

# The Winds of Change in Market Data

*Winning Cloud Strategies for Exchanges and Trading Venues*

**White Paper**



**The Melbourne Group LLC**

## Introduction

Technology has always been one of the foundations of the financial services industry. From the first ticker-tape machines to today's low-latency, high-frequency trading black boxes, the industry has continuously harnessed the power of technology to drive competitive advantage, increase revenue and lower costs. However, technology itself is indifferent to the needs of business. Innovation in one area can lead to new challenges in others. It takes creativity, a sharp business acumen and leadership to harness the power of technology. Today, emerging cloud technologies hold great promise for exchanges and trading venues. However, only a careful examination of current technology challenges, fundamental cloud economics and bold business thinking will unlock this potential.

Electronic trading coupled with the growth of alternate trading venues has increased competition for order flow and improved market efficiency. While these innovations deliver significant benefits both to institutional and retail investors, they have also led to increased costs and greater complexity for market participants as firms must collect, process, and analyze an ever-growing mountain of global market data to make intelligent investment decisions. As a result, exchanges, execution venues and financial services firms require new market data technology solutions to deal with these challenges. Cloud computing and the increasing reach, bandwidth and robustness of the Internet in general offer both relief and opportunity to the financial services firms that have the creativity and boldness to explore the capabilities of the cloud.

<b>Harnessing The Cloud: An Action Plan for Exchanges and Trading Venues</b>
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Create Cross-selling Opportunities with Direct Feed Customers
Monetize Stale Data Assets by Targeting Unmet Business Needs
Expand and Simplify Global Access and Delivery
Deliver New Products Faster to Meet Emerging Customer Needs
Increase Market Transparency for OTC Derivatives and Complex Products

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This white paper explores the strategic value that cloud computing offers exchanges and electronic trading venues. It outlines the important market data challenges exchanges and venues face today and the key business benefits of the cloud. Then, it provides an action plan with the steps they should take to leverage the transformational aspects of the cloud for increased revenue, cost reduction and competitive advantage.

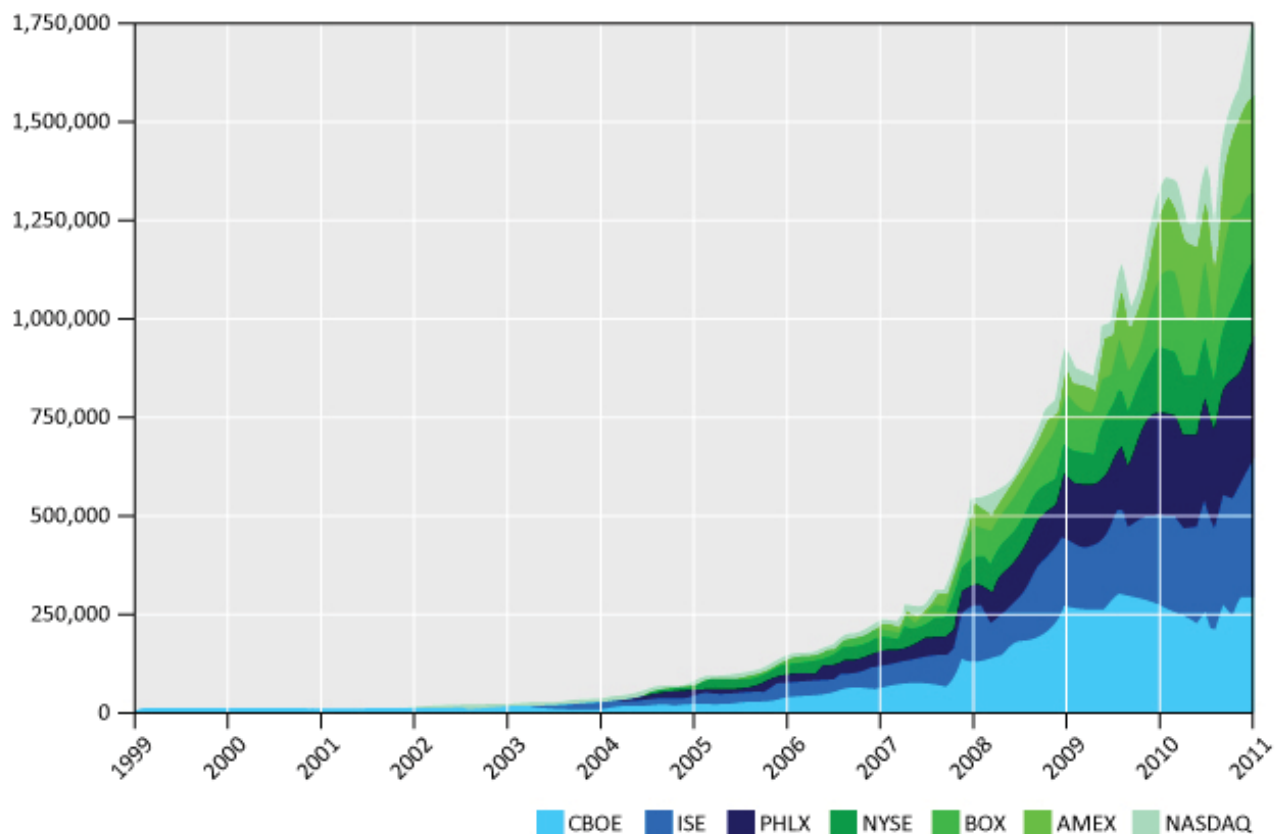
## Exchange and Trading Venue Market Data Challenges

