



Stephen Campbell, Principal and Manager of Operations, William Blair & Company (left); Ray Esposito, Director, Marketing, and Rosaleen Matthews, Account Manager, Marketing (above); Laurie Quinn, Account Manager, Marketing, and Michael Molloy, Vice President, Marketing (below).

The two-year redesign of our Automated Customer Account Transfer Service (ACATS) once again positions the industry for future growth in the range of products offered and the diversification of our customer base.

ACATS began as a service that allowed broker/dealers to electronically transfer the assets in a customer account from one firm to another. During 1998, ACATS processed over 2.5 million account transfers with assets valued in excess of \$254 billion.

Through a link to NSCC's mutual fund system (Fund/SERV), ACATS began to transfer mutual fund



assets in 1989. **The capabilities of ACATS have now been greatly expanded to include transfers by banks (which are expected to increase volume by 20 percent) and other financial institutions.** It will accommodate new types of firms and new asset classifications, as well.

The new ACATS was successfully implemented in early 1999. It will reduce the normal transfer time to six business days from seven and has the ability to shorten time frames further as the industry requires. Moreover, the enhanced



Diane Frimmel, Executive Vice President, Director of Operations and Service, PaineWebber, and Gregory M. Brennan, Managing Director and Chief Operating Officer, BNY ESI & Co., A Bank of New York Company (above); Anthony Pietanza, Director, Marketing, Helene Mathews, Participant Services Representative, Marketing, and Mark Vercreyusse, Director, Marketing (right); Charles Lichter, Director, Product Development, and Nadia Morris, Vice President, Marketing (below).





Barclay Frey,
Director, Marketing.

service allows partial transfers on a next-day settlement basis, as well as fail reversals, reclaims and residual credits.

For bank transfers, the new ACATS provides standard time frames for transferring accounts and an account tracking mechanism for quickly determining the status of asset transfers. Banks will also be able to electronically re-register mutual fund shares to a new bank, allowing dividend and tax information to be transferred with the account. Where the old ACATS was limited to processing transfers once a day in a "single batch," the new ACATS is multi-batch and multi-cycle.

The launch of the new ACATS was supported by an extensive communications program, including seminars held across the country, virtual training via our public Web site, special training sessions for banks and extensive feedback from industry technical advisory committees.

NSCC began a number of other key initiatives during 1998. **On the risk management front, we initiated stronger membership standards and capital requirements to reflect the higher levels of trading volume.** By increasing our own line of credit, as well, to \$1.2 billion, we've placed NSCC in a stronger financial position should we need to fund settlement in the event of a firm's failure. We also began work on extending margining requirements for firms that are market-makers or who have highly concentrated positions in securities, and broadening the reach of

our daily volatility calculations to firms beyond those on high-level surveillance. And with T+1 settlement on the horizon, NSCC has begun a study of intra-day risk management issues so that our guaranty can be moved as close as possible to the point of trade.

In 1998, NSCC introduced a multi-batch, multi-cycle Fixed Income Transaction Service (FITS), making possible intra-day processing on trade date, the first time this has ever been done for bonds. This service will enhance trade comparison rates and better position fixed income products for the eventual move to T+1, objectives sought by both participants and regulators.

In addition, NSCC modified our listed equity systems to support efforts by the marketplaces to process trades in decimals as well as fractional shares. We expanded our system to handle nine new Nasdaq-Amex index share products called Select Sector SPDRs (Standard and Poor's Depository Receipts). And we helped the NASD eliminate its Trade Acceptance and Reconciliation Service (TARS) and Municipal Bond Acceptance and Reconciliation Service (MBARS) by completing enhancements to our OTC trade recording and comparison systems. Users of TARS and MBARS, old systems that would have required massive work to make them Y2K- and decimal-price-compliant, are now using NSCC's PCWeb Direct Internet service that will save Nasdaq and the industry more than \$3 million yearly.

