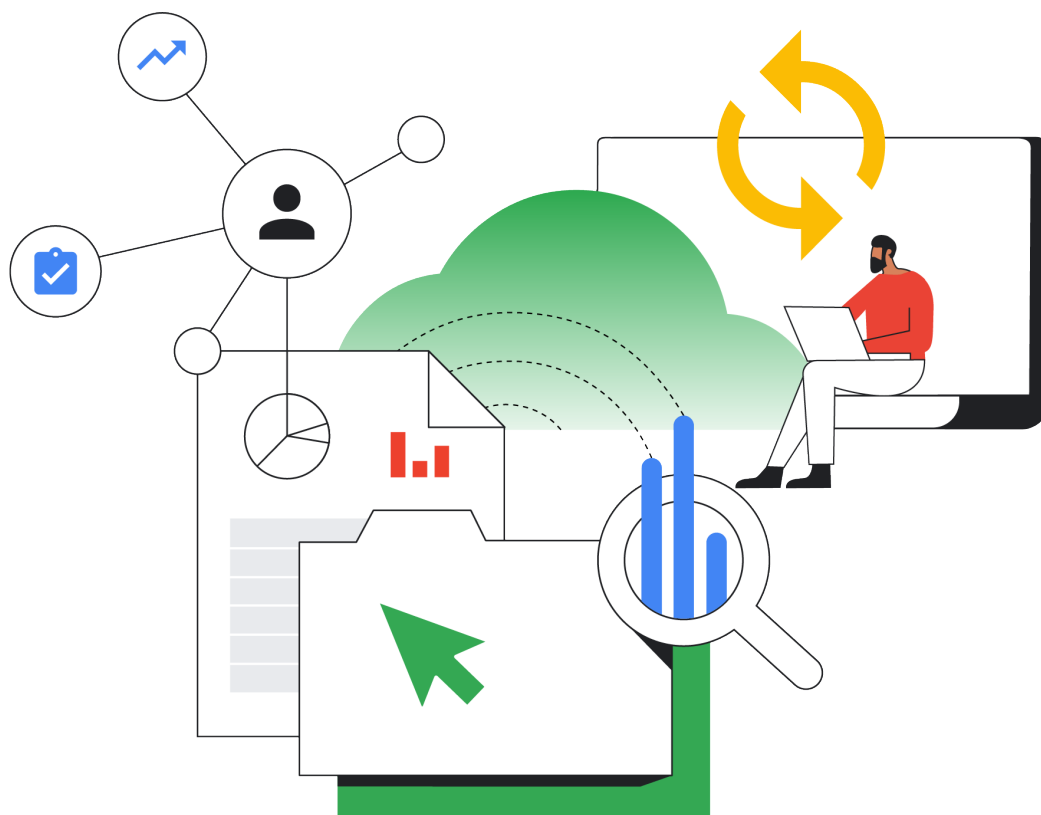# Exchanges and data providers

## Prioritizing the cloud & AI for internal insights

Part 2

# Executive Summary

Google Cloud commissioned Coalition Greenwich to survey 14[1] exchanges, trading systems, and market data providers[2] about their artificial intelligence and machine learning (AI/ML) tooling, infrastructure upgrades, and current and future public cloud usage. This set of institutions includes large, medium and small firms across the US and EMEA, and represents a variety of asset classes.
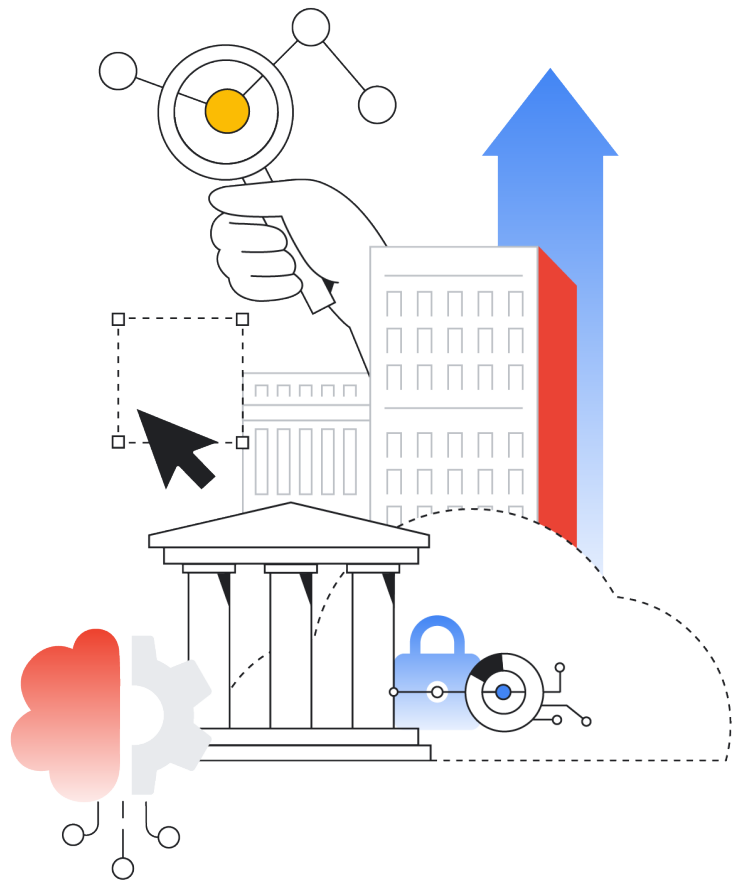


[1] The 14 interviews were part of a total sample of 102 institutions that we reached in the overall study and used to publish in the first paper, The Future of Market Data: Distribution and Consumption through Cloud and AI

[2] Exchanges, trading systems, and data providers are hereafter referred to as 'institutions'

# There were **three key takeaways** from the study:

## 01

**Today, institutions rely on public cloud for data and analytics.** 71% of institutions are using public cloud for data transmission, processing, analysis and long-term storage. Cloud-deployed trade monitoring and surveillance workloads are also common across firms.

