Media and entertainment
- 2% Customer products
- 2% Government
- 2% Retail
- Telecommunications: 2%
- Other: 17%

## What is Graph Database Technology?

A graph database is an example of technology created to fix a problem that relational databases simply weren't designed to handle. Traditional relational database management systems store data in tabular form—rows and columns—but that isn't always reflective of the world we live in.

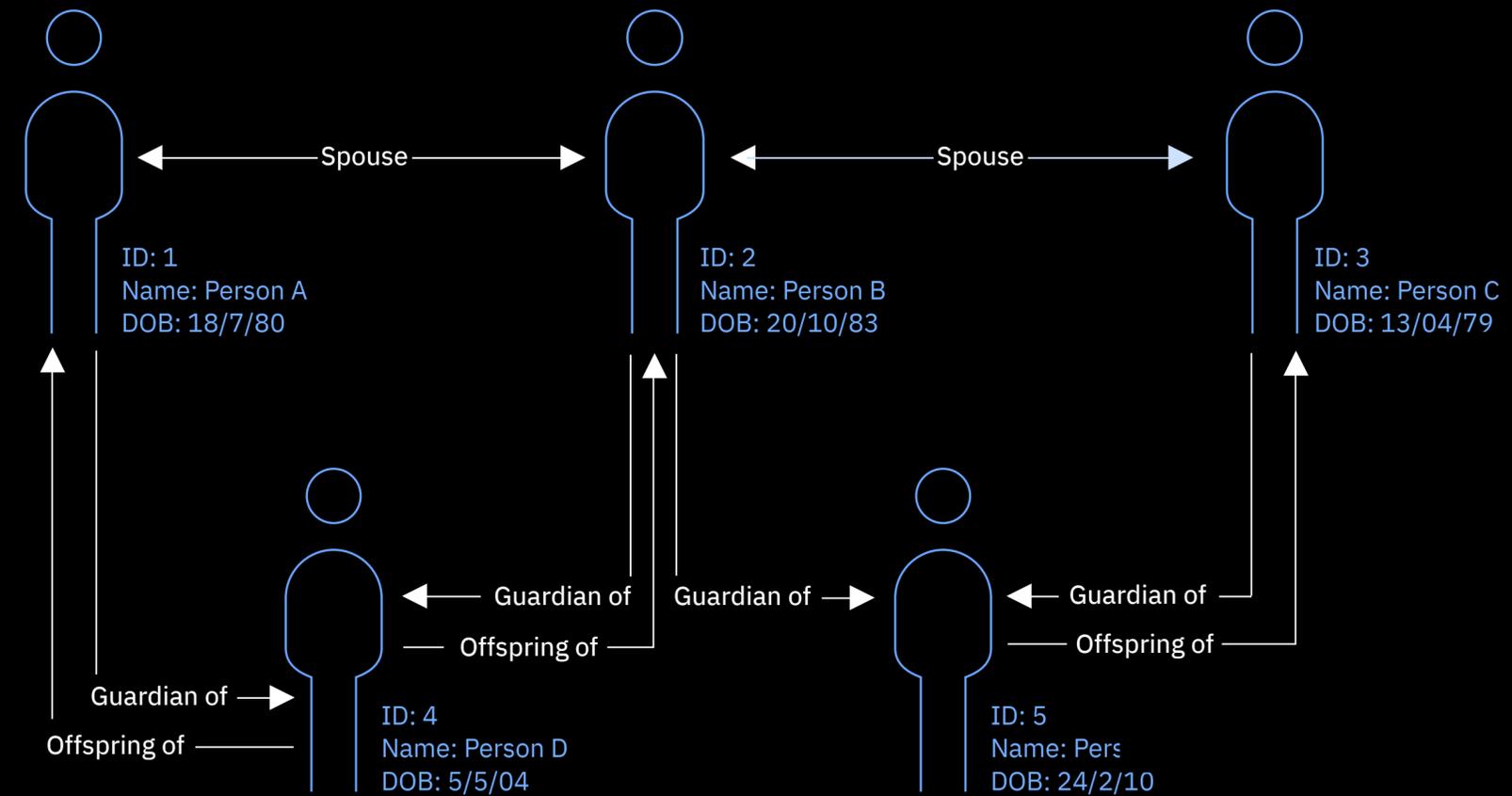
This is significant because much of the value of information lies not in a linear representation of the data, but in the connections between data sets, or “data relationships.” It's the interconnectedness of those relationships—across multiple levels—that is hindered within a relational database, which limits the discovery of those relationships to one or two levels of depth. Putting data into a constrained environment essentially hides the insights, such as common or unusual patterns, for instance, that could be derived by viewing data at a greater depth. For this reason, there is an inherent connectedness of data that goes beyond what is practical to put in a relational database structure.

While relational databases are designed to reveal data relationships to some extent, they do so through abstraction, because they can only reveal data relationships via joins between tables. It's the rigidity of the rows and columns in a relational database that makes viewing many-to-many relationships complicated and costly. Diving deeper into data sets in a relational database, to a fourth, or sixth, or eighth level, inhibits performance. Why shoehorn data into columns and rows if it only slows the work and complicates or restricts the analysis?

Graph databases remove that abstraction. By storing data and relationships together as a graph—made up of nodes or vertices, connected via relationships or edges to form a mesh of information—you reduce complexity and eliminate the extra work involved in transforming the data from the model to storage.

The illustration on the right demonstrates how a graph database can discover these relationships in ways that traditional database models cannot.

## Graph databases think like you do



“A graph database and its ecosystem of technologies can yield elegant, efficient solutions to problems in knowledge representation and reasoning.”

