

NEW YORK STOCK EXCHANGE, INC.

MEMORANDUM

June 28, 1973

TO: Board of Directors

FROM: William C. Freund

SUBJECT: Staff Analysis of Issues Affecting A Central Exchange Market
for Listed Securities

We have now made further changes in the enclosed document. If the Board approves, our aim would be to circulate this paper to knowledgeable individuals in the securities industry in the hope of eliciting their suggestions and generating support for a more unified position on the structure of a central market system.

Also attached is a separate report, prepared by SIAC (Securities Industry Automation Corporation), detailing some of the technical elements and costs of CENTAUR, a system which could become the hub of the central market.

William C. Freund

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THE CENTRAL MARKET SYSTEM

The foundation of the central market will consist of a group of communications and data processing systems linked together so that all qualified participants can access the entire market regardless of location while achieving the reduced costs of centralized processing and record keeping.

It is not possible to precisely define the new central market systems, as many of the details are dependent on the outcome of the key policy issues. What is possible, however, is the construction of a general conceptual design of a system based on a number of assumptions on the basic capabilities required for a central market and with the knowledge that when, or to what extent, some features are to be utilized is yet to be determined.

The Securities Industry Automation Corporation (SIAC) has developed such a conceptual plan. This plan is largely based on the new automation system for the New York and American Exchanges called CENTAUR. The central market system envisioned, like the CENTAUR system, is divided into four major systems:

- Communications Network
- Trading Services
- Market Data Services
- Post Trade Services

The following sections describe, briefly, each of these four systems:

Communications Network

The communications system will link exchanges, member firms and institutions into a single communications network. The objective of the network is to reduce costs and improve communications efficiency by consolidating operations wherever feasible. The network approach will enable each participant to use a minimum number of lines and terminals to transmit and receive information for applications such as trade confirmations, clearing, depository, last sale and quote information, member firm and stock list communications, and others in each of their offices throughout the U.S. and abroad. In addition, improved timeliness and depth of industry information will be available to all via the network.

Trading Services System

The trading system includes that portion of the central market system starting with the entry of an order into the exchange markets, through the entire trading process, and ending with the notification to the member firm, the clearing organization and the market data system of the detailed results of the trade.

In the system all member firm communications lines between the exchanges will be connected -- either directly from their central office or, if a firm wishes, via the communications network -- to a single Central Switch that will manage the traffic for all data entering or leaving all markets. A member firm originating an order can route it through the switch to any market it desires or to the "best market" -- if policy determinations establish that requirement.

At the central switch, the system will create a file of all pending or open orders for use as the base for a specialist electronic "book" The specialist, in the proposed system will have as a fundamental tool for his function an electronic terminal connected in real time to the open order file, and the market data information from all markets. This terminal will be his input and output to the system as well as his electronic book. Through it he will enter his quotations and trading data and will evaluate the market through retrieval of competitive quotations and historic trade information. Direct updating of his book from the order file will also be possible.

In the trading system the specialist plays an important part from a systems standpoint. The flow of orders in the system is a flow of supply and demand indications. Where there is perfect harmony a specialist is not required, except as an agent, to provide an open order or inventory management service. Where there is an imbalance he is indispensable. An imbalance usually results when market conditions shift and a new market equilibrium point needs to be established in a securities price. When this happens, it is important that the adjustment take place in an "orderly" fashion. That is there isn't an under-dampening with the resulting excessive price oscillations or an over-dampening which would mislead the public. The trading system is thus analogous to a process control system, with the specialist acting as the fallback correction mechanism. A correction mechanism works best when it is working at the most concentrated flow area or focal point of the process. The specialist, to function properly, must also be in that position, and the envisioned system insures that he is. When properly executing his

function, the specialist's dampening effect, through buying and selling from his own account, will insure not only an orderly market but a fair market price.

In the proposed system the broker also plays a key role. He is primarily responsible for the determination of the trading strategy to be used on each order and routes it accordingly. He may want to simply electronically switch the order into the specialist's book in the case of limit orders or he may choose to electronically switch the order for automatic execution against the best bid or offer in the case of small routine market orders, and in many cases he will want to personally represent the order in the market place. The system provides improved tools to the broker for all of these activities. Greatly improved terminals to receive, display, print, or re-route incoming order traffic will be available to the broker at his station and small hand-held terminals or equivalent devices will be available to him when he enters the auction crowd. In all cases the system will insure that all key information and input such as quotations and trade details are entered into the system via electronic terminals at the exact same time as the action occurs.