## 02

**Going forward, institutions will continue to rely on public cloud for data and analytics.** The majority of institutions' planned public cloud workloads produce data insights for the institutions' own consumption.[3] Over the next 12 months, 33% of new public cloud workloads will focus on data mining, data insights and advanced analytics; 16% on building a multicloud foundation and 14% on enabling alternative data.

## 03

**Institutions are currently upgrading their AI/ML capabilities.** 50% of institutions are using AI/ML in the cloud today. Over the next 12 months, 28% of new AI/ML tooling and infrastructure investments will focus on faster analytics and risk reviews and 27% on data quality maintenance.
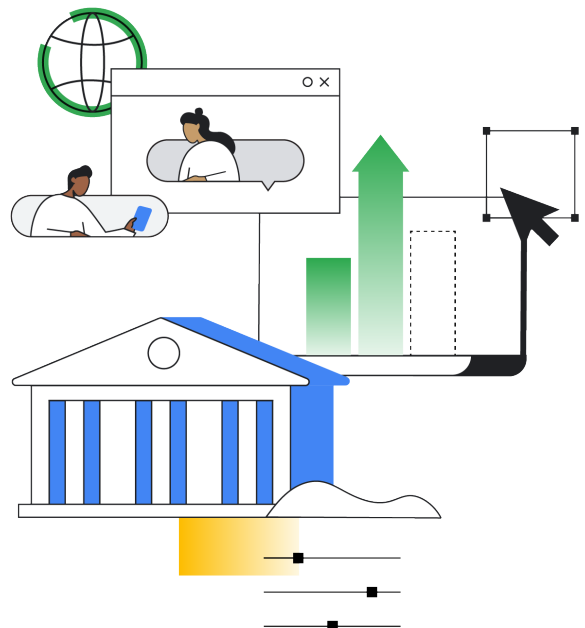
[3] Public cloud workloads that produce data insights for a firm's' own consumption are hereafter referred to as 'internal insight workloads'

# Introduction

As covered in our first paper, The future of market data: Distribution and consumption through cloud and AI, institutions have embraced public cloud for market data delivery and consumption. However, public cloud can also support institutions' internal insight and mission-critical (e.g. matching, co-located trading, etc.) workloads.