Three persistent industry trends are creating significant market data challenges for exchanges and trading venues: the expansion of electronic trading, the ongoing battle of venue fragmentation versus consolidation, and the emergence of new mobile technologies. These trends not only affect exchanges, but their financial services customers as well as market data costs and complexities continue to rise. By recognizing these trends and the cloud's ability to manage them, exchanges and execution venues can shift the cost and competitive structures of the industry to their benefit and address the challenges faced by their customers.

### Market Data Costs are Skyrocketing Due to The Expansion of Electronic Trading

Since the early 2000s, market participants have increasingly adopted electronic trading as their primary means to execute trades on both exchanges and alternate trading venues. According to Aite Group, nearly 70% of all equity trades and over 50% of futures volume will be executed electronically in 2011<sup>1</sup>. This increased focus on electronic trading has led to exponential growth in market data volumes. Since 2008, market data volumes, constituting trades, bids, offers and depth of book orders, have increased more than 50%<sup>2</sup>. And it's not only equities that are affected. High-frequency trading is expanding into futures, options, fixed income and foreign exchange markets as well.

PEAK MESSAGES TO OPRA - JANUARY 2009 to JANUARY 2011



*This increased focus on electronic trading has led to exponential growth in market data volumes.  
(source: Financial Information Forum)*

<sup>1</sup> Aite Group Report, 2011

<sup>2</sup> MarketDataPeaks.com

The increased emphasis on electronic trading and the subsequent growth of market data volumes have led to increased costs for nearly all market participants. These costs can be classified as follows.

1. Storage and maintenance costs for managing the increased volumes of market data.
2. Compute power and network costs to reduce latency and increase trading performance.
3. Network connection costs to multiple execution venues such as new electronic exchanges, multilateral trading facilities (MTFs), and dark pools.

Many market participants have responded with significant programs to squeeze costs out of their market data infrastructure investments. For example, State Street Bank recently launched a program to cut \$600 million in annual expenses for data, software, hardware, and people<sup>3</sup>. Similar less publicized programs are underway at most major financial institutions as firms look to the cloud and other technologies to reduce costs of collection, storage and delivery of market data and the financial applications that consume it. Firms are aggressively assessing their market data sourcing and delivery infrastructure to find new savings and are looking into more scalable storage and application delivery solutions, such as public and private clouds, to reduce expenditures.

### **New Trading Venues and Technologies are Driving Mergers and Consolidations**

Since 2006, more than fifteen new alternate equity trading venues have been created, in addition to other electronic market places for foreign exchange and other derivative instruments. These electronic trading venues are pulling an ever increasing volume of trades away from traditional exchanges. The New York Stock Exchange, once the leading exchange in the world, now processes less than 30% of all US market trading volume<sup>4</sup>. This trend is global. For example, BATS Global Markets, which launched in 2008 and recently acquired Chi-X Europe (launched in 2007), has grown to represent more than 15% of all European exchange and dark pool trade volume<sup>5</sup>.

