

Broadridge Trading and connectivity solutions

An unprecedented opportunity to unlock efficiencies
and streamline workflows for market participants
worldwide with Broadridge



It is no exaggeration to say that technology has transformed virtually every aspect of the trading process. Expanded access to information, advanced analytics and ever-increasing speed all contribute to today's trading tools delivering results far beyond what a human could ever achieve, and these efficiencies result in dollars saved for the broker and greater returns for investors.

That's how it's supposed to work – and in some cases, it is. Too often, however, systems that were originally implemented to unlock efficiencies end up causing new problems for the front office, especially as innovation occurs and requirements shift.

These challenges can take many forms – monolithic architecture, frustrating workflows and high costs are typical pain points – but the common thread is a lack of ability to adapt to the client's ever-evolving needs on integration, speed, multi-asset capabilities and the like. The usual result is a solution with all the complexity of a modern system, but few of the benefits. The challenges facing this space go beyond technology alone. The capital markets have experienced significant change in a

relatively brief period – shrinking margins, increased regulatory scrutiny and the uncertain future of work are just a few of the trends that market participants must account for. In this environment, firms need trusted partners with demonstrated expertise and a track record of helping their clients succeed amid daunting circumstances.

Itiviti has always prided itself on being ahead of the curve, and now, with its acquisition by Broadridge Financial Solutions, its ability to help the industry reimagine its approach to technology has been greatly enhanced. Itiviti's focus on front-office multi-asset trade order and execution management systems (OEMS), FIX connectivity, post-trade matching and middle-office offerings is highly complementary to Broadridge's industry-leading post-trade back-office and other capital markets capabilities. By working with best-in-class providers, market participants can turn obstacles into opportunities, optimizing their business for the current moment as well as future challenges.



This paper will delve into some of the key drivers of industry modernization, the approaches that can enable this shift and our vision for how this can be achieved through technology, collaboration and forward thinking.

“The capital markets of 2030 will require bundled services, deep data insight, and extension of technology to partners beyond just transactional services. There will be a core shift in priorities of data and technology and how applications will be built.”

BRAD BAILEY

AUTHOR & MARKET INTELLIGENCE SPECIALIST

*THE FUTURE OF THE CAPITAL MARKETS APPLICATION STACK - CELENT REPORT - 24 FEBRUARY 2021 - [LINK](#)

THE MODERNIZATION IMPERATIVE

Innovation in the trading technology space continues to move at a rapid pace – but too often, firms are not equipped to take full advantage of the most up-to-date functionality.

As important as it is to have cutting-edge tools, the platform on which they run and the infrastructure that supports them is just as crucial.

Given the level of sophistication required to succeed in today's markets, increasingly diverse client demands and unprecedented cost pressures, it is not just advisable, but critical that market participants refine their technology strategies to prepare for the future. Indeed, this shift is already underway, and will accelerate in the years to come.

Let's explore some of the factors that have led to this shift.

10 FORCES DRIVING DEMAND FOR CROSS-ASSET TRADING TECHNOLOGY

FORCE	FEATURE	SIGNIFICANCE
MARKET STRUCTURE	Continued electronification	Very high
	Commingling of execution protocols	Very high
	Increased demand for agency trading	High
ECONOMICS	Market revenue pressures	Very high
	Need to reduce complexity associated with e-trading	Moderate
CLIENT DEMAND	Cross-asset class expertise proliferating on the buy side	High
	Desire for insights and new offerings	High
	Outsourced trading	Moderate
DATA & ANALYTICS	Availability of data	High
RISK & REGULATORY	Increased transparency	High

SOURCE: CROSS ASSET TRADING SOLUTIONS - CELENT REPORT - 28 MAY 2020 - [LINK](#)



MONOLITHIC SYSTEMS ARE INHERENTLY LIMITING

While the trading technology space has undergone fundamental changes in recent years, there are still some legacy skeletons in its closet. Historically, vendors and in-house technology teams alike have delivered functionality via closed, monolithic systems. The tools themselves may be effective, but the way they are architected results in a net negative. As innovative as the industry has been, the challenges that exist today make it clear that many firms haven't gone far enough.