— Dr. Marko A. Rodriguez, Project Management Committee Member, Apache TinkerPop™

Graph technology provides a data storage and processing engine that makes the persistence and exploration of data and relationships more efficient. In short, graphs behave similarly to how people think—in specific relationships between discrete units of data. What’s more, graph databases have the capability to match both the actual data model and the conceptual model, something our survey respondents told us is a tremendous advantage. In the view of Dr. Marko A. Rodriguez, a graph expert and Project Management Committee Member with Apache TinkerPop, an open source graph computing framework, “A graph database and its ecosystem of technologies can yield elegant, efficient solutions to problems in knowledge representation and reasoning.”

“For domains that have a good fit, graph provides zero friction between model and implementation, which results in exponential savings in time and effort.”

—Application Architect, Large Enterprise Financial Services Company

“Creativity goes way up when our data model matches our mental model.”

—Architect, Large Enterprise Computer Software Company

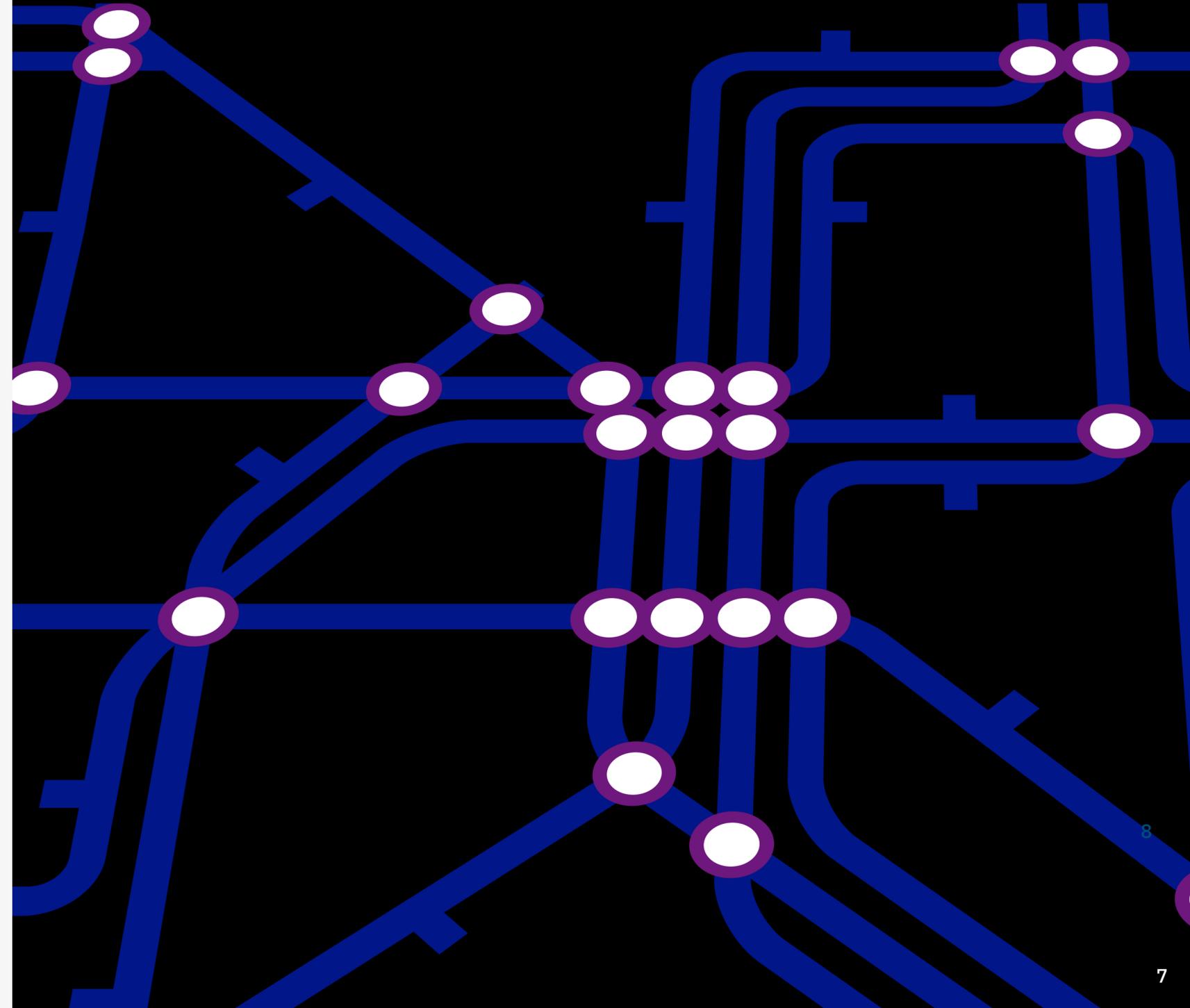
## Graph Results Resemble a Map

Graph databases are also known as property graphs—attributed, multi-relational graphs in which the edges are labeled and both vertices and edges can have any number of key values and properties associated with them. Think of a map, in which the street intersections are “nodes” and the roads connecting them are “edges.” Each section of road probably has a name, a type, a length, a speed limit, etc. When you query a graph database, you get all the nodes (data points) that have a particular property and are related to other nodes. Both nodes and edges can store additional properties such as key-value pairs.

“Graph databases excel at managing highly connected data sets and complex queries.”

—Developer/Programmer, Medium Enterprise Computer Software Company

A graph database is like a map, in which the street intersections are “nodes” and the roads connecting them are “edges.”



The ability to store both nodes and edges as key-value pairs is critical because it reveals how your organization's data points relate to each other. The value of data rests in its relationships, and graph databases let you get at that value more quickly and easily. This visualization of data relationships leads to a fuller picture of what's happening, so that users have better insight. The ability to map extremely complex data relationships is vital. The technology opens the door to a range of business uses, from fraud detection and real-time recommendation engines to master data management and IT and network operations—and more. These use cases are outlined later in this paper.