NSCC prepares for the future, working closely with its customers, exchanges and regulators. With each step we take, we remain cognizant of the challenges today, while anticipating and adding value in addressing the needs of tomorrow.

Mutual Fund Services

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inancial markets continue to chronicle the astounding growth of mutual funds year after year. So much so that it's hard to believe that just 12 years ago, **NSCC helped revolutionize the trading process in this sector with the introduction of Fund/SERV.** By automating the daily order, confirmation, registration and settlement of mutual fund transactions, linking multiple distribution partners with multiple funds, NSCC now processes over \$578 billion, or nearly 38 million Fund/SERV transactions yearly.

The average daily volume of Fund/SERV orders in 1998 was up 34 percent, to 150,000 from 112,000 the previous year. The average daily value of these trades was nearly \$2.3 billion. Of the 314 firms and 471 fund families using Fund/SERV, 170 represent no-load funds, or 36 percent of the fund participants on the system.

Networking, NSCC's companion service for automating the exchange of non-trade-related client information, also grew rapidly last year. With the

addition of 29 new funds in 1998, Networking now supports linkages between 220 firms and 445 fund families. The number of subaccounts in Networking jumped 22 percent, to 33 million from 27 million in 1997.

Several years ago, NSCC developed a systems link with DTC to allow banks to utilize both Fund/SERV and Networking through DTC's Participant Transaction Service (PTS) terminals. **To further streamline the process for banks and lower their costs, we're now providing these banks direct membership with NSCC.**

While processing and communications linkages have been automated between fund families and their broker/dealer and bank distributors, many collateral activities are still done manually. Phase 2 of NSCC's Mutual Fund Profile Service (MFPS) was completed in 1998 and will automate several key services. This builds on the initial functionality of daily pricing and dividend rate data offered by MFPS in 1997. Phase 2 includes Member Profiles which offer participants information on the processing capabilities of other firm and fund members; Security Issue Profiles identify minimum requirements and purchase amounts for a particular security; and a Distribution Declaration Profile highlights record, reinvestment and payable dates for dividend and capital gains payments. Piloted early in 1999, MFPS will give the industry an automated resource to further enhance its internal processing efficiency. In addition to providing MFPS through mainframe connections, NSCC is working in 1999 to build Internet access to these applications.

From the flexible technology platforms of Fund/SERV and Networking have come several other services that have made tremendous differences in the way mutual fund families and their trading partners conduct their businesses, differences that have increased efficiency, lowered risk and reduced costs. NSCC's Defined Contribution Clearance & Settlement (DCC&S) service, which uses features of these two systems, is but one example of how we leverage our experience.

A year after the 1997 premiere of DCC&S, this service is reducing the time it takes to process orders, the costs involved and the number of errors experienced by third-party administrators (TPAs), trustees and fund families. DCC&S participation is up to 87 participants, and efforts are under way to link more users to the system. There's no question that as defined contribution plans grow, DCC&S will grow just as rapidly.

In a related area, NSCC worked against the clock to modify our Transfer of Retirement Assets system last fall to accommodate our participants' new reporting requirements following passage of the Taxpayer Relief Act. The law prompted dramatic changes in the IRA market, allowing several

“ Emotions are key in human intelligence, and now are being emulated in machines. Affective computing research aims to give computers emotional intelligence, including the ability to recognize and respond appropriately to expressions such as frustration and confusion. The goal is not emotional machines, but

machines that finally are smarter about adapting to you, learning your preferences, and understanding your priorities.”