The limitations of monolithic systems are a near universal pain point within the industry. There's no way for firms to select the precise functionality they need and gain efficiencies accordingly – they must deploy the entire platform or nothing at all. That means reorganizing trading desks is a major lift, as a trader assigned to a new role might need multiple discrete systems on their desktop, even if they are using only a fraction of the functionality delivered by each. In addition, monolithic platforms must be fully redeployed with each update, no matter how small, and a single bug can break the entire system – an unacceptable level of risk.

LEGACY WORKFLOWS IN A SPEED-OBSESSED WORLD

More data, greater diversification, new remote work setups – both sides of the Street in recent years have been defined by increasing complexity and a widening scope.

This has occurred amid a backdrop of increasing speed, from milliseconds to microseconds to nanoseconds. To thrive in this environment, users must have the ability to make quick decisions, easily access information and communicate with clients and colleagues in real time. But their systems have not been built for this modern landscape, leading to frustrating workflows and significant time wasted.

Legacy systems cannot communicate effectively with other tools on the desktop, requiring users to manually navigate from window to window and platform to platform to access mission-critical functionality.

This constant context switching can jar workflows and sap productivity, especially in an environment where speed is paramount and every click matters. It also means manually re-keying information into what could be several different applications, a frustrating, repetitive workflow that drains resources from tasks that create more value.

INNOVATION ACROSS ASSET CLASSES

Multi-asset trading is a natural area for sell-side innovation. As various market structures converge and disparate asset classes continue to undergo electronification, adapting traditionally siloed trading desks to work alongside and in collaboration with one another helps investors diversify portfolios and access less mature markets, which boosts business.

But this approach can be rife with complexities. [A 2020 report](#) from Celent predicts a gradual increase in the adoption of cross-asset trading technology in some asset classes and stages of the trade lifecycle on the sell side.

However, market structure differences between asset classes, siloed business lines within banks and legacy technology stacks across products are inherent limits to the scale and pace of adoption of cross-asset technology.

“The sell side is trying to better serve clients by automating interaction, tailoring offerings to specific segments. This is hard when silos are extreme and technology inadequate. Covid has highlighted existing sell-side front office silo challenges, like: getting full 360° client views, pricing and quote automation, hedging ease, and risk management.”*

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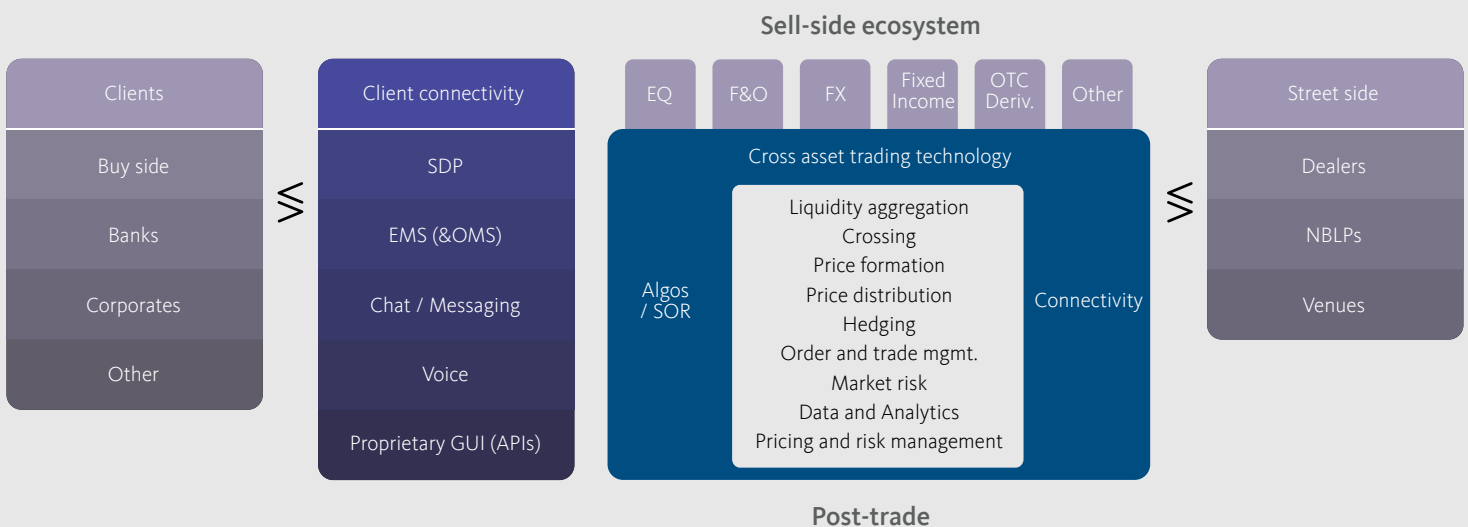
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SCHEMATIC OF CROSS-ASSET TRADING TECHNOLOGY