“... people are excited about graphs in the context of data management and processing ... because they are realizing that many problems can be represented as a graph and solved efficiently using graph traversal techniques. No longer are graphs relegated to mathematical inquiry. This previously underutilized, fundamental data structure is now applied to numerous engineering problems.”

—Dr. Marko A. Rodriguez

## Graph Adoption Rates on the Upswing

Though graph technology has been around for decades, it is still considered to be relatively new, and is now seeing increasing levels of adoption. While this technology was historically considered useful strictly for back-end analytics, results of this survey show the emergence of graph for high-performance, realtime analytics.

In fact, 43 percent of all respondents reported that they use graph databases for transactional (real-time) analytics, while 29 percent are using them for batch (offline) analytics, marking a significant shift in conventional wisdom about graph databases and their uses. Enterprise user responses were nearly identical, at 42 percent for transactional analytics and 29 percent for batch.

## Planned Uses for Graph Technology

What types of application(s) do you currently use or are considering using graph technology for?

**43%**  
**Transactional**  
(real-time)

**29%**  
**Batch analytics**  
(offline)

## Reasons for Choosing Graph

Survey respondents cited numerous reasons for adopting graph, including operational and strategic challenges. On the operations side, respondents reported turning to graph databases to address concerns over slow application performance and batch processes, problematic development and test processes, and issues trying to introduce new data sources. On the qualitative side, respondents expressed that they are choosing graph to address strategic issues such as becoming more proficient in identifying correlations between data sets and improving fraud detection capabilities.

Of those surveyed across all business sizes, slow application performance and batch processes ranked highest (37 percent) among their challenges, while bringing in new data sources and missed data correlations were close behind (33 percent and 32 percent, respectively). These responses were consistent across users in various industries.

## Top Seven Reasons Companies Turn to Graph Database Technology

What problem(s) is your organization experiencing where you use (or are considering using) graph?

**Batch processes taking too long 37%**

**Slow application performance 37%**

**Missed correlations between data (flawed results) 33%**

**Cumbersome development process 32%**

**Slow testing cycles 30%**

**Slow testing cycles 18%**

**Ineffective fraud detection 16%**

Technologists from large enterprises, which made up 44 percent of those surveyed, reported even more pronounced issues across those same challenge areas, reflecting the complexities that are often found in larger corporate environments.

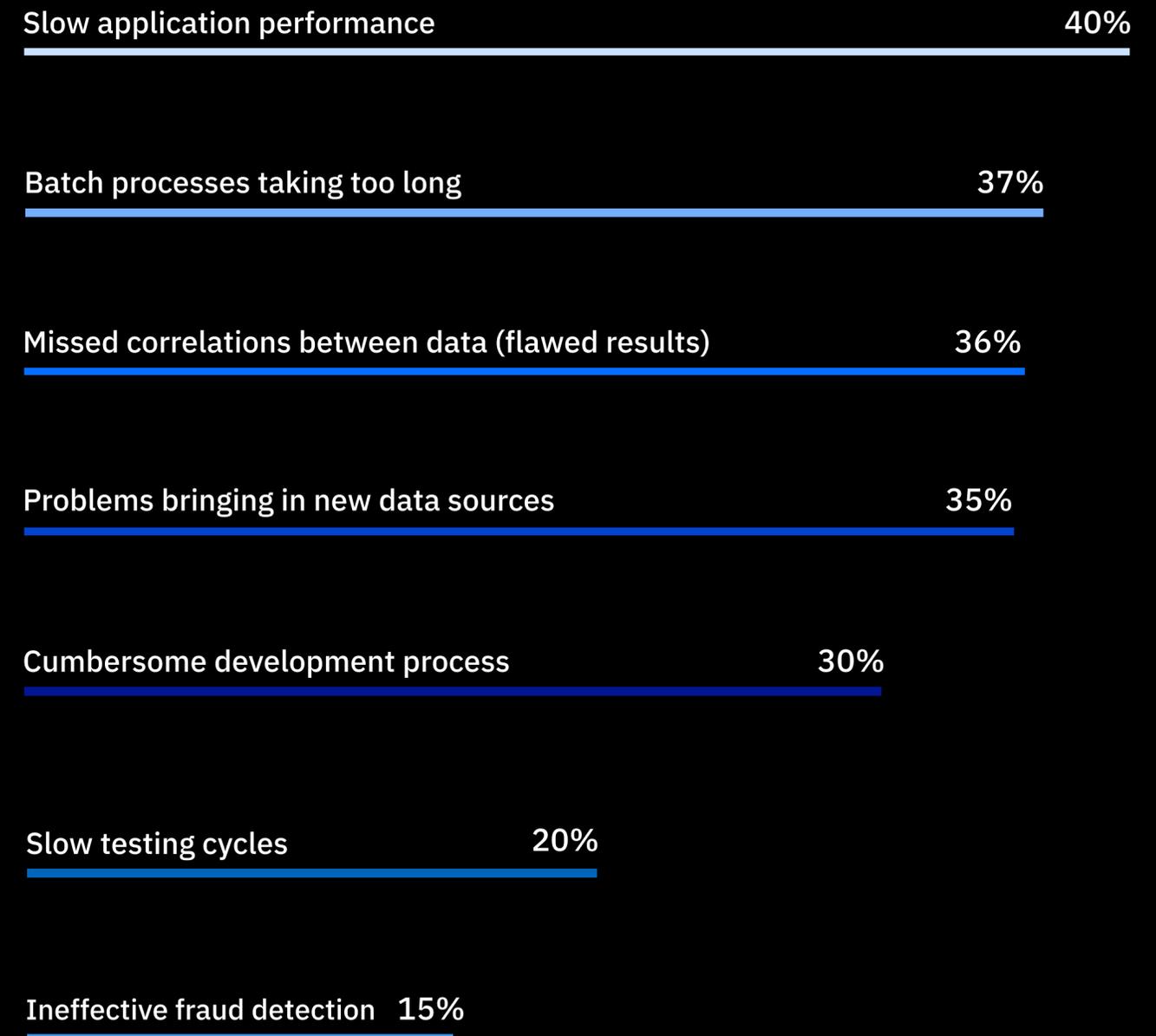
The performance issues that current graph users are experiencing underscore the need for the high-performance, real-time analysis that graph can provide.

