



Future Prospects for the Market Infrastructures and
Strategies of Exchanges

Tokyo Stock Exchange's Approach

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New-Generation Stock Trading System “arrowhead” (1)

- TSE launched the next-generation stock trading system “arrowhead” on January 4, 2010.

- Background -

- Fierce global competition among exchanges
- Exchange system must attain processing speed and stability of the highest global standard
- TSE appointed its 1st external CIO to oversee IT in 2006, and began developing a next-generation stock trading system

- Basic concepts for system development

Reliability / Scalability

- Significantly increase system capacity
- Capacity expansion within a short period of time (one week)

Speediness

- 10 millisecond order response
- 5 millisecond data distribution
- Thorough review of trading rules



Flexibility

- Ability to accommodate diverse products, trading rules, and other changes within a short period of time

Robustness

- Availability of 99.999% and above
- Back-up center (recovery within 24 hours)

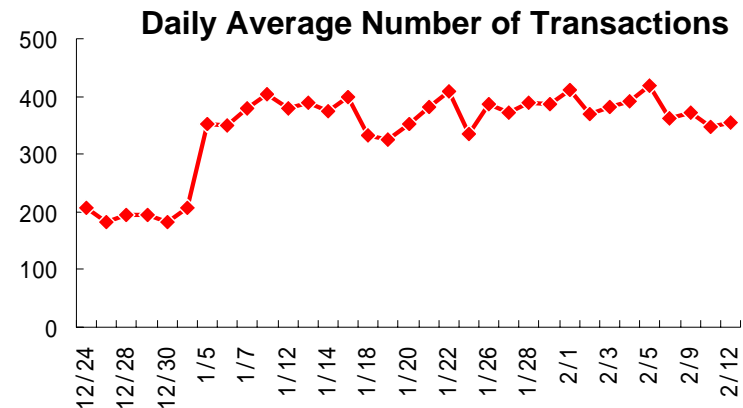
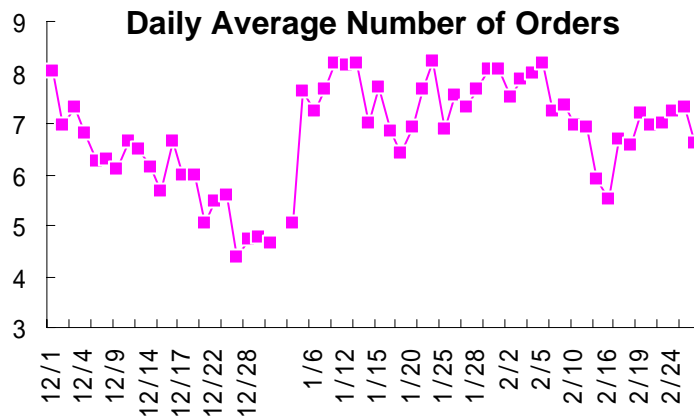
New-Generation Stock Trading System “arrowhead” (2)

■ Impact of “arrowhead”

- **2 millisecond** (0.002s) order response
- **3 millisecond** (0.003s) information distribution
- Daily average number of orders increased from 6 million level to 7 million level
- Daily average number of transactions executed per issue doubled from 200 to 400
- Trading value is on the uptrend
- Bid-offer spread shrank by 20%