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CONSTANT AND INCREASING COST PRESSURES

Operating a sell-side firm has always been an expensive proposition, but the space today is facing unprecedented cost pressures. One is the unbundling of research from execution, which has become a [global phenomenon](#) – even in jurisdictions outside of MiFID II, the framework has caused buy-side firms to take a hard look at their expenses, resulting in slashed research budgets. A [2019 report](#) from Coalition Greenwich found that institutional equity trade commissions were down almost 50% from their peak in 2009.

Another factor is buy-side firms' pivot to low-touch electronic trading venues, which keep their costs in check – a response to their own growing regulatory obligations, among other factors. And while the pandemic brought a temporary reprieve from the reduced volumes and volatility seen for most of the previous

decade, both remain long-term trends that have depressed profits. Furthermore, sell-side firms often lack a single point of sales coverage, presenting additional cost pressures. While the buy side has largely pivoted to multi-asset platforms, brokers are more likely to have disparate systems for each asset class, a clunky, costly configuration that invites risk. This dynamic raises the table stakes for sell-side firms that want to maximize their share of client order flow wherever it may lie.

All of this has created a dynamic in which every dollar has an outsized impact on the bottom line – the sell side must optimize its spending to have any chance of keeping up with the previous generation. Legacy technology, with its complexity, inflexibility and inefficiency, is among the biggest resource drains in any organization, so modernization is a key aspect of the need to cut costs.

KEYS TO MODERNIZATION

Given the aforementioned challenges, it is no wonder that many firms are actively preparing to embark on a journey to modernize their outdated legacy systems. These initiatives can be daunting, but by adhering to a few key technological principles, organizations can achieve this shift with relatively little disruption and position themselves for the future.

In addition to these principles, there is an important concept that underpins them all: outsourcing. Buy-or-build questions are nothing new, and the desires to minimize exposure to third parties and retain full control over a given system have historically been powerful incentives to keep everything in house.

This logic is understandable, but it does not hold up to scrutiny. Instead of trying to manage every aspect of their business, firms should place a greater emphasis on their core competencies (getting in and out of positions and executing trades). They should actively seek out best-in-class trading technology vendors, whose core competencies lie in deploying, maintaining and enhancing mission-critical tools at scale.

“The path to the capital markets application stack of 2030 requires an evaluation of how firms create applications that are flexible and can adjust to changing business requirements.”*

BRAD BAILEY

AUTHOR & MARKET INTELLIGENCE SPECIALIST

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Some level of apprehension about outsourcing may always remain, but by engaging a vendor that leverages open architecture, sell-side firms can build on the foundational components with their own secret sauce, unlocking unprecedented workflow efficiency and configurability while maintaining a high level of control.

Let's explore some of these principles in greater detail.



MODULARITY PROVIDES ULTIMATE FLEXIBILITY

Taking a modular approach to software is perhaps the most essential element of capital markets modernization efforts. By breaking up a system into independent, loosely coupled components, technology teams gain an incredible level of freedom to build and reconfigure tools as they see fit.