Institutions are indicating that cloud adoption for mission-critical workloads will likely be evolutionary, rather than revolutionary, for two reasons. First, the unique set of exchange operating requirements around latency and determinism have been underserved by cloud service providers, resulting in a general conservatism and scepticism. Second, an ecosystem of telecommunications and network providers has been built around exchanges, with network effects that might be difficult to displace in the short term.

Today, however, public cloud deployment of internal insight workloads is well underway. Institutions report their growing demand for such workloads, and cite cloud's deployment and processing speed as the properties enabling them to meet this demand with scale and agility. Cloud's cost efficiency is an important secondary factor.
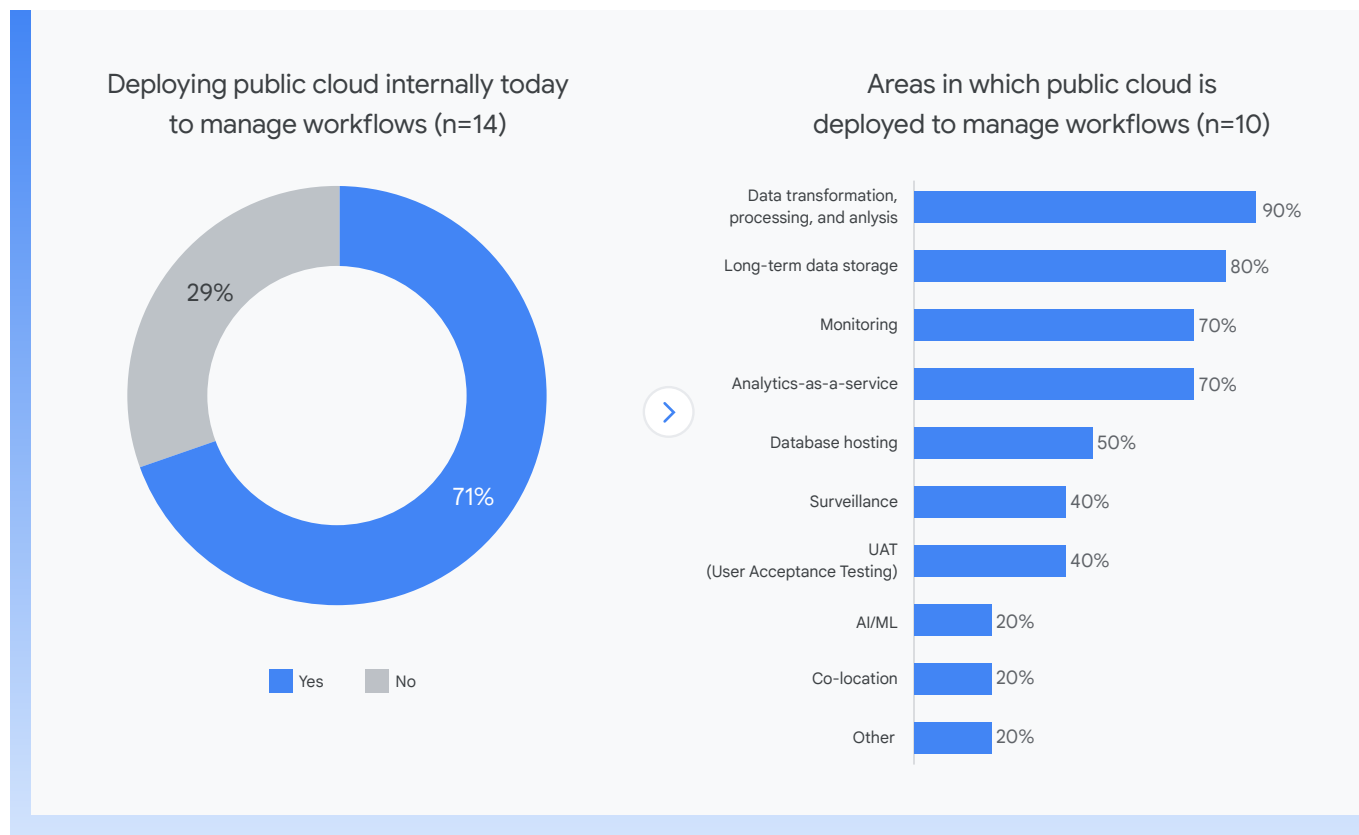
Many reported a narrow immediate-term focus on data transformation for internal insight workloads, in terms of flagging anomalies or unifying data format across sources. But these workloads are poised to advance longer-term strategic goals like higher data fidelity and introduction of bespoke user-level insights.
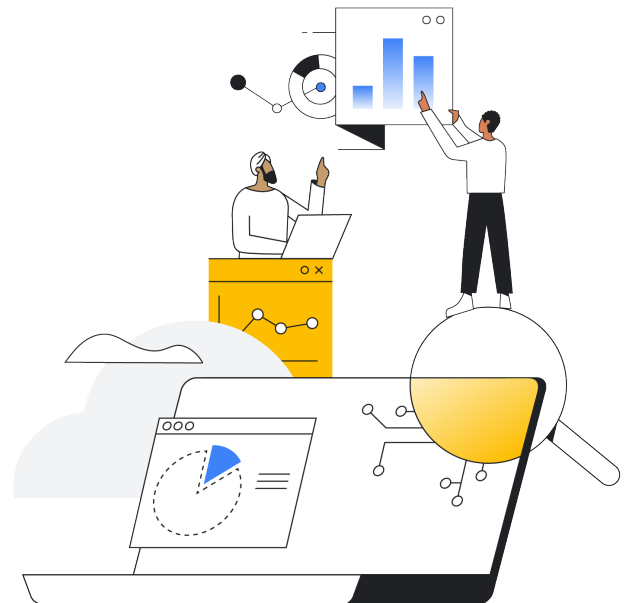
# Internal insight workloads: Focusing on data and analytics

