QUIKEST PRE-TRADE SOLUTION
RISK CONTROL FOR BROKER-DEALERS

About a year ago **ARQA Technologies** started to introduce the broad possibilities of pre-trade checks developed within its trading platform QUIK to clients abroad. Numerous Russian and CIS clients as well as Russian subsidiaries of international houses have been using the tools of risk control developed for the **QUIK** platform for quite some time now.

FUNCTIONAL DESCRIPTION OF RISK CONTROL AND SOME HISTORY

QUIK as a risk server is a powerful tool working across currencies, instruments, venues and keeping multi-level positions in real time. The versatile system of risk checks relies on a variety of approaches and may be customized to suit particular needs.

The reasons for its sophisticated risk control functions are traced to the history of Russian financial markets. Since mid 90-s trading in the emerging Russian market demanded that brokers be extra precautious and prudent. Brokers made sure that clients had deposited required resources before trading and watched lest the trades went into negative account balances. Because of its relatively short history Russian markets right from the start used electronic trading only and position keeping took place inside trading platforms. One more intrinsic feature of trading in Russia has been strict market regulations and the need of compliance control. This likewise raised additional demands for trading software. The resulting functional possibilities of QUIK software in terms of risk control reflect years of work that had been invested in that.

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is one used for margin trading with dynamic evaluation of collateral and preset credit parameters. It either allows extending loans within fixed restrictions for cash instruments and securities or marks the client's portfolio to market and makes sure that borrowed marginal resources do not exceed acceptable parameters.

Another model of risk assessment is a modified SPAN-approach for dynamic mark-to-market portfolio evaluation. A maximum probable change of portfolio is calculated with account to correlation of its components.

For trading in spot and derivatives markets QUIK is able to consider various settlement dates within one unified cash account.

It must be added that all the models employed may be applied together wholly or in part. A combination of risk filters may be selected either globally for all clients, a group of them or individually.

Of course all risk calculations rely on timely market data which comes straight to the risk server. QUIK is fed data from trading venues where it has direct access (MICEX-RTS Stock and Currency markets, FORTS, RTS Standard, WSE, UX, MOSENEX, SPIMEX) and from foreign exchanges via our partner's technological network (SunGard Global Network).

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FAST PRE-TRADE IDEA

A really bright idea of our software developers was how the functions of risk assessment they had developed could be used for fast pre-trade control. The idea was born during an international conference where one of the discussions was about HFT and fast pre-trade checks it required. Why not employ a separate module to make a fairly straightforward check. The sole decision would be to let through or block an order on the basis of previously processed data automatically fed to it by the QUIK server. Thus the dedicated module of pre-trade control makes sure that the clients account has sufficient resources before orders are submitted (or replaced). The module wastes no time because it is not engaged in keeping the client's position, computing his buying power or freezing resources

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required by outstanding trade orders. By this moment the necessary parameters of the client's position (including outstanding orders) have already been computed by the separate server. All previously executed trades have been accounted and relevant market parameters have been adjusted by QUIK. Whenever required the assessment would include portfolio analyses. This scheme may be described as a pre-trade check based on post-trade data.

This may well be an alternative approach to commonly used methods of pre-trade risk control - a very fast approach of using preset limits ("fat fingers") and complex analysis and statistical modeling that consumes much more time. Thus it combines the best of the two approaches - meticulous assessment of current position including portfolio analysis models with a simple but sufficient fast pre-trade check of orders.

THE WAY IT WORKS

New orders are forwarded to a trading venue as long as the client has a positive balance in his account. Meanwhile the assessment of his position is updated and his outstanding orders are accounted for because real time data from that trading venue and other relevant market data are continuously fed into the QUIK server from the trading system.

The module of pre-trade control intercepts an order message inside the technological infrastructure of a broker handling the transaction. If the transaction is allowed by the module it is forwarded for execution to a trading venue. If not, it is rejected and the trader is promptly informed with appropriate explanations.

This approach may be recommended when pre-trade control is applied to low-latency infrastructures or used for HFT clients. It may also be used to manage risks in external systems where direct integration with a principal risk server is not possible.

The checks by the separate module may involve more than just validation of a transaction at a moment in time. Additional checks may also include restricted securities lists or limits on volumes. Settings may be adjusted to stop an order for an account preventively when there is still

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some reserve of buying power in the account. Another setting of the module may limit a number of orders per second which are allowed to pass through it. Such adjustments guarantee sufficient protection without noticeable slowdown of transaction flow.

SOME APPLICATIONS

Practical applications of QUIK's pre-trade control mechanism have been extensively tested by a large number of ARQA clients in situations of direct sponsored access.

FIX2Market is a low latency solution that lets a broker make a direct connection between his or his client's trading platforms and the exchange.

The FIX2Market family of interfaces developed by ARQA Technologies includes FIX2CETS (for Currency market MICEX-RTS), FIX2MICEX (for Stock market MICEX-RTS) and FIX2Plaza2 (for FORTS and RTS Standard).

A very popular solution is FIXPreTrade module which is built into any broker's technological infrastructure based on FIX protocol. It may be regarded as a FIX proxy-service integrated into the broker's infrastructure.

MICEXPreTrade module is a result of a joint project with the exchange and represents a solution for trading at the Stock market MICEX-RTS. This module is integrated with MICEX Bridge (incorporated within the exchange gate's own protocol).

The dilemma of vast possibilities of pre-trade control developed in QUIK and necessity to use them for low latency infrastructures is solved by using a separate module to control current order flow. The fast pre-trade solution relies on intricate risk control assessment calculations which are performed simultaneously by a powerful risk server. The order check itself adds a fractional overhead (less than 10 mcs) to order placement.