“Graph has provided faster test cycles. Our improved application performance is our best outcome.”

—Developer/Programmer, Small Business Computer Software Company

## Enterprise Reasons for Moving to Graph

What problem(s) is your organization experiencing where you use (or would consider using) graph?

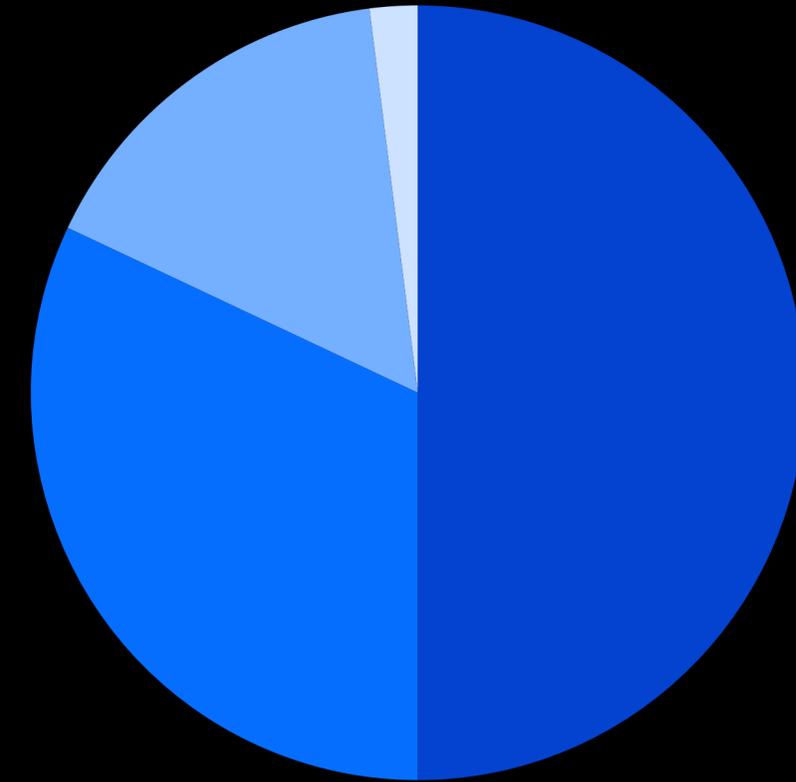


## Databases Used Prior to Migration to Graph

Based on their responses, developers are choosing to migrate existing applications to a graph database in addition to using it to build new functionality, which suggests a strong vote of confidence for the advantages the technology can bring. But what types of databases were our respondents using before turning to graph? Half of the users (50 percent) had migrated from a relational database, followed by NoSQL (32 percent); a much smaller percentage (16 percent) said they were using graph to manage new projects.

## Developers Are Migrating Applications to Graph

What database technology were you using before adopting graph technology?



- 50% Relational database
- 32% NoSQL database
- 16% New projects (no pre-existing database)
- 2% Other

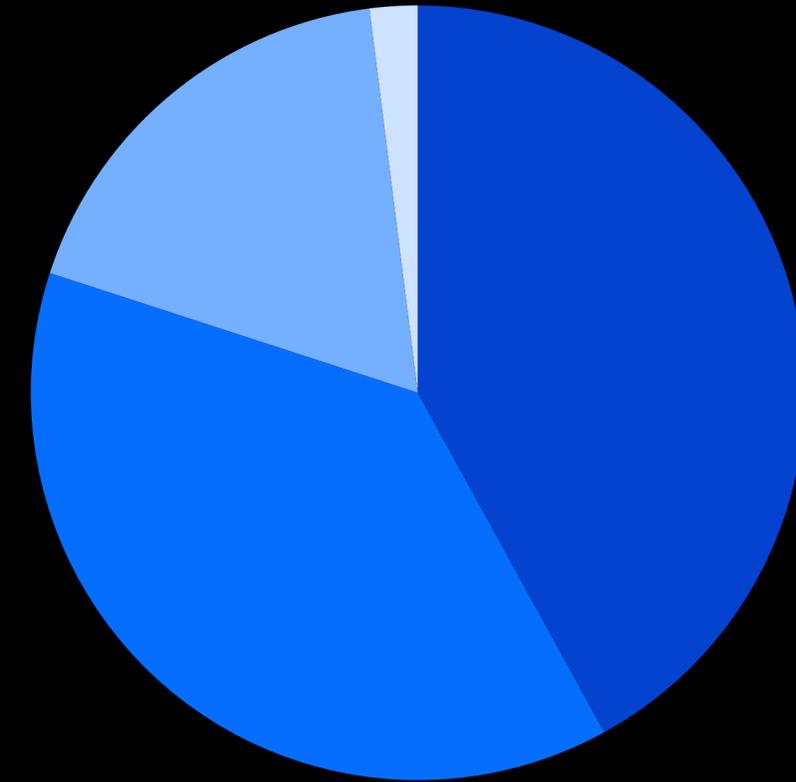
Technologists are betting on graph with existing applications. 82% of respondents were willing to refactor applications in order to obtain the benefits of graph technology.

Responses were similar across enterprise users, with 42 percent having migrated from a relational database and 38 percent from a NoSQL database. Only 18 percent were using graph to take on new projects.

These results represent a surprising finding because new technology is often purposed for new projects, but it is more unusual for companies to choose to refactor existing code to adopt a new database paradigm. It is significant that technologists are willing to re-write existing code within current applications in order to take advantage of the benefits that graph technology can deliver.