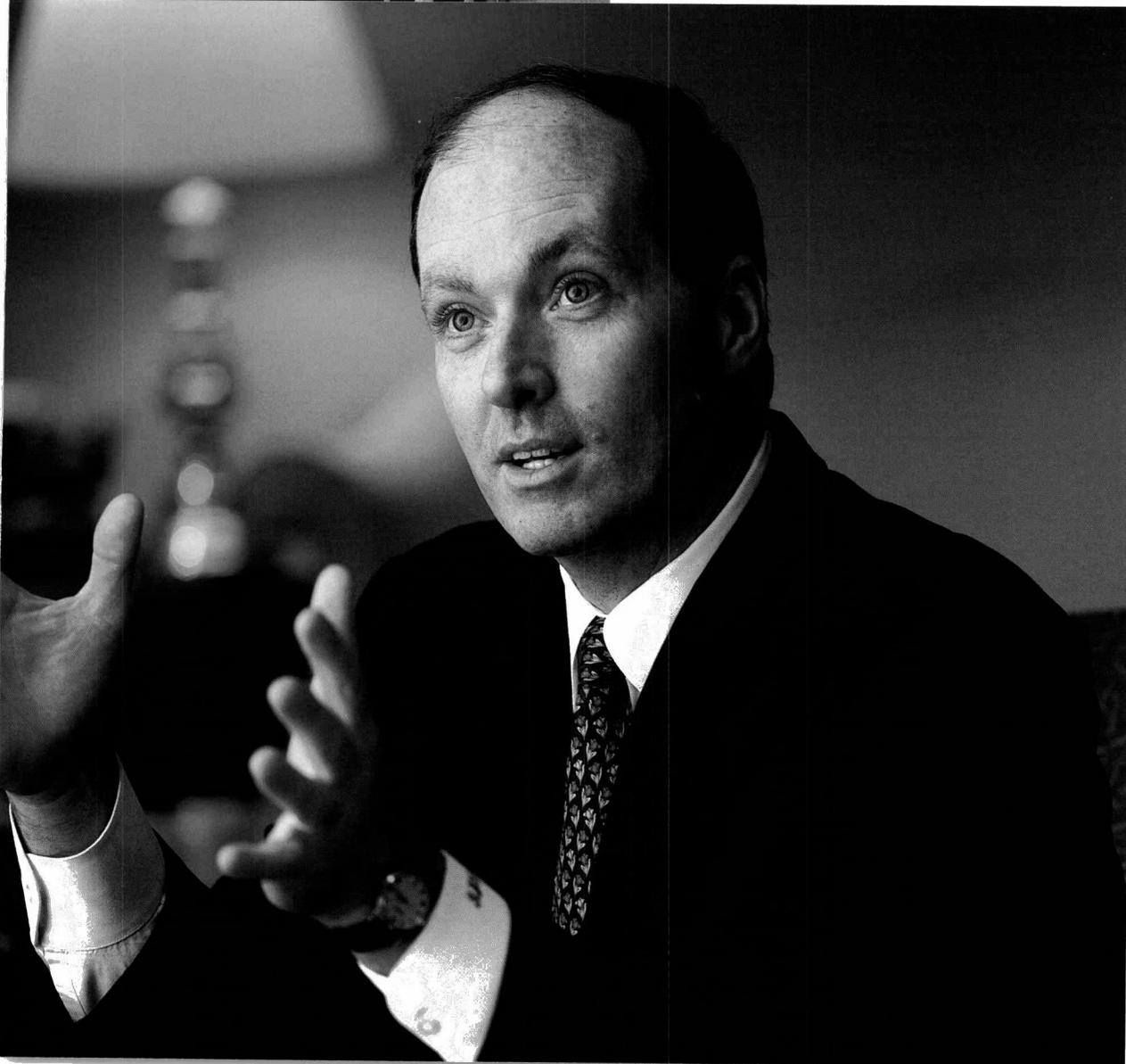
Rosalind W. Picard, Ph.D.,
Associate Professor,
MIT Media Laboratory
...author of *Affective Computing*

additional types of IRAs to be transferred from one retirement plan to another, including Roth IRAs.