A recent Celent survey exposes key demands that financial institutions require for their technology and applications. These demands are driving massive shifts in their considerable investment into new technology platforms. The benefits of this approach are many. Because building individual components does not require a wholesale reimagining of the entire platform, modular systems are faster to market and offer greater potential for customization.

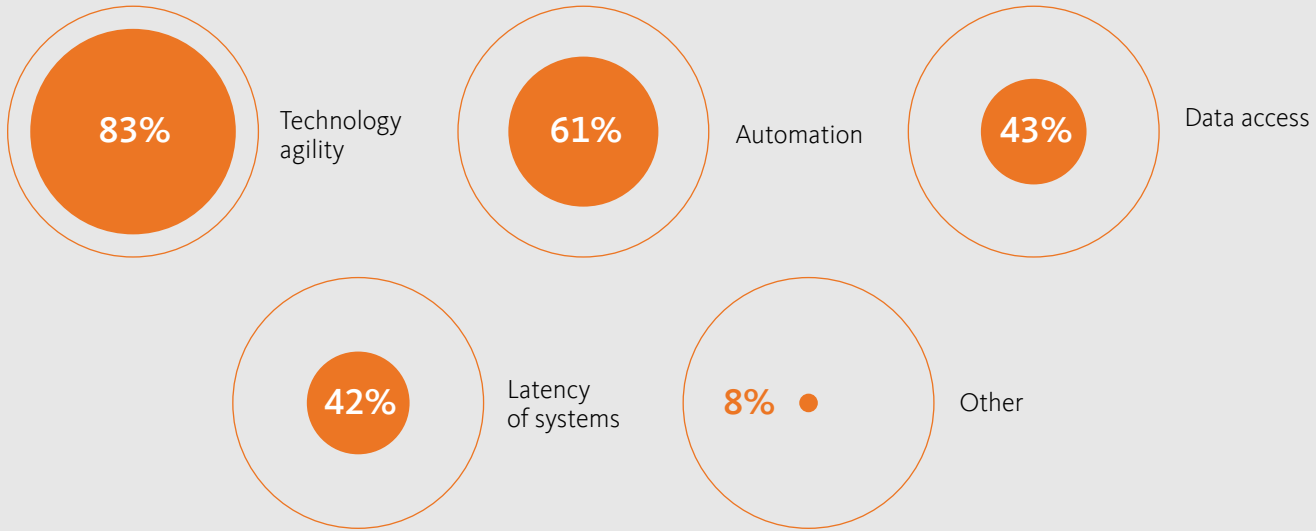
They are also more scalable and cost-effective, as modules can be reused for similar products as opposed to building the same functionality from scratch, reducing the development and testing lift. They also allow for incremental upgrades, so fixing that one buggy feature will not disrupt the entire system.

Reorganizing trading desks is a key use case for modularity, especially as the pressure to move to cross-asset intensifies. For example, a firm that wants to build out a desk for fixed income ETFs requires functionality for both asset classes: an equity-like trading platform for ETFs and robust hedging tools for fixed income.

Componentized systems mean relevant tools can be reused for this purpose, whether replicating them exactly or making tweaks to optimize them for a new context. Instead of being wedded to the status quo, firms can freely pursue structures that maximize the opportunities before them.

The need for this adaptability will only intensify as the move toward more diverse strategies and multi-asset workflows continues.

TODAY'S DEMANDS IN THE CAPITAL MARKETS



SOURCE: THE FUTURE OF THE CAPITAL MARKETS APPLICATION STACK - CELENT REPORT - 24 FEBRUARY 2021 - [LINK](#)

AUTOMATION EQUALS ACCELERATION

As front-office trading continues to become more complex, automation will become a particularly important priority. This is not so much a separate architectural concept as much as a vital capability that can be supported through modularity and interoperability, helping the entire organization work more efficiently.