Institutions see the benefits of public cloud today, with 71% deploying public cloud to manage one or more institutional workflows. Data transformation, processing, analysis, and long-term storage are the top use case areas, while monitoring and surveillance workloads are also common across firms. In other words, institutions currently focus on internal insight workloads, with a secondary emphasis on internal services.

**Figure 1. Institutions are deploying public cloud internally to manage workflows across data and services**



Deploying public cloud internally today to manage workflows (n=14)

71% Yes
29% No

Areas in which public cloud is deployed to manage workflows (n=10)

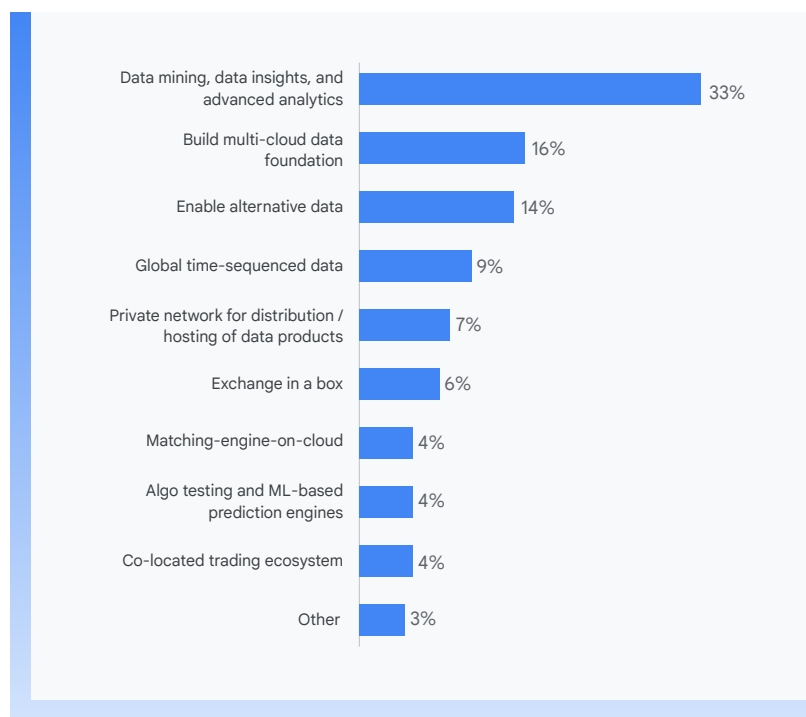| | |
|---|---|
| Data transformation, processing, and anlysis | 90% |
| Long-term data storage | 80% |
| Monitoring | 70% |
| Analytics-as-a-service | 70% |
| Database hosting | 50% |
| Surveillance | 40% |
| UAT (User Acceptance Testing) | 40% |
| AI/ML | 20% |
| Co-location | 20% |
| Other | 20% |

This focus on internal insight workloads suggests that this segment is still catching up with other parts of the broader financial services industry,[4] using public cloud to meet compute and storage surges, but not yet progressing to modernize its core applications or deployment pipelines.