## Enterprises Are Migrating to Graph

What database technology were you using before adopting graph technology?



- 42% Relational database
- 38% NoSQL database
- 18% New projects (no pre-existing database)
- 2% Other

## Reasons for Moving to Graph

Based on responses from the earlier question about why companies are moving to graph, we learned that technologists are moving from their existing database models, especially relational databases, due to lagging performance. These results suggest that database administrators and programmers have grown weary of lengthy query times, the hassles of pre-computing query results in advance instead of performing real-time queries, and of rapidly changing schemas as data evolves at breakneck speeds. In addition, the rigid schemas in relational databases—while great at maintaining data accuracy— can also bring web and mobile applications (and their millions of users) to a screeching halt.

What's more, relational databases are simply not designed to answer questions about relationships between data elements, which requires connecting database tables by writing complex joins. These serve as serious obstacles to delivering the actionable insight that fuels business agility.

Graph databases overcome those obstacles with their ability to model data with a high number of data relationships, expand the model as needed to add new data or data relationships, and—perhaps most importantly—query data relationships in realtime. Increasingly, those tasked with managing the analytics within their organization have begun to understand that the relationships between the data are as important as the data itself. Graph is ideal for bringing those relationships to light.

“Graph is easier to teach than joining tables.”

—Research Coordinator Nuclear Medicine,  
Federal Government

Businesses are demanding greater application performance. Companies are requiring greater agility and faster response times from their applications, and they have a strong desire to derive enhanced value from their data. 34% of respondents said they are moving to graph for faster performance.

Survey results for those migrating to graph from NoSQL databases indicate that respondents were facing challenges around analytics in their non-relational databases as well. While the schema-less structure of NoSQL databases is more flexible to additions and subtractions of attributes, they pose a challenge in getting actionable insights. In most cases, analytics applications are going to search for a relational schema—but they won't find that in a JSON store, for example. No matter the type of database that graph users migrated from, it appears evident that companies are requiring greater agility and faster response times from their applications—and they have a strong desire to derive enhanced value from their data. As a result, they are moving to graph from other database models to achieve these benefits.

“Graph enables faster time to market for functionality that is difficult to implement using relational technology.”

—Developer/Programmer, Medium Enterprise Computer Software Company

## Popular Graph Use Cases

In this survey, we sought to better understand the use cases that are driving graph adoption and to determine if the use cases vary by company size or industry. Survey results suggest that graph databases are being used to unlock relational information to protect businesses from financial loss, help speed time to market, reduce network performance issues and unveil opportunities to create new revenue streams. Some of these are detailed on the following pages.

“Graph has helped us reduce cases of fraud and has made data collection very easy.”

—IT Manager, Small Business Computer Software Company

## Using Graph for Forensics and Fraud Detection

Not only can graph databases identify data relationships, they can also identify anomalies that deviate from known patterns. This can be especially helpful in fraud detection, not just for industries like banking, but also for retail organizations that need to track buying behaviors. For example, an online gaming company, whose customers make incremental transactions as small as \$5, was able to use its graph database to detect when its users were registering with falsified information. To successfully detect fraud using graph technology, it's necessary to supplement fraud detection with link analysis. Organizations can do this by putting checks into place and associating them with the appropriate event triggers.

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For example, a typical e-commerce transaction includes a user ID, IP address, geo location, a tracking cookie and a credit card number, with the relationships between those identifiers being almost one-to-one. An event trigger in this case would be identifying when the relationships between those variables exceed a reasonable number. In this way, organizations can use graph for real-time link analysis and can stop fraudsters immediately.

“Graph provides better response times and accuracy to help us discover new data correlations. We then turn those valuable insights into individualized campaigns and greater product personalization.”

—IT Professional, Global 500 Computer Services Company

## Using Graph for Personalization, Promotions and Real-Time Recommendations

Graph databases are well-suited for delivering personalization and real-time recommendations. Unlike all other database types, graph can track relationships according to user purchase, interactions and reviews to provide meaningful insight into customer needs and product trends. This can work two ways: to identify resources that could be of interest to individuals, or to identify individuals likely to be interested in a given resource.

What's more, a graph database allows your application to provide real-time results rather than pre-calculated data, a competitive advantage that can be leveraged across a variety of industries, including retail, logistics, recruitment, media, sentiment analysis, search and knowledge management.

## Using Graph for Master Data Management

Whether used for managing data around customers, accounts or business units, graph databases are useful for master data management (MDM), which is the process of identifying, cleaning, storing and governing data. This is a valuable use case because your master data is typically stored in many different places, with a high degree of overlap and redundancy, in different formats and with varying levels of quality and accessibility.

Master data is typically managed in one of three ways—merging all master data into a single location, managing data assets for easy access from a single service or application, or a combination of both. Regardless of the approach, organizations need a data model that provides for ad hoc, variable and exceptional structures as business requirements change, something that a graph database is designed to accommodate.

## Using Graph for Network and IT Operations

Graph databases are also particularly useful for storing configuration information to alert operators in real time to potential shared failure modes in the infrastructure and to reduce problem analysis and resolution times from hours to seconds. They are being employed successfully across a variety of uses, including telecommunications, network management, impact analysis, cloud platform management and data center and IT asset management. They do this by bringing together information from disparate systems, providing a single view of the network and its consumers—from the smallest network element to the applications, services and customers who use them. Having this resource optimization capability allows IT managers to more easily catalog assets, visualize their deployment and identify the dependencies between the two, and to gather information about which part of the network users depend on, as well as to determine if there is redundancy across the network for the most important users.