While modularity streamlines processes on the development side, trade automation enables superior workflows for end users. By allowing logic and information to flow freely across the desktop, users are saved from myriad repetitive tasks and able to work more efficiently and precisely. Instead of starting from scratch every time they switch windows, automation ensures the right information is at users' fingertips from the time the app is launched, helping them pick up where they left off even if the two tools originate from disparate sources.

The complex sales trader workflow is a natural use case for automation. For any given trade, a sales trader might need to communicate with a client, look that client up in the CRM, identify and access relevant data and analytics, monitor the latest market

activity and, ultimately, execute in real time, amid quickly shifting conditions and with clients and counterparties awaiting their every move.

By eliminating the need to rekey criteria into every new window, automated functionality helps create a robust framework for algorithmic execution strategies and synthetic order type solutions.

When platforms that offer a rich library of out-of-the-box trading apps can seamlessly integrate with both proprietary and third-party tools, market participants are far better equipped to address their every need, whether it be real-time control of risk and P&L or complex instrument pricing without sacrificing speed or accuracy.

In addition to general complexity, automation helps support the shift to multi-asset trading by enabling easy communication between apps that historically may not have been part of the same workflow.



CREATING AN INTEROPERABLE ECOSYSTEM

When it comes to legacy systems, the most robust functionality on the market does not mean much if it causes a bigger headache than the problems it claims to solve.

Similarly, even the most flexible modular system will not provide value if components cannot share information with third-party tools and create a true ecosystem of productivity. This is why market participants should seek interoperable applications for every task that falls under their umbrella.

This goes back to the outsourcing question – why would an organization implement a system that it does not have full control over alongside proprietary technology, or multiple systems from various providers?

Won't these inconsistencies complicate development and workflows? With interoperability, the answer is no.

When applications are built to communicate and share data with one another, the front office's world suddenly opens up – as long as all tools are interoperable, an organization can leverage functionality from any combination of providers to build a truly optimized workflow.

The technology that enables this exchange of information is entirely separate from the components themselves, so it can be deployed in any context with similarly transformative results.

As an example of the power of interoperability, picture a company with an industry-leading equities trading desk that wants to move more heavily into fixed income.

The firm could build its own fixed income trading tools, but what if the in-house technologists have only limited experience with this asset class?

By building interoperable systems – and by identifying vendors with a similar commitment to interoperability – this firm could benefit from the best functionality the vendor market has to offer while keeping its core competency in house.

This sort of hybrid approach will help usher in a future in which the front office is truly multi-asset. When it does not matter where the functionality came from, all that matters is how robust it is, and that exclusive focus is a recipe for success.

CHECKING ALL THE BOXES WITH BROADRIDGE/ITIVITI

As a provider of flexible, cross-asset trading technology, Broadridge/Itiviti's award-winning solutions cover an extensive part of the trade lifecycle for nearly 2,000 financial institutions around the world.

The firm is well-positioned to help financial institutions solve their technology challenges and head off negative industry trends through modularity, interoperability and automation.

This current moment is a particularly exciting time for the organization, as a variety of forces have converged to create an opportunity to help the industry on its modernization journey like never before.

While M&A events like these can sometimes result in disruption, in Broadridge/Itiviti's case, its history provides key validation of its offerings, as it establishes a long track record of integrating distinct, powerful functionalities from different sources with one another to build a superior solution.

This unique story means that modular, component-based systems that can adapt to work alongside additional tools are part of the Broadridge/Itiviti's DNA. That approach extends to its