While these new venues increase competition and lower transaction costs for trade execution, the market fragmentation created has led to higher costs and complexity for financial services firms to access and participate in multiple markets. While execution venues face increased competition for order flow and downward pressure on trading revenue, market data costs are rising as data volume explodes from electronic trading and as data complexity increases from spreading that volume over multiple venues. Reduction in costs, gains in scale, and centralizing order flow are key drivers for the mergers of NYSE Euronext and Deutsche Bourse Group, as well as the acquisition of Chi-X Europe by BATS.

### **Transparency Requirements Driven by Regulator Responses to Financial Crisis**

The last ten years has seen unprecedented growth in derivatives, structured products and other complex OTC investment instruments. The risk these markets pose to the financial system was made clear in the 2008 financial crisis and has caused regulators to look for solutions to make these markets less complex, more competitive, and more transparent. As a result, new market transparency and reporting requirements from Dodd-Frank and other SEC regulations in the US and from MiFID in Europe are being put in place to eliminate undue risk exposure to the global financial system. For example, pending hedge fund regulations require greater transparency of their investment and execution strategies to provide investors more insight into the investment approach and risk mitigation strategies.

<sup>3</sup> State Street Bank, November 30, 2010

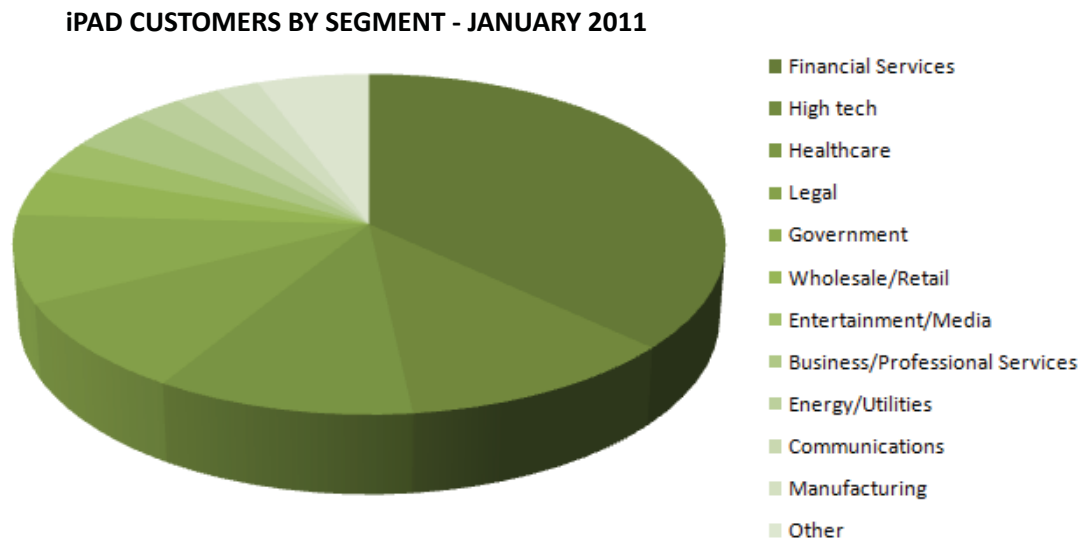
<sup>4</sup> Securities Technology Monitor, March 4, 2011

<sup>5</sup> BATS Global Markets, February 23, 2011

These new regulations entail new trading and market data technology requirements for these investment products. These technology requirements in turn create both new product opportunities and new cost threats for exchanges and trading venues that support these instruments. Moreover, the technology requirements implied by these new regulations extend beyond trading systems to the portfolio and risk management systems that help firms ensure that they are well protected and adequately capitalized against exposure to these exotic instruments.

**Mobile Technology Enables Usage Patterns for Market Data**

As electronic trading has grown, old delivery and distribution models have changed, shifting the needs of financial services firms and creating new demands on execution venues. Where sell-side institutions once held rows and rows of specialist traders, following market movements on a terminal screen, they have reduced staff, pushing traders to buy-side firms as these institutions increasingly adopted electronic trading. The power for these trading programs comes from a sophisticated algorithm combined with low latency to the execution venue and constant connectivity into the market via an electronic gateway. Direct feeds, proximity centers, and colocation services ensure firms are receiving the latest market information in milliseconds and are able to execute their strategies in the blink of an eye. Exchanges and alternate execution venues have responded by offering robust low-latency data feeds directly to a market participant’s data center or colocation facility.