## Using Graph for Identity and Access Management

Identity and access management (IAM) solutions store information about parties such as administrators, business units, end-users and resources such as files, shares, network devices, products and agreements. They also establish rules governing access to those resources. Traditionally, IAM has been implemented either by using directory services or by building a custom solution inside an application's back end. But hierarchical directory structures are not ideal for managing complex dependency structures found in multi-party distributed supply chains. Worse, custom solutions that use non-graph databases to store identity and access data become slow and unresponsive as their data sets grow. A graph database can store complex, densely connected access control structures spanning billions of parties and resources, with support for hierarchical and non-hierarchical structures, and can capture rich metadata across millions of relationships per second.

This enables you to conduct queries about, for instance, which data a particular administrator can manage, and who can modify access settings. A graph database is the ideal model for a high-performance solution across content management, federated authorization services, social networking preferences and software as a service (SaaS).

Fraud detection is not just for the banking industry. 37% of respondents said forensics and fraud detection within their applications rated among the highest in use cases across all respondents and industries.

Of current graph users, when asked how they are using graph technology, nearly half (44 percent) were using it for network and IT operations, followed by MDM (40 percent), forensics and fraud (37 percent), personalization and recommendations (37 percent) and resource optimization (36 percent).

Those planning to use graph in the future had surprisingly different responses, with the majority (64 percent) earmarking graph for resource optimization, followed by personalization and recommendations and forensics and fraud (63 percent each), MDM (60 percent) and network and IT operations (56 percent).

## Current and Planned Uses of Graph Databases

In what way is your organization using (or planning to use) graph technology?

	Current	Planned
 Network and IT operations	44%	56%
 Master data management	40%	60%
 Forensics and fraud	37%	63%
 Personalization / Recommendations	37%	63%
 Resource optimization	36%	64%

The survey surfaced interesting information about the telecommunications industry, which has been an early adopter of graph technology and has pioneered the use of graph databases for network and IT operations. Most current users (83 percent) from the telecommunications sector reported that they are using graph for that purpose. However, future uses for graph technology in telecommunications focused on more strategic tasks, with more than half (61 percent) looking to use graph for forensics and fraud detection and personalization and recommendations (54 percent), yet with very few (17 percent) planning to use graph for network and IT operations in the future.

## Uses of Graph in the Telecommunications Sector

In what way is your organization using (or planning to use) graph technology?

	Current	Planned
 Network and IT operations	83%	17%
 Master data management	43%	57%
 Forensics and fraud	39%	61%
 Personalization / Recommendations	46%	54%
 Resource optimization	43%	57%

## Speed and Performance Top the List of Technical Benefits

Given the challenges respondents cited around application speed, development efficiency and difficulty gleaning accurate insights from their data, survey findings show that graph technology delivers some significant technical benefits. They include: Flexibility, due to graph's ability to add new types of data without writing the complex joins that relational databases require.

**Performance**, specifically the speed with which technologists can write data to a database and receive query results from any amount of data, due to graph's inherent scalability.

**Discovery**, or the ability to unlock information about unknown relationships and hidden patterns, as in the case of fraud detection, across a vast field of information.

**Searchability**, especially in the case of databases that are not relational, where indexes do not exist, and information lacks any organization.

**Visualization**, which provides the ability to “dig deep” into multiple levels of data and see new relationships.

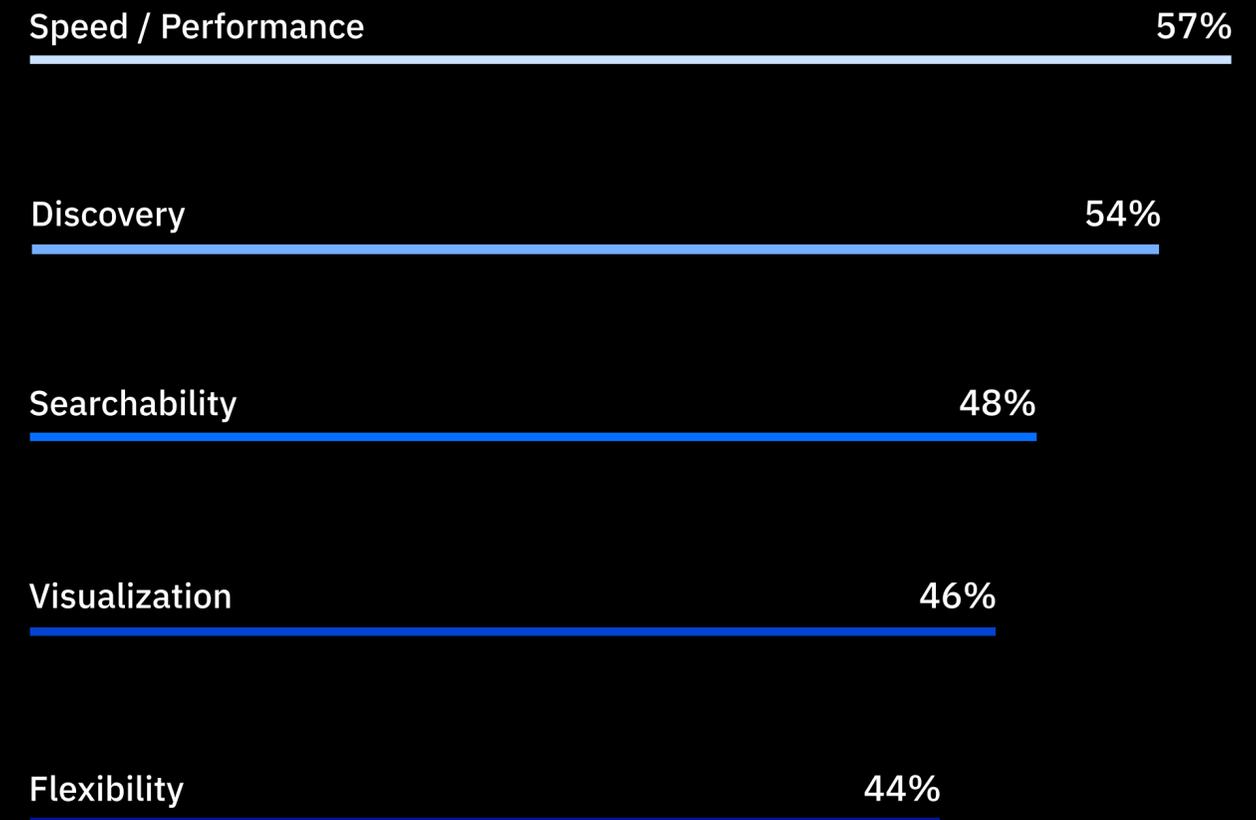
The survey results showed that users across all industries and organization sizes reported improvement in application performance as the top technical benefit (57 percent), followed by discovery (54 percent), searchability (48 percent), flexibility (46%) and visualization (44%).