Once a trade has been agreed upon as to size, price and settlement details, and the computer system has verified that the other order details from the buying and selling brokers match, the trade will be "locked-in" -- and all details of the trade will be instantaneously transmitted to the member firms involved, to the last-sale ticker network, and to the clearing and settlement system.

The basic objective of the trading system is to reduce the cost and strengthen the auction process through the use of new automation technology. Care has been taken not to force basic change in the process simply to optimize the computer system. The new equipment will undoubtedly significantly change the physical appearance of the trading floors, but only in ways that will be consistent with maintaining the essential strengths of the auction market. Once the system is in operation, new trading patterns may evolve, but these changes, if any, will then be in response to normal competitive pressures and not to meet the requirements of the data processing system.

Market Data

The market data system combined with the communications system supports the distribution of all information concerning the market activities. The composite tape and competitive quotations will be part of this system. Improved surveillance and analysis will be another feature as a result of the availability of complete trade details such as both side identification and prevailing quotes at time of trade. It is proposed that this system be built on the recently installed MDS-II of the New York Stock Exchange, a system designed to provide a large array of services at extremely high reliability.

Post Trade/Clearance and Settlement

In this area of the central market, a national clearing system is planned that will combine trade information from all listed securities markets into a single clearing cycle. All verified trade results will be collected at a central source and netted for each firm.

After member firm approval, the resulting balance will be transmitted directly to the central depository to automatically update each clearing member's inventory position.

The system will make it possible for every participating firm to have a single position per security per day and, in effect, will combine the major benefits of the delivery balance order system used by the New York and American Stock Exchanges and the continuous net system now used by other markets.

The current economic climate in the securities industry has added a new degree of urgency to the implementation of a national clearance system. While some economies will flow from the elimination of multiple clearing operations under the new system, a major incentive for change is the significant savings that each firm can attain in its internal operations as a consequence of standardizing and upgrading the clearance process. The system planned could be executed in less than one year if policy issues are resolved.

Implementation Schedule

The proposed central market system will require significant physical modifications to the existing exchanges particularly in the trading floors. Because of the scope of these changes it is clear the system cannot be implemented in any one step or in a short period of time. What is required is a careful step-by-step implementation over a number of years. While this time frame won't satisfy the bodies calling for instantaneous

change, it is the only practical and workable way to effect major changes to a complex market system that must continue in full operation at all times.

The CENTAUR system for the New York and American Exchanges, which includes all of the elements of the central market system, is planned to be implemented in a series of steps starting in 1974 and completing in 1978. The expansion of the system into a full central market system could be completed in the same time frame given the resolutions of the key policy questions in the near future.

Costs

As indicated earlier, the final system configuration is dependent on the resolution of a number of policy issues. Precise cost estimates are therefore impossible. Detailed cost estimates have been made for the CENTAUR system, however, and an extrapolation of those costs provide an order of magnitude estimate of the costs of a central market system. Including the costs of CENTAUR, the central market system outlined is estimated to cost a total of \$38 million for one time development costs over the next five years. In addition, an increase of \$10-13 million per year of data processing operating costs over present levels experienced by the NYSE and AMEX is forecast due to the installation of new terminals, lines, and processors.

Cost Benefits

The system once installed will not only produce significant improvements in investor protection, service, and visibility and timeliness of information, but will significantly reduce existing clerical and information handling costs in the member firms and exchanges. In the trading area alone, detail cost savings of over \$40 million per year are projected when CENTAUR is fully implemented for the New York and American Exchanges.

Significant cost reductions realized from other listed market participation, the national clearing system and reduced communication costs should yield additional savings. In total, it is estimated that the investment of \$38 million of one time development charges should yield a net cost savings to the industry of \$135 million over the next seven years. At the latest stages, cost savings will be accruing at the rate of \$50 million per year. While all of these benefits are not realized until full system implementation, the plan provides that there are cost savings offsetting the increases in operating and development costs in every year except 1974. It is possible therefore, that the entire central market system could be installed for no significant increase in costs to the industry.

Summary

The central market system proposed is a planned evolution in practical steps from the existing exchange systems, to CENTAUR for the New York and American

Exchanges, and finally to the full market system. It builds on the broad experience of the major markets and places a high priority on the enhancement of the auction market.

While precise system details, implementation schedules, and costs are contingent on the resolution of the key policy issues, it is estimated that the central market system can be installed in steps over a five year time frame for a one time development cost of \$38 million. Operating costs will be increased \$10-13 million per year. Offsetting these increased costs are estimated yearly industry savings of in excess of \$65 million per year, or a net decrease of present industry expense levels of over \$50 million per year.