*Analysis of Good Technology’s user base, which includes over 4,000 enterprise customers whose iPad deployments range from one to over 1,000 iPads, shows the financial services sector leading the way in iPad adoption (source: Good Technology).*

While the needs of low-latency traders are high on every exchanges list of priorities, the needs of the broader financial market data user population, which is increasingly mobile and has rising expectations of information on-demand, have not been well addressed. Financial services professionals have aggressively embraced the iPad, far more than any other professional group. According to Good Technology, a leading multiplatform enterprise mobility solution provider, nearly 40% of corporate iPad activations in December 2010 can be traced to a user in a financial services firm. The move to mobile has been rapid and pervasive.

Over the past 6 months, industry leaders Morgan Stanley, Credit Suisse and J.P. Morgan have all launched iPad apps for their institutional clients, joining retail brokerages TD Ameritrade and E-Trade who also have iPad apps for their retail clients.

The rise of mobility and on-demand access to information as a key requirement for a financial services firm's data management and distribution strategy have led to new players entering the market and challenging established data vendors. Companies like CarryQuote, Pyxis and Xignite are leading the way by recognizing the need for a more flexible delivery model that focuses on instant global access, scalability, and reliability over latency to support mobile and on-demand applications.

## Impact and Value of The Cloud

Once thought to be the domain of small and medium size businesses, enterprises are now investing in cloud-based projects to gain economies-of-scale, simplify access and delivery of information, and decrease time-to-market for new products and services. Firms that fully realize the power of the cloud are not simply seeing it as a useful component of their technology infrastructure, but are leveraging the transformative nature of the cloud for what it can bring to the business. These visionary firms are using the cloud to change how products are built, how solutions are sold, and how customers are served.

In financial services, many of the largest institutions have projects underway to leverage public and private clouds to lower costs and drive innovation. Further, leading exchanges such as NASDAQ OMX, NYSE Euronext and CME Group are beginning to release cloud-based offerings for their customers, recognizing the opportunity the cloud presents for their business.

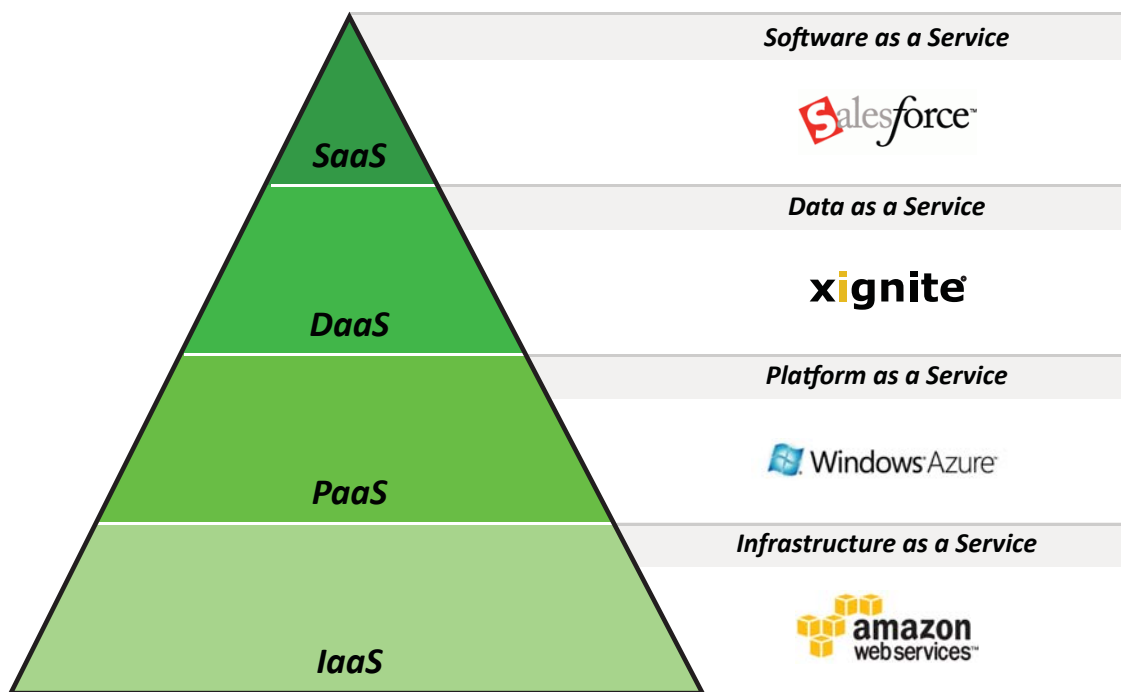
### The Cloud Transforms Compute Power into An On-Demand Utility