“Graph’s value goes beyond data discovery—it enables data science to be applied within data governance models.”

—Big Data Analytics Manager, Small Business Computer Services Company

## Most Valued Graph Capabilities

Which technology capabilities of graph provide the most value (or potential value) for your organization?



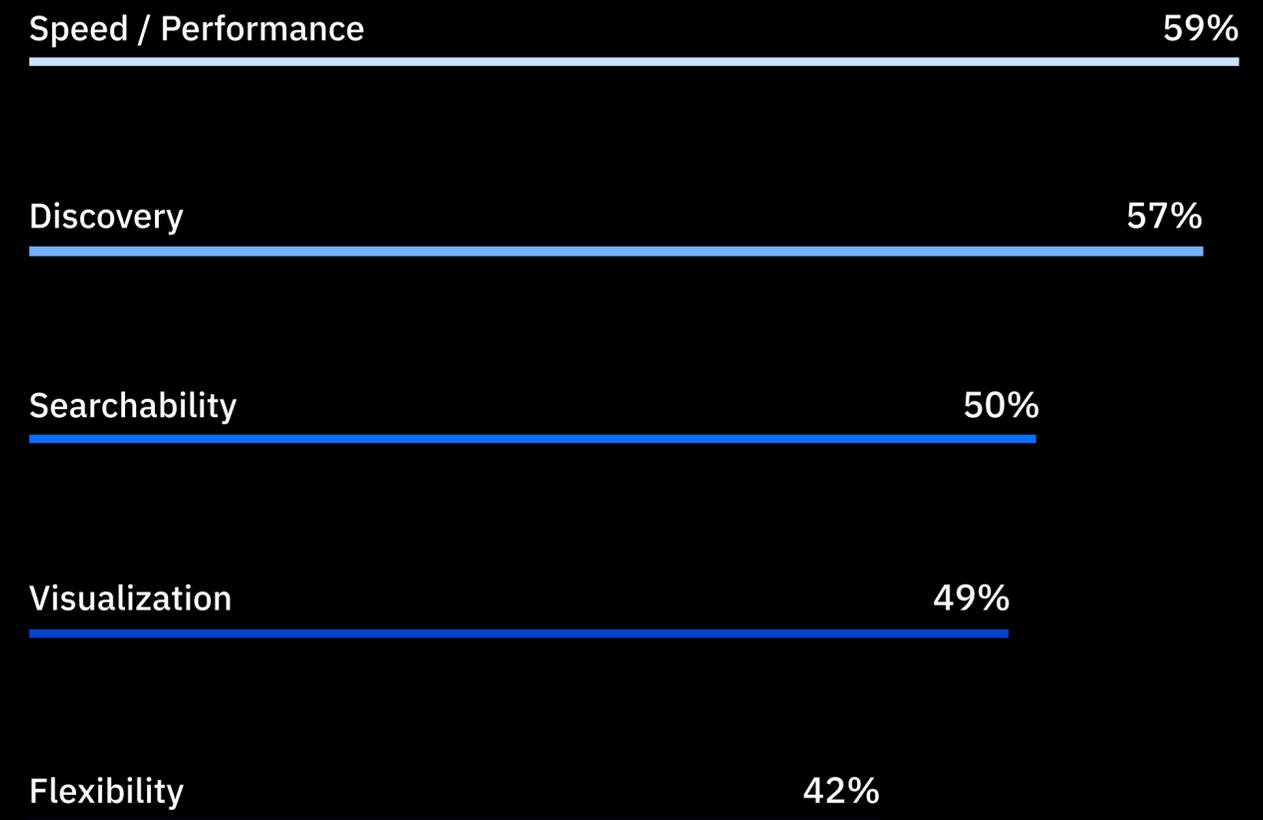
Enterprise users reported even higher benefits in most technical categories, with 59 percent reporting an increase in performance, followed by discovery (57 percent), searchability (50 percent), visualization (49 percent), and flexibility (42 percent).

“Graph helps us discover previously hidden relationships between data.”

—IT Specialist, Large Enterprise Wholesale Distribution Company

## Graph Capabilities Most Valued by Enterprises

Which graph technology capabilities provide the most value (or potential value) for your organization?



## Faster Performance Is a Key Business Benefit

“Graph gives us better efficiencies in reporting and analysis.”

—Consultant,  
Small Business Government Company

When it comes to business benefits that graph users have experienced, it’s clear that speed is king. The majority of survey respondents framed the benefits they derive from graph in terms of faster applications combined with more rapid development and test cycles—all contributing to an overall faster time to market with new capabilities and offerings. A majority of respondents also indicated operational efficiencies, greater technical flexibility and reduced maintenance burden.

Of the total population, 59 percent cited faster application performance, followed by increased technical flexibility (54 percent), faster development and test cycles (45 percent), faster time to market (38 percent) and reduced maintenance burden (28 percent). Survey results were consistent across industries, geographies and roles.