[4] Per recent Google Cloud and Harris Poll study, 83% of respondents are using some form of public cloud, including hybrid and multicloud approaches

# The future of public cloud workloads

Responses to the survey's forward-looking questions indicate that institutions will retain their focus on data processing use cases even as they progress beyond their current Infrastructure-as-a-Service (IaaS) cloud adoption phase. When institutions allocated priority points across a set of notional workloads to be deployed in the next 12 months, the data mining and data insight workloads accumulated 33% of points, while the multicloud foundational workload received just 16%. Algorithm testing and ML-based prediction engines represent a niche audience looking to leverage the cloud's Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS) offerings.

**Figure 2. Over the next 12 months, public cloud workloads will increase allocation to data and services (% of 100 points allocated by each respondent)**

| Workload | % |
|---|---|
| Data mining, data insights, and advanced analytics | 33% |
| Build multi-cloud data foundation | 16% |
| Enable alternative data | 14% |
| Global time-sequenced data | 9% |
| Private network for distribution / hosting of data products | 7% |
| Exchange in a box | 6% |
| Matching-engine-on-cloud | 4% |
| Algo testing and ML-based prediction engines | 4% |
| Co-located trading ecosystem | 4% |
| Other | 3% |

Allocations also indicate development of new cloud-based data services as an emerging industry priority. The alternative data and global time-sequenced data workloads scored 14% and 9% of points respectively. The core system transformation workload – i.e. 'exchange in a box' and `matching-engine-on-cloud` – scored lower, but signaled institutions' desires to continue investigating these propositions.

# Institutions are upgrading their AI/ML capabilities

AI/ML adoption is also growing across the institutions we surveyed. Today, 50% of the surveyed firms are using AI/ML in the cloud to offer products and services to clients, focusing on front-office trade analytics and execution. Other services offered include surveillance and communications monitoring.

When institutions allocated priority points across a set of notional future AI/ML outcomes, the most popular choice was speeding regulatory and risk reviews (28%) via performant cloud infrastructure (that is, GPUs and TPUs, and the techniques they enable). Boosting data cleanliness and organization (27%) was nearly as popular, with more advanced AI/ML use cases once again finding a niche audience.
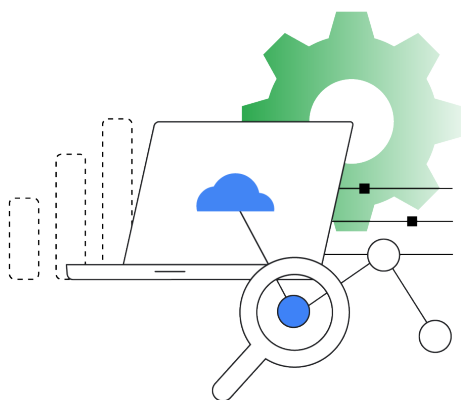
**Figure 3. Half of the respondents are using AI/ML in the cloud**