Firms that are deploying cloud technology today are quickly realizing that the cloud changes the way information technology is managed from a maintenance-driven business process (i.e. buying, deploying, supporting) to a productivity-driven business process, (i.e. building, developing, releasing). Instead of focusing on capacity planning, supporting operating systems, and purchasing and deploying hardware, firms move straight to the implementation and delivery of products and services. Like electric power, cloud infrastructure is always on and available on-demand, allowing a firm simply to plug in and run a software application appliance.

This power of utility computing is particularly visible when it comes to building and deploying products and solutions on the cloud. Rather than investing time, effort and money in procuring the necessary infrastructure, firms focus immediately on building and delivering customer solutions that generate revenue and improve service. In addition, enhancements in response to customer needs are easily and quickly delivered without the pain of extensive testing, planning and scheduling of upgrades across the user base that comes with traditional on-premise software solutions. This is one of the objectives for State Street Bank. In their infrastructure program noted previously, they are looking to leverage a private cloud to transform their compute needs into a utility service, reducing hardware investment, creating a virtualized, on-demand service for their business.

## The Cloud Enables Global Access and Delivery of Enterprise Information Services

The success of enterprise software-as-a-service (SaaS) firms like Salesforce.com, Workday, and Netsuite has proven the viability and value of on-demand applications for critical business functions such as sales, human resources, and finance. In addition, infrastructure-as-a-service (IaaS) and platform-as-a-service (PaaS) offerings such as Amazon Web Services, Microsoft Azure, and Force.com are expanding the use of the cloud as a development platform for enterprise applications.



As the cloud matures, cloud applications will continue to make inroads into sectors currently served by traditional on-premise enterprise software. Moreover, these applications will exploit the natural robustness and scalability offered by the on-demand, highly distributed nature of the cloud to deliver greater agility, higher reliability and lower costs. Just above the IaaS and PaaS layers of the cloud stack, data-as-a-service (DaaS) is emerging as the next great cloud opportunity. With DaaS, data owners are enabling global, on-demand, 24x7 access to their information resources, securely and in a format that is easily consumed by any software application. DaaS offerings such as Dun & Bradstreet's D&B 360, NASDAQ Data-On-Demand, CME Data Cloud and Xignite Market Data Cloud exemplify this trend. Customers of these services gain easy, global access to big Internet-based data sets through cloud APIs that allow applications to request the specific, tailored slices of information they need, when they need it, how they need it.

Like SaaS, IaaS and PaaS, DaaS shifts the focus from infrastructure, connectivity and data management to building innovative solutions that meet customer needs and increase competitive advantage. For the DaaS provider, the cloud offers the opportunity to disrupt the competitive landscape by transforming data access and into a utility and expose information services to a wider global audience at a significantly lower cost of service for increased revenue and higher margins.

### **The Cloud Changes The Way A Company Sells, Supports and Delivers Its Products**

Firms are leveraging the cloud to expand market reach, lower customer acquisition costs, simplify purchase, reduce support and service costs, and improve customer satisfaction to increase revenues and retention. With a cloud-based product, a prospective customer can be on the other side of the world far beyond the physical reach of a firm's sales department. The way cloud customers find, buy and access the firm's product is significantly different from a traditional on-premise solution. For this remote customer, if they are unable to find, buy and access the product without needing assistance from a representative of the firm, they will not buy the service. Thus, the cloud enables a shift from a labor intensive, location dependent sales model to a self-service, e-commerce model. Consequently, most cloud firms deploy robust e-commerce platforms to sell and provision their cloud services to customers.

Cloud support must also be available to remote customers through a browser or mobile device. Firms leveraging the cloud for delivering solutions to customers are using tools such as on-line help desks, knowledgebase wikis and social media to create on-line communities that crowdsource solutions for customers. This extensive use of online capabilities and self-service tools enables more rapid response, deeper access to the knowledge of both customers and a firm's experts all while driving down the overall costs of service.