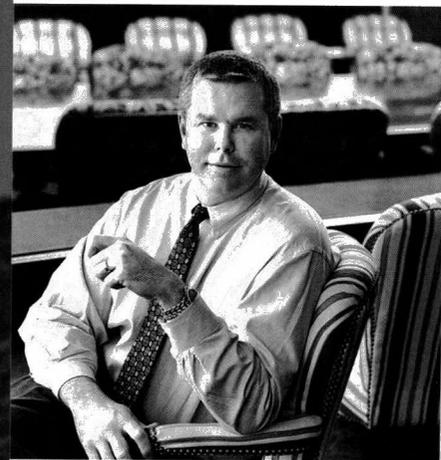
As the industry consolidates and participants look to diversify the products they offer, NSCC is always looking to develop creative solutions.

During 1998, one of these involved changing our membership requirements so an insurance carrier could be an NSCC member and user of both Fund/SERV and our Annuity Processing Service. The change, approved by the Securities and Exchange Commission, now allows insurance carriers to automate the purchase and sale of the underlying mutual funds that make up their annuity products.

Finally, we ended the year with an exciting proposal to develop a new affiliate company for the



John Clark, President, Seligman Data Corporation (left); Barbara Simon, Director, Marketing, Jamie DeRubertis, Vice President, Marketing, and Denise Burton, Participant Services Representative, Marketing (above left); James Kiernan, Director, Marketing (below).



growing number of independent financial planners that sell mutual funds. NSCC took this step at the request of the mutual fund industry. In the last several years, financial planners have become an important source of revenue for mutual funds.

In December, NSCC received approval from its Board of Directors and the industry to go forward with the new affiliate. The decision recognizes this segment of the industry has such unique requirements – and is so manually intensive – that if the processes aren't computerized, it would become a greater strain on the processing resources of funds and the brokerage firms that contract business with financial planners. Introduction of this new affiliate will be a major challenge for NSCC in 1999, but it sets the stage for growth anticipated in the coming decade.



Timothy J. Griesmer, Managing Director, Putnam Investments, and Janet L. Hanson, President, Evergreen Service Company (below); Karin Billias, Participant Services Representative, Marketing, and Scott Seibel, Account Manager, Marketing (left).



Insurance Services

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emand for insurance products that also provide guaranteed income for retirement has created a new challenge for the financial services industry.

Insurance carriers, recognizing the popularity of annuities, are expanding their distribution channels. Banks and brokerage firms, which offer an expanded marketing and sales network, also are diversifying the range of investment products they can offer aging baby boomers. The challenge was to find a way to automate the processing and facilitate linkages between insurance carriers and their marketing distributors.

NSCC's Annuity Processing Service, initially introduced late in 1997 and further enhanced in 1998, will help mainstream annuities, in the same manner as equities, bonds and mutual funds. Working closely with insurance carriers, NSCC has automated the processing of fixed and variable annuity positions, valuations, commissions and related money settlement. During 1998, NSCC processed 46 million position records, 491,000 pricing records and settled more than \$61 million in commissions, representing over 821,000 transactions.

We also launched a major effort in 1998 to automate the processing of annuity applications,

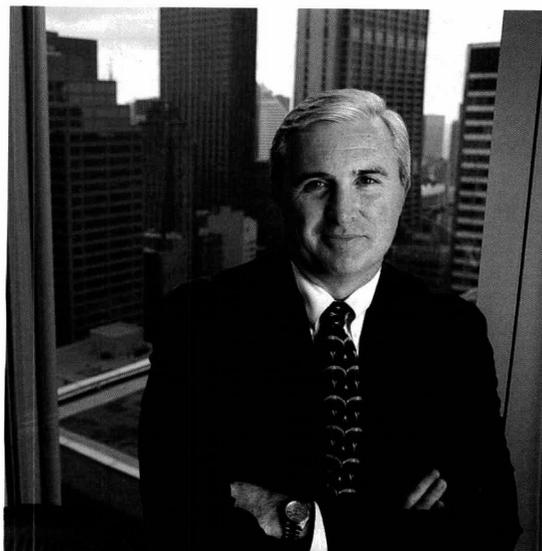
premiums and financial activities, such as withdrawals, surrenders and fund exchanges. Two firms began piloting this new service in December, and more are to be added in 1999, as we continue to enhance the service.