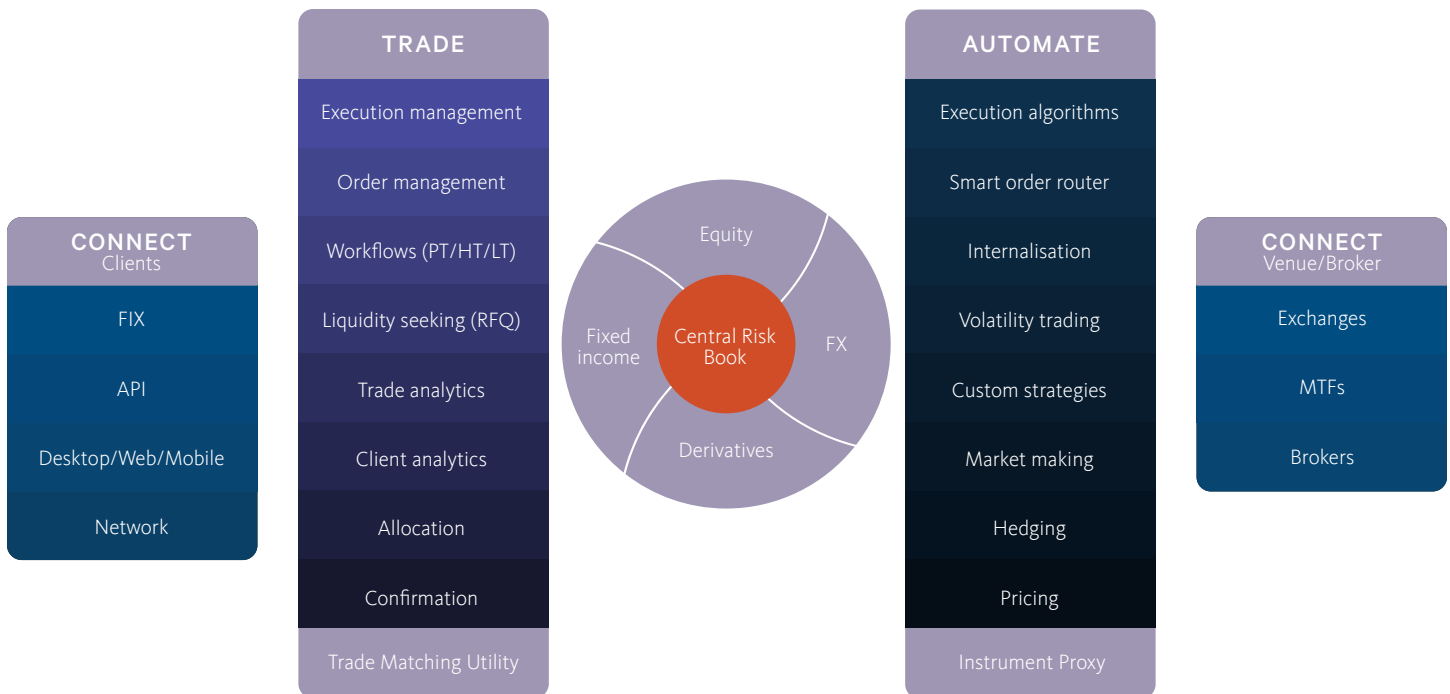
clients, which have long benefited from Broadridge/Itiviti's scale, flexibility, expertise, integration and configurability.

As a result, Broadridge/Itiviti's order and execution management system (OEMS) can provide a wide range of robust capabilities for both agency and principal trading – high- and low-touch workflow support, order routing, reporting, FIX engines and more. Its tools extend across equities, foreign exchange, fixed income, derivatives, ETFs and even digital assets.

This expertise means Broadridge/Itiviti is the ideal vendor for wholesale solutions and targeted projects alike. Longtime clients know the firm can solve just about any technology challenge, and new ones are often blown away by the myriad efficiencies it can unlock.

As many aspects of the trade lifecycle as Broadridge/Itiviti's OEMS covers, one of its most powerful features is the ability to function in concert with third-party tools. When a client wants to implement a new application, integration with Broadridge/Itiviti requires a minimal development lift.

This is because Broadridge/Itiviti's goal is not to add every piece of functionality it possibly could, nor is it to be the sole trading





technology vendor to its clients – rather, it is to focus on its core competencies to help clients modernize systems and achieve a truly optimized trading business, whatever that looks like.