The opportunity for exchanges and trading venues is that they are now able to address a wider audience of customers, especially those looking for smaller lists or subsets of information. By offering self-service features, customers requiring just a few instruments or data points are able to easily access, purchase and consume the information from the source. This fills an unmet need in the market, one both exchanges and information vendors have been unable to address to date.

### **The Cloud Allows Companies to Focus on Customers Over Computers**

The cloud is transformative not only in what it enables companies to do, but in what it allows companies not to do. A successful business strategy requires firms to focus on their core competencies while driving expense and complexity out of all non-essential functions. The cloud allows a firm to strengthen its strategic focus by applying more resources to core competencies and fewer resources to technology, infrastructure and operational IT management.

Cloud infrastructure providers have made on-demand delivery of computing resources their core competency. These firms have automated the deployment of highly scalable, reliable infrastructure and platform technology, reducing costs and gaining efficiencies to allow businesses using their services to focus on their customers over computers. Therefore, firms leveraging world class cloud providers gain both the operational advantage of best practice infrastructure and technology management through the cloud as well as the competitive advantage of directing the full weight of the firm's resources toward solving their customers' problems. For example, Tradar, a buy-side portfolio management provider, recently launched its flagship product, Insight, over Eze Castle Integration's hosted cloud-application platform<sup>7</sup>. One key benefit Tradar cites is that they did not want to enter the hosting business themselves, thus leveraging a platform to deliver the scale they need to meet customer demands. With their infrastructure needs met, Tradar can focus on innovation and delivering new capabilities for their demanding buy-side customers.

## Harnessing the Cloud: An Action Plan for Exchanges & Trading Venues

The cloud offers numerous opportunities for exchanges and trading venues to increase revenues, expand market share, lower costs, improve customer satisfaction and drive competitive advantage. Given the highly competitive nature of the exchange market and the extreme market data challenges created by electronic trading, regulatory pressures, mobile computing and the ongoing battle of fragmentation versus consolidation, exchanges cannot afford to not have a cloud strategy. The following action plan provides a roadmap for harvesting the cloud's lowest hanging fruit.

### 1. Make Core Market Data Assets Available from The Cloud

The demand for market data-as-a-service will increase alongside the growth of cloud-based applications. By creating an Internet-based DaaS using standard cloud APIs, exchanges can offer both institutional and retail customers a means to access their core market data assets, such as real-time quote and price data, deep historical databases, detailed reference datasets for front, middle and back-office applications, as needed, anywhere, anytime, while driving down both the cost of access for the customer and the costs of service and maintenance for all.

Exposing data assets as a DaaS offering allows all customers to access the 'master copy' of exchange or execution venue data directly from the source, as opposed to a proprietary, third party service which may alter the information from its original state and tack on additional costs for legacy infrastructure.

### 2. Create Cross-Selling Opportunities with Direct Feed Customers

Customers need data consistency across applications. However, direct feeds designed to service automated trading applications are poor vehicles for user-centric and mobile applications. Since the data from an exchange matches that for a direct feed in form, content, symbology and other key attributes, customers that leverage an exchange's direct feed or direct market access services can rest easy that their trading activities are back-stopped by consistent historical and reference data made available from the cloud.

A DaaS offering coupled with an exchange's direct feeds allows buy and sell-side firms to synchronize and coordinate front and back-office operations seamlessly. Using the original data directly from the source for trading as well as confirmation and settlement gives a firm confidence in meeting its regulatory and fiduciary compliance requirements while eliminating operational costs associated with data reconciliation.

### 3. Monetize Stale Data Assets by Targeting Unmet Business Needs

With mountains of historical pricing, corporate actions, index, and reference data built up over years of operation, exchanges are well positioned to satisfy many unmet data needs for customers across asset classes, including equities, futures, options, ETFs, etc. Without the cloud, the sheer volume of this data made delivery cost-prohibitive to any but the largest clients. With the cloud, exchanges can move away from the one-size fits all approach and offer tailored products that allow customers to select and consume only the data required for their specific applications.