Like so many sectors of the financial services market, the face of the insurance industry is changing. Companies are demutualizing and raising capital through public stock offerings to keep pace with growing competition. Investors, both domestic and foreign, are looking at the underlying investments more avidly than ever before.

NSCC has a history of identifying synergies and leveraging the technology platforms it develops to bring about additional efficiencies and cost savings for the industry. Early in our experience working with annuities, we identified similar processing requirements for variable life insurance products. Heeding the requests of our insurance and broker/dealer customers, and with regulatory approval, we expanded our services into variable life insurance, now offering automated processing of valuations, commissions and related money settlement.

In response to the expanded use of the Annuity Processing Service, NSCC has renamed this effort, Insurance Processing Services (IPS). The new name recognizes that we expect to find other processing requirements that can be addressed using our technology.

By the first quarter 1999, NSCC had 78 insurance carriers, broker/dealer firms and service providers in various stages of linking to our Insurance Processing Services, up from 18 last year, and representing more than 80 percent of the total variable annuity business in the U.S. We are determined to grow that number in the year ahead, as we are firmly committed to supporting the full migration of insurance investment product processing to an environment that is fully standardized and automated.



Mark E. Reynolds, Executive Vice President, Finance, Cova Financial Services Life Insurance Company (left); **Robert Schweikert, Jr.**, Participant Services Representative, Marketing, and **Barbara Smith**, Vice President, Marketing (above).

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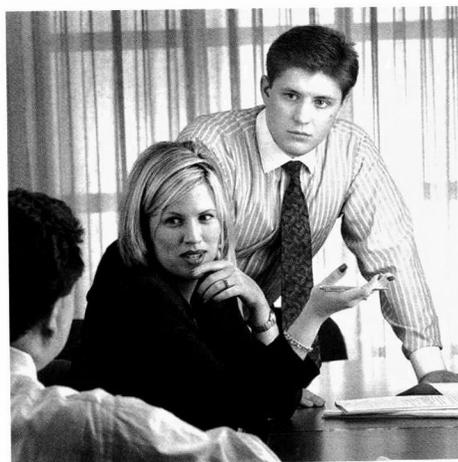
investment swings in 1998 hit the largest securities market in the world with no less force than they did the other major financial markets. Our affiliate, Government Securities Clearing Corporation (GSCC), posted a 44 percent boost in total dollar volume, reaching \$214 trillion. And on a peak day, November 16, of \$2.8 trillion entering the system for netting and settlement, GSCC reduced the obligations of participants by 94 percent for all transactions and 89 percent of the dollars.

While maintaining the high-performance levels of its core services, GSCC netting for the fast-growing repurchase agreement (repo) market was the biggest driver of its dollar growth in trades, accounting for 61 percent of the total annual volume. GSCC's various repo services have been reducing financial risk and providing opportunity benefits which in 1998 reached \$227 million in total balance sheet relief, more than twice that for 1997.

In 1998, GSCC launched its General Collateral Financial Repurchase Service (GCF Repo). Since last November, the GCF repo has opened the door for dealers to easily trade general collateral repos

throughout the day without requiring intra-day, trade-for-trade settlement on a delivery-versus-payment basis. **By removing certain constraints on the notification and allocation of collateral deposits, and by adding one more source for borrowing, participants are conducting business with more liquidity than ever before.**

The aggressiveness with which GSCC has implemented new services and improved established ones in 1998 extended to its pursuits of real-time, interactive processing. GSCC has already begun to build a technologically advanced infrastructure that will greatly extend the benefits of netting, risk management and clearance services to the marketplace, beginning with real-time processing of repo start legs and continuing with, among numerous other features, an automated link to clearing banks. In terms of Y2K imperatives, at year-end, a comprehensive testing schedule of participants' systems with GSCC's systems was well under way, with more than 90 percent of participants testing successfully. And, keenly aware of the driving forces of global investment, GSCC announced an initiative with Brussels-based Euroclear to develop netting and settlement services for cash and repo trades in the European sovereign debt markets.