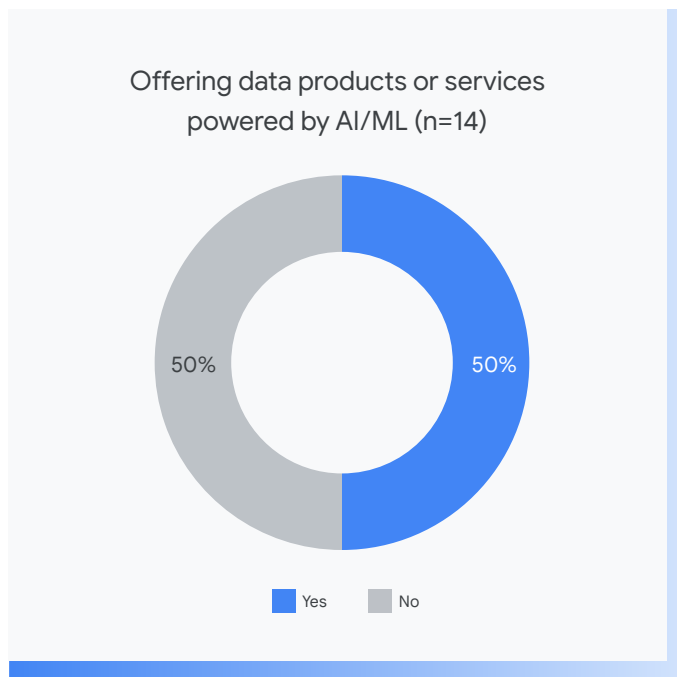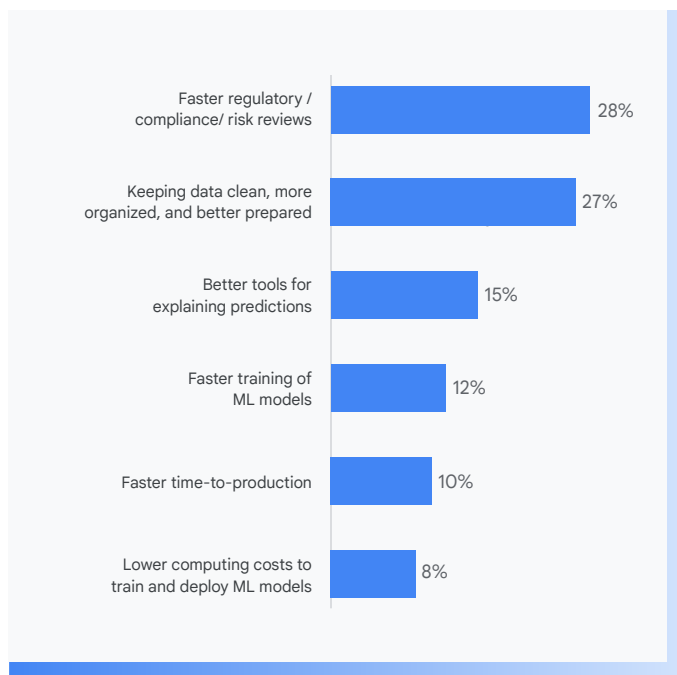Offering data products or services powered by AI/ML (n=14)

50%     50%

■ Yes    ■ No

**Figure 4. Institutions are focused on improving their own AI/ML tooling or infrastructure around data (% of 100 points allocated by each respondent)**



| | |
|---|---|
| Faster regulatory / compliance/ risk reviews | 28% |
| Keeping data clean, more organized, and better prepared | 27% |
| Better tools for explaining predictions | 15% |
| Faster training of ML models | 12% |
| Faster time-to-production | 10% |
| Lower computing costs to train and deploy ML models | 8% |

# Conclusions

For exchanges, trading systems, and data providers, public cloud can provide both a production and test environment for an array of use cases that serve customers and institution-internal stakeholders. Today, internal insight workloads leverage well-known cloud infrastructure properties (that is, rapid deployment, scale, and cost efficiency) to solve the limitations of legacy infrastructure.

Based on the survey, Coalition Greenwich predicts **three following trends** over the next 12 months:

While top public cloud use cases are concentrated on data mining, data insights, and advanced analytics, we expect new public cloud workloads and deployments around data and services, and even some proof-of-concepts around core systems.

We anticipate institutions making increased use of PaaS and SaaS for additional internal insight workloads (e.g., algorithm testing and prediction engines), and possibly putting more mission critical system migration to their public cloud roadmaps.

Improvements to AI/ML tooling or infrastructure will ramp up as firms seek more rapid responses to risk initiatives. Additionally, there will be enhancements to data for more advanced and commercially-lucrative use cases enabled by predictive analytics and training of models for machine learning.

**We believe that institutions will gradually overcome some of their conservatism and inertia to embrace additional public cloud and AI/ML use cases over time, shedding previous approaches in favor of newer, more advanced strategies.**