The business benefits that graph users in large enterprises experienced were similar, with slightly more citing faster application performance (61 percent), increased technical flexibility (55 percent), faster development cycles (47 percent) and faster time to market (39 percent). As with all users across all business sizes, the same number of enterprise users (28 percent) reported a reduced maintenance burden.

It’s clear that graph users recognize the need to respond quickly to business demands, and they told us the technology has helped them gain a foothold over the competition.

## Benefits of Graph Databases

What benefits have you seen (or expect to realize) from using graph technology?

**Faster application performance** 59%

**Increased technical flexibility** 54%

**Faster development / test cycles** 45%

**Faster time to market** 38%

**Reduced maintenance burden** 28%

“Graph helps us make time-critical decisions faster. In my industry, if you miss or do not take the right decision at the right time, then you missed the opportunity.”

—Developer/Programmer, Large Enterprise Food Company

“Graph gives us the flexibility to represent data in new ways. We have faster development as well as time to market, and it’s easier to maintain.”

—Application Architect, Medium Enterprise Computer Services Company

## Graph Benefits Seen by Large Enterprises

What benefits have you seen (or expect to realize) from graph?

Faster application performance 61%

Increased technical flexibility 55%

Faster development / test cycles 47%

Faster time to market 39%

Reduced maintenance burden 28%

## Return on Investment Exceeds Expectations

Once we identified the areas of business benefits, we asked respondents to qualify the level of benefit to better understand the degree of impact that graph can make in an organization. The majority of respondents reported significant increases in all business areas, with improvement of 50 percent or more. Specifically:

- 7.5 out of 10 respondents experienced at least 50 percent faster application performance.
- 8 out of 10 experienced 50 percent or more technical flexibility.
- 7 out of 10 realized 50 percent or faster development and test cycles.
- 7 out of 10 reported a 50 percent or greater increase in time to market.
- 7 out of 10 experienced a 50 percent or lower maintenance effort.

“Graph reduces the cost of maintaining large, searchable data sets while improving performance.”

—CTO, Small Business Computer Software Company

Graph creates new  
business opportunities

“Graph increases our ability to deliver new solutions which previously weren’t viable due to performance limitations of traditional relational databases.”

—Consultant, Small Business Computer Services Company

“Graph has expanded our potential customer base because we can now accommodate a wider variety of organizations in our model.”

—CTO, Small Business Media & Entertainment Company

## Graph's Overall Impact Is Far-Reaching

Graph users across a range of industries, company sizes and roles within their organizations told us that the technology has been a game-changer.

For data quality...

“Graph increases our data integrity.”

—Developer/Programmer, Small Business Consumer Products Company

Newly discovered data relationships...

“Graph provides the ability to find, in very short intervals, correlations between previously unrelated data points.”

—Designer, Educational Institution

Fraud detection and monitoring...

“Graph helps with data management and reduces cases of fraud by monitoring every data point.”

—Developer/Programmer, Small Business Insurance Company

Better asset management...

“Graph helps us manage complex associations between asset hierarchies.”

—Product Manager, Medium Enterprise Media & Entertainment Company

Increased marketing insight...

“Graph helps us better understand our market segmentation.”

—Application Architect, Small Business Non-Profit Company

And enhanced service for internal users...

“Graph enables faster delivery of solutions to our internal clients.”

—Developer/Programmer, Large Enterprise Pharmaceuticals Company

## Majority of users would recommend graph

When users were asked if they would recommend graph, the overwhelming majority (68 percent) of respondents said yes, while only 13 percent said no, and 11 percent said maybe, with the caveat that they wanted to gain more experience with the technology.

The statements respondents provided about whether they would recommend graph databases, and why, indicate that many recognize the advantages of easier, more flexible data retrieval over other database formats. Others needed more time to decide if graph would benefit their organization.

Yes

68%

Maybe

11%

No

13%

N/A

13%

Would you recommend graph, and if so, why?

“Yes. As organizational software tools are finding the advantages of “unification” and the newfound abilities of having an enterprise social network that breaks all bureaucratic barriers which exist in communication to wider audiences accentuates innovation.”

—Consultant, S&P 500 Consumer Products Company

“Yes. Allows you to spend less time worrying about how to fetch data and instead declaratively ask for what’s needed.”

—Developer/Programmer, Large Enterprise Pharmaceuticals Company

“Still testing.”

—Consultant, Small Business Government Company

## Summary: Graph users report the technology is key to delivering value

From fraud detection and network and IT operations to personalization and real-time recommendations, graph users reported a variety of uses across a range of industries and business sizes that have delivered tangible technical and business benefits around enhanced performance.

### Technical Benefits

- Speed and performance
- Discovery
- Searchability
- Visualization
- Flexibility

### Business Benefits

- Faster application performance
- Technical flexibility
- Faster development and test cycles
- Faster time to market
- Reduced maintenance burden

## Compose for JanusGraph: A Full-Service Solution

Is your organization looking for a graph solution that provides consistently high performance with low maintenance overhead? **Compose for JanusGraph** is an enterprise-grade service, managed 24/7, that unleashes the power of data connections by letting you store, query and visualize data points, connections and properties in a property graph. Compose for JanusGraph is built to ensure the service is always up and your data is always accessible, so your web and mobile applications are always working hard for your business. It also gives

your organization the flexibility to start small and scale on demand as your data size and complexity increase. This full-service solution is powered by Apache TinkerPop™. Compose for JanusGraph contributes back to the development ecosystem of TinkerPop to extend on its core interfaces, integration points and ideas. Being a part of this community allows Compose for JanusGraph users to access TinkerPop graph systems, documentation and libraries to aid in support.

To learn more about Compose for JanusGraph's wide-reaching capabilities, you can register for a free trial [here](#).

JanusGraph

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