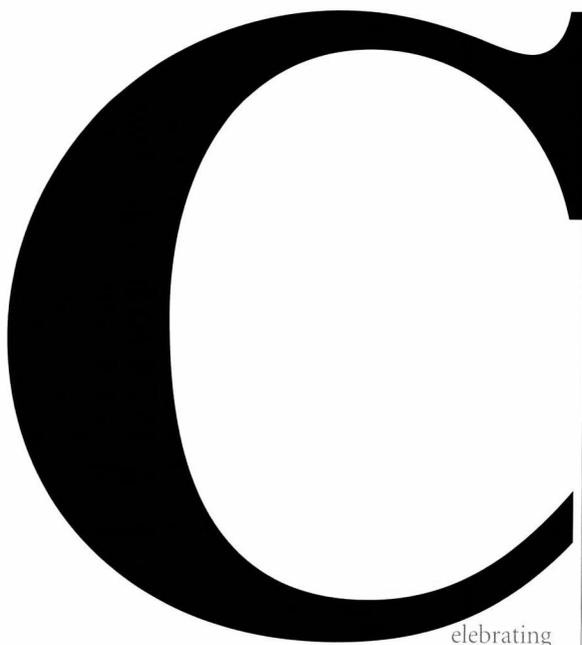
Richard C. Beggs, Executive Vice President and Chief Administrative Officer, Daiwa Securities America, Inc. (above); Suzanne Roberts, Operations Specialist, Operations, GSCC, and Chris Jodlowski, Documentation Specialist, Planning, GSCC (left).

““ As we interconnect
ourselves, many of the values
of a nation-state will
give way to those of both
larger and smaller electronic
communities....

Communities formed by ideas will
be as strong as those formed by the
forces of physical proximity.... We
will socialize in digital neighbor-
hoods in which physical space will
be irrelevant and time will play a
different role. ””

Nicholas Negroponte
Professor, Co-founder and Director,
MIT Media Laboratory
....author of *Being Digital*

MBSCC



celebrating its 20th anniversary in 1999, MBS Clearing Corporation (MBSCC) is well-prepared to support the mortgage-backed securities industry as it faces the main technological event of the year – Y2K.

During 1998, MBSCC had several major objectives: to expand its services to institutional participants; to strengthen its risk-management policies; to bring all parties connected with MBS trades closer to actual straight-through processing, and to ensure a smooth transition from 1999 to 2000.

Key among MBSCC's efforts was the introduction of CUSIPs to identify To Be Announced (TBA) trades. The more commonly recognized nine-digit CUSIP code for MBS product type, issuing agency, coupon, maturity, settlement month and check digit replaces the numerous proprietary methods used by

dealers, money managers and custodian banks, which made communication extraordinarily difficult. TBA CUSIPs were fully implemented for the Electronic Pool Notification (EPN) system in October 1998. The implementation of TBA CUSIPs in clearing, started in 1998, was completed in March 1999.