Broadridge/Itiviti's modular architecture also enables it to perform lateral, cross-asset integrations with relative ease. The firm's Tbricks trade automation technology and infrastructure is a great illustration of this – by consolidating all asset classes onto a single trading platform, clients can redeploy trading strategies and apply expertise across markets. It comes with powerful functionality, but also the flexibility for clients to build their own.

This is another testament to the power of modularity – with a legacy system, everything goes through the vendor, and clients are at the mercy of a long backlog of requests for bespoke functionality. By leveraging components, Broadridge/Itiviti flips this narrative of inefficiency and unresponsiveness on its head. This flexibility enables an unparalleled level of sensitivity to client priorities and pain points.

A separate integration with Imandra, the world leader in cloud-scale automated reasoning, has streamlined the client certification process through automation, so the FIX certification and onboarding process can now be completed in hours rather than days, drastically reducing time to market.

“Implementing Itiviti’s robust OMS solution represents a strategic move for us to support new customer segments, from global clients seeking regional execution expertise, to local low-latency players seeking outstanding performance and speed from their brokers.”

TREVOR LEE
DIRECTOR, GLOBAL SALES AND PRIME SERVICES
KGI ASIA



BRINGING IT ALL TOGETHER. ITIVITI, BROADRIDGE AND A MODERN PLATFORM FOR CAPITAL MARKETS

As much as Itiviti has done to enable the modernization of capital markets architecture and workflows, the future is even brighter. In May 2021, Itiviti was acquired by Broadridge Financial Solutions, a global fintech leader with over \$4.5 billion in revenues that powers investing, corporate governance and communications.

Broadridge's scale and industry footprint will help Itiviti bring its solutions to more and different kinds of organizations. In addition, the firm's historical focus on back-office functions will serve as the perfect complement to Itiviti's front-office expertise. This is key because it represents the next chapter of Itiviti's extensive history of enabling market participants to evolve their systems.

Just as Itiviti's expertise in lateral integration has helped accelerate the shift to multi-asset trading, bringing Broadridge's post-trade prowess into the fold will supplement existing capabilities and enable a deeper focus on front-to-back integration, helping streamline workflows not just across asset classes, but from the first inkling of a trade to its ultimate settlement.

Beyond product functionality, Broadridge's established footprint in the industry will reinforce Itiviti's reputation as a trusted vendor and support the business with a long-term vision and significant investment capabilities.

This is only the latest milestone in Itiviti's mission to help its clients realize an optimal ecosystem of trading technology. Over the years, the firm has steadily added new functionality and refined its infrastructure to reach as many clients as possible. Integration with Broadridge will accelerate this journey. It is the perfect pairing of the front office and the back office to better serve both buy-side and the sell-side firms. Now, both entities can provide their clients with more comprehensive functionality, broader expertise, reduced risk and optimized balance sheet utilization.

In the event that this new and improved organization cannot meet a client's every need, it can still implement a targeted solution via modularity, and the client can pursue additional tools that will supplement Itiviti and Broadridge via interoperability. In this way, Itiviti and Broadridge are pioneering a vision for a true capital markets platform – one that supports current client needs, can adapt to future needs, enables unprecedented workflow efficiency and does so with unparalleled scalability and extensibility. Modularity, interoperability and automation are crucial to this vision.

As these firms continue to innovate, they are committed to building platforms that support their clients' own innovation. New ideas and collaboration make the industry stronger, and Itiviti and Broadridge exemplify this principle in numerous ways.

Broadridge Financial Solutions (NYSE: BR), a global Fintech leader with \$5 billion in revenues, provides the critical infrastructure that powers investing, corporate governance, and communications to enable better financial lives. We deliver technology-driven solutions that drive business transformation for banks, broker-dealers, asset and wealth managers and public companies. Broadridge's infrastructure serves as a global communications hub enabling corporate governance by linking thousands of public companies and mutual funds to tens of millions of individual and institutional investors around the world. Our technology and operations platforms underpin the daily trading of more than U.S. \$9 trillion of equities, fixed income and other securities globally.

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