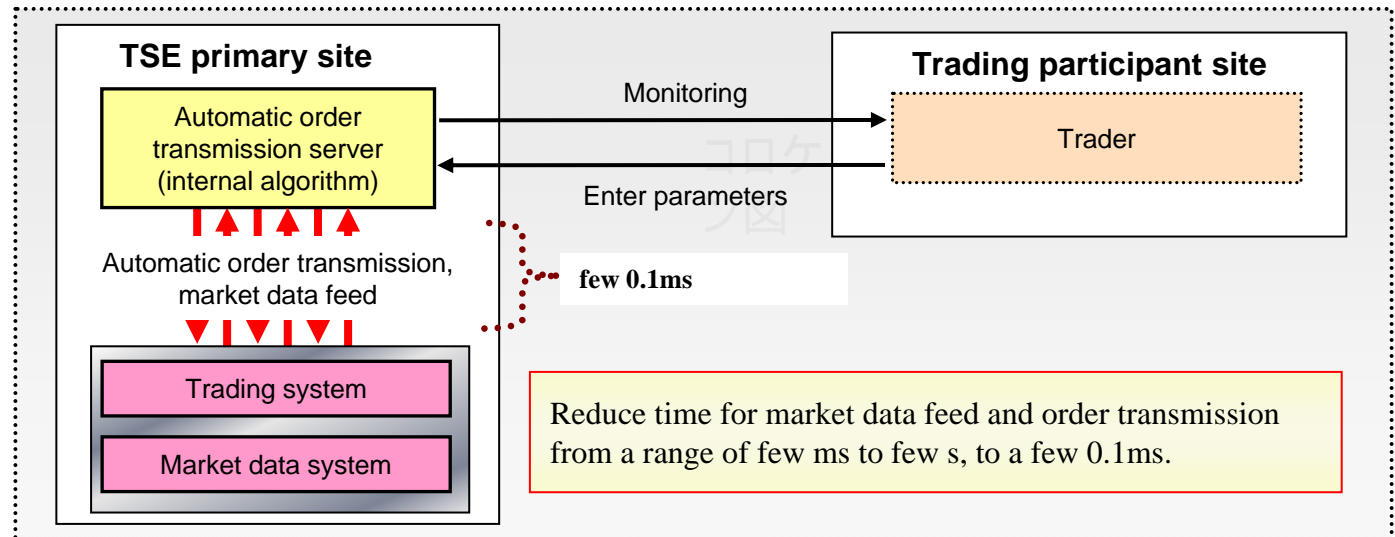
(million)



- Trading participants are still analyzing “arrowhead” system performance and preparing to fully utilize the system.
- Full-scale use this summer will lead to a rise in trading volume and value.

Co-location Service

- Use of algorithmic trading and high frequency trading in the Japanese market was rare due to the low processing speed of exchange trading systems.
- TSE started to provide its “Co-location Service” in June 2009.
- The service is aimed at maximizing the speed of new-generation exchange systems such as arrowhead.
- Many trading participants have already signed up for the service.



- Investors can enjoy a dramatic increase in execution speed brought about by “arrowhead” launch and the co-location service.
- A new investor class (hedge funds, institutional investors etc.) is expected to emerge and provide significant liquidity to the TSE market.

Derivatives Trading System “TDex+”

- TSE launched the options trading system “TDex+” in October 2009.
- TDex+ was developed based on the NYSE Liffe trading engine.
- The new system has significantly improved order response time and enabled strategy trading.



TSE will take full advantage of its advanced market infrastructure to expand the size of our market, with the cash and derivatives markets functioning in tandem as “two wheels of one cart”.



Clearing and Settlement

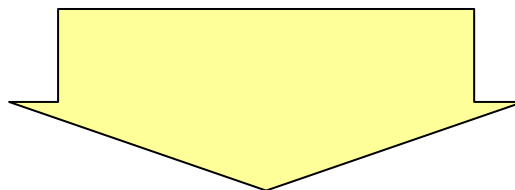
- The recent global financial crisis made us realize the importance of centralized clearing and settlement for OTC products.
- TSE is collaborating with the central clearing organization (the Japan Securities Clearing Corporation) and the settlement and depository organization (Japan Securities Depository Center) to provide new clearing and settlement services for OTC derivatives trading.

TSE is currently devoted to improving its clearing and settlement systems and frameworks as highly important functions unique to an exchange.



Conclusion

- With developments in IT and financial engineering in recent years, there have been rapid advancements in execution capabilities and investment strategies of market users.
- Competition among markets has now become global due to the emergence of alternative markets such as ATS, PTS and Darkpools.
- An exchange's IT strategy is gaining importance in the global competitive landscape.



- TSE will implement a new trading system for its futures market, in addition to the recent launch of the new systems for cash and options markets, so that all TSE-listed products can be traded in a world-class trading environment.
- In addition to providing clearing and settlement functions for OTC derivatives trading, TSE will provide its market participants with new added value which only a stock exchange equipped with self-regulatory functions can create, such as enhancement of corporate governance and more stringent market surveillance. By making risks more visible to market players through these efforts, TSE is committed to fulfilling a key role in the global financial capital market.