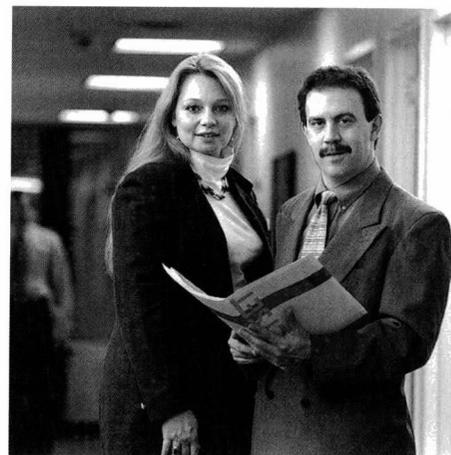
MBSCC's primary services include automated post-trade comparison, risk management, netting and EPN. Last year, the par value of transactions entered for comparison was \$12 trillion, a 43 percent increase over 1997. Netting in 1998 reduced trade obligations totaling \$9.7 trillion to \$1.3 trillion, an 87 percent netting factor.

EPN has done much to reduce financial risk between trading partners by replacing a manual process that was causing seriously high levels of failed trades, with a streamlined, automated way for MBS sellers to provide buyers with the necessary mortgage pool allocation information to satisfy a TBA trade. During 1998, nearly 325,000 EPN messages, with a current face value of \$3.4 trillion, were processed, a 66 percent increase over the prior year.

Like the overall financial community, MBSCC has been attracting a more diverse participant base. **Institutional investors have changed their traditional investment philosophy from one that was primarily buy-and-hold to a more active trading stance. These organizations now represent 55 percent of MBSCC's participant base.** Interest from the non-domestic investment community also has been growing. Last year, MBSCC welcomed the Bank for International Settlements as a new user of its full complement of services.

In light of its growth, MBSCC took steps this past year to modify its Rules, establishing more highly defined liquidation procedures and stronger margin requirements. In addition, MBSCC put zero-variance netting into effect on TBA trades, further extending its cost- and risk-reduction benefits to customers.

MBSCC's systems were enhanced several years ago, reducing the level of change required for Year 2000 compliance. Nevertheless, an 18-month test schedule was put in place in 1998, with full testing commencing in June.



Richard E. John, Vice President, Investment Group, Travelers Insurance (left); Deborah Romanski, Senior Programmer Analyst, Information Technologies, MBSCC, and Chris DeRoberts, Quality Assurance Manager, MBSCC (above).

International Services

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hile the trend is for investors to look beyond their traditional spheres for trading opportunities, certainty of trade execution and completion will remain critical factors as markets become global.

Since 1990, investments made in foreign securities by domestic firms and individuals have tripled to \$4 trillion, and foreign investment in U.S. securities reached \$3 trillion by year-end 1998.

The importance of minimizing risk in such an environment, as well as working toward a set of standards and regulations that ensure timely settlement from country to country, is an imperative.

In April, International Securities Clearing Corporation (ISCC) and the Emerging Markets Traders Association (EMTA) launched the Emerging Markets Clearing Corporation (EMCC) to compare and guarantee settlement of cross-border trades of emerging market debt instruments, beginning with U.S. dollar-denominated Brady bonds. Starting with 10 dealer members and five interdealer brokers, EMCC began to record substantial volumes early on. **By year-end, EMCC had processed more than 128,000 matched trade sides in 123 securities, and guaranteed settlement obligations exceeding \$197 billion.**

In August, when emerging markets in Latin America, Russia and Asia came under severe pressure, EMCC's volume increased by nearly one-third, but trade comparison rates remained above 90 percent on trade date. Prior to the start of EMCC's operations, comparison rates of these instruments were only 40 percent.

Working with its U.S. and European Operations Committees, EMCC took steps this past year to develop a Central Comparison System to support a wider range of communications methodologies. This new system will have the capacity to accept, process and report trade information from both Match-EM and TRAX, a trade comparison and confirmation system for Eurobonds provided by the International Securities Market Association (ISMA), as well as trade input from those EMCC members using both the S.W.I.F.T. network and NSCC's proprietary communications network. The Central Comparison System will be introduced in the second quarter of 1999. EMCC also developed a Settlement Netting system, which will reduce the total number of positions that require money settlement by participants at the end of each day; it will be implemented in 1999.