The low cost delivery and on-demand global access of DaaS allows exchanges and execution venues to expand data revenues by enabling new uses of their information in new industries. Not only is it possible to deliver new data sets to old customers, it is also possible to tap into new retail, corporate and global markets that were previously unserviceable due to the high up-front access and ongoing maintenance costs of traditional feed technology to deliver new data sets to old customers. It is also possible to tap into new retail, corporate and global markets that were previously unserviceable due to the high up-front access and ongoing maintenance costs of traditional feed technology.

#### **4. Expand and Simplify Global Access and Delivery**

Cloud-based data-as-a-service delivery can be complemented with e-commerce style purchase and provisioning to access new geographic regions and new customers through a 24x7 Web presence that allows customers to select, purchase and use an exchange's data products without a local sales organization.

Emerging financial markets across the globe are immediately within reach. Easier access to data products can drive interest and investment dollars from global customers. International investors that are currently not participating at a venue can assess, test and validate successful investment strategies employed on their local exchanges or on an international exchange more quickly and cost effectively. For example, an Asian hedge fund could access historical tick data and other key pricing and reference information cheaply and easily to test an investment strategy in the US market. Once validated, the exchange can offer its co-location services and direct feed services to the hedge fund to support execution on the venue.

#### **5. Increase revenue by Expanding Retail Channels**

A scalable, low-cost cloud platform allows exchanges to distribute exchange data directly and cost effectively to retail websites and retail investors. By accessing these channels directly, exchanges open revenue streams currently outside their reach and strengthen their brand with the investors that use these portals and buy shares traded on the exchange.

Cost-sensitive retail sites serving hundreds of millions of private investors across the globe can be directly supported by a data-as-a-service offering that eliminates the need for investment in infrastructure, networks and data management. Further, emerging retail investor markets such as Brazil, China, India and the Middle East can be accessed without building a costly local presence.

#### **6. Deliver New Products Faster to Meet Emerging Customer Needs**

New traded products create new information needs for financial services firms and market participants. In order to respond to these demands, exchanges and execution venues need to get the complementary data products to market quickly. DaaS allows exchanges to provide immediate, global access to new market data products while removing the adoption barrier of infrastructure investment for customers.

## 7. Increase Market Transparency for OTC Derivatives and Complex Products

New exchange traded products and new reporting requirements brought forth by Dodd-Frank, RegNMS and MiFid create new information needs for financial services firms and market participants. These new regulations create the opportunity for exchanges to handle more trading and settlement of these products through both the exchange and managed OTC facilities and in conjunction offer new data products that provide greater market transparency.

A data-as-a-service solution can provide both market participants and regulators easy global access to activity in these markets, providing accurate and auditable information that helps financial institutions manage risk and meet regulatory and internal compliance requirements. This increased accessibility to data directly from the source will satisfy the need for transparency and openness these regulations are pushing towards. Accurate and auditable information from the execution venues themselves will enable financial institutions to satisfy reporting requirements more easily and in a form that regulators can match.

## Conclusion

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Exchanges and trading venues face significant market data technology challenges fueled by electronic trading, regulatory pressures, mobile computing and the ongoing struggle between market fragmentation and consolidation. In particular, the explosion of market data volume and complexity brought on by these trends creates an enormous drag on strategy execution and operational performance. The emergence of cloud computing and the maturity of the Internet in general as an enterprise computing platform provides new opportunities to increase revenue, lower costs, expand market reach and increase competitive advantage by complementing direct feed technology with cloud-based data-as-a-service offerings. However, one firm's opportunity is its competitor's threat, and those exchanges and trading venues that move first to master the new cloud paradigm for data delivery and application development will reap the benefits. Those that lag behind will simply struggle for competitive parity.



## About The Melbourne Group

The Melbourne Group LLC provides consulting and advisory services for business information and technology industry leaders and startups alike, who seek to better leverage their firm's information assets to grow revenue and margins while reducing costs and complexity. With deep expertise in commercial and technology strategy, business operations and channel development, The Melbourne Group offers a range of services to help firms meet their own unique challenges and those of their industry head-on. Areas of expertise include cloud-based financial information products and services. Founded in 2010, The Melbourne Group is based in Norwalk, CT. For more information on how we can help you reach your goals, please contact Ross Inglis at [ross@the-melbourne-group.com](mailto:ross@the-melbourne-group.com) or by calling +1.203.722.3966.