During 1998, EMCC also received regulatory approval to provide warrant fail and bond fail pair-off services. These services have played a key role in helping members reduce their gross exposure, while improving operational efficiency.

Beyond EMCC, ISCC's Global Clearing Network (GCN) handled nearly 246,000 transactions in 1998. GCN provides a standardized platform through which brokers in 45 countries communicate information on clearance, settlement and custody. While volume was down from 1997, GCN remains an important service for its core base of 50 firms.

ISCC also made modifications last year to iPC, its interactive PC product, to accommodate the transition to the Euro and Y2K compliance.



Paul A. Masco, Managing Director, Emerging Markets, Salomon Smith Barney (right); Macrina DiGregorio, Vice President, Planning and Development, ISCC, and Loretta Stack, Director, ISCC (above).



“ “ If we could arrange atoms as we pleased, we would gain, effectively, complete control of the structure of matter. Nanotechnology will give us this control. (But) to have any hope of understanding our future,

we must understand the consequences of...nanocomputers.

They promise to make changes as profound as the industrial revolution, antibiotics and nuclear weapons all rolled up in one massive breakthrough.

” ”
K. Eric Drexler, Ph.D.,
Research Fellow,
Institute for Molecular Manufacturing
Chairman, Foresight Institute
...author of *Engines of Creation*

What makes



Our philosophy Our approach

Internet

The technology

innovators, who live and breathe in the world of the Internet, are responsible for a human revolution in the way individuals communicate with each other — and the way businesses operate.

Everywhere, it seems, Internet technology is being pushed to new levels, its vast resources being harnessed to gather, translate and disperse information. However, the post-trade processing end of the

industry presents some unique challenges for introducing Internet applications, including concerns for accuracy, timeliness and security.

In 1998, NSCC became the first industry utility to introduce the use of digital certificates and pave the way for accessing our applications via the Internet. The use of digital certificates and encryption became part of a multilayered security system used by NSCC in launching our PCWeb Direct platform of services. PCWeb Direct, a Web-based transaction entry system, currently supports six NSCC applications — Fixed Income Transaction System

(FITS), Reconfirmation and Pricing Service (RECAPS), Commission Billing, Correspondent Clearing, Continuous Net Settlement (CNS) and the new ACATS. This Internet-based platform replaces two older applications, PC Platform and PC Access.

PCWeb Direct represents an entirely new direction for NSCC and gives our participants extraordinary opportunities to transmit data over the Internet with certainty and confidence. Over 2,000 digital certificates have been issued, and we now process in excess of 12,000 transactions per day through PCWeb Direct. In 1999, we will expand the applications accessible through PCWeb Direct to include several for mutual fund, annuity and life insurance services.

Our public Web site — <http://www.nsc.com> — has also received high praise from participants for the depth and quality of marketing and educational information. In addition to product fact sheets, marketing brochures, Important Notices, rule filings, press releases and newsletters, several significant changes were made to the site in 1998. Users can now choose to access the site by a single product segment; a virtual training site allows users to drill down and learn about services from high-level overviews to specific record layouts; and an expanded news bureau helps trade media report on NSCC's service announcements.

New efforts are under way to use the public Web site as a portal through which participants will access a firm-specific "home" page, with digital certificates used to ensure proper security safeguards. Through this site, firms will access their Participant Information and Efficiency Reports (PIER), billing and settlement information and the status of their technology efforts with NSCC. In addition, this portal will offer secure access to file formats, technical reference manuals and interactive communication on new developments.

While prudent in our approach and aware of our responsibility for safety and soundness, we nevertheless remain determined to innovate. In 1999 and beyond, we will use the Internet and Web technology to transform how we interact with our

customers, from product delivery through to customer service.

Anthony Guardascione, Director, Systems, and **Jeannette Rosario**, Business/Systems Analyst, Systems (far left); **Crystal Levy-Bueno**, Manager, Corporate Communications, and **Brian Callaghan**, Director, Systems (left).

