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Evaluation Findings of the Real Time Gross Settlement (RTGS) System

Task 1.6.5 (Preliminary Draft Report)

A. Introduction

During the period June 2 through June 11, 2003, Mr. Howard Crumb, formerly Federal Reserve Bank of New York, as a consultant for IBTCI, visited the Eastern Caribbean Central Bank (ECCB) to review plans and ensure that the strategy, plan and resources to implement a modern RTGS are properly formulated.

The consultant met with officials of the ECCB and commercial banks in St. Kitts to assess the status of current capabilities. The consultant wishes to thank Governor Sir Dwight Venner, Deputy Governor Errol Allen, Mr. John Venner, Director Banking and Monetary Operations Department (BMOD), Ms. Brontie Duncan, Deputy Director BOMD, and Mr. Henry Hazel, Project Coordinator for arranging meetings with ECCB staff, bankers, industry providers of services, and others who shared information and participated in the discussions.

B. Executive Summary

ECCB has made substantial investments in software packages that are planned to be the forerunner of an effective RTGS capability. Several capabilities already exist in the system and other capabilities are being developed as enhancements to improve attributes of the system. In the following sections there is discussion on a number of points to assist ECCB in observing the Core Principles. The following recommendations are presented for management consideration:

1. Offer remote access to banks and other authorized users through the VPN – remote access technique. Some users may not have access to SWIFT services. The VPN approach will generally be more cost effective for all users initially. Later, when demand warrants, the SWIFT interface could be implemented.
2. Initiate a project to study the various alternatives for cost recovery of payment system services. While ECCB may have this project as a lower priority, much background work will need to be accomplished before any pricing scheme is adopted. A policy objective should be developed and disclosed through some form of public notification.
3. Continue the ongoing work with business continuation planning. An effective plan requires periodic testing to be part of normal daily operating processes to assure availability of knowledgeable staff and that equipment is working to support operations when abnormal conditions are experienced.
4. Maintain close liaison with the private sector providers of critical services. This liaison usually facilitates restoration of services following an unanticipated outage and improves reliability of critical services.
5. Assure bankers understand the need to closely monitor their account balances that will be changing more rapidly with RTGS payment services than has been the case in the past. Use of the intraday liquidity facility, which ECCB has already established, may be more prevalent in the future and the banks should understand how to access and use the facility.

6. Review the policy about allowing third party (beneficiary) information in bank-to-bank transfers as is currently permitted with government transactions. This will be extremely useful to banks in that they will not have to fax, or use other notification services, to advise the receiving bank about the use of incoming funds.

C. Background

The ECCB currently operates a RTGS system. It is based on the GLOBUS software package that was acquired for the ECCB's accounting operations. In addition to supporting the ECCB accounting operations, GLOBUS processes and records commercial bank transactions in an "on-line real-time" mode. Transactions, when authorized, are posted directly to the bank's current account by ECCB staff. ECCB staff considers the transactions final and irrecoverable when posted. Authorized users, using dial up access at their expense, are able to view their balances and recent transactions (for up to two days) on demand. The GLOBUS system also provides support for the multilateral net settlement of the cheque clearing operation that occurs in each of the eight ECCU countries and the Securities Exchange. In total there are, on average, 125 payment transactions per day processed by GLOBUS.

The GLOBUS system became operational in June 2000. In 2001, a modification was installed to deliver advice and confirmation information, upon request, from the GLOBUS software system straight through to the commercial banks. GLOBUS interfaces directly with the SWIFT system as a delivery mechanism for those advices. The GLOBUS system, after stabilizing from the initial implementation, has been working effectively for the ECCB.

D. Initiatives-Direct Access by Banks to GLOBUS

The ECCB wants to provide banks with the capability to input their transactions directly to the GLOBUS system for processing. Currently, the ECCB receives transfer requests by fax or SWIFT from the banks. The ECCB staff enters, verifies and authorizes (on behalf of the banks) the data for processing by the GLOBUS system. The proposed concept would allow for straight through processing (STP) by ECCB.

There are two approaches being considered to receive transfer requests from the banks. The first is to develop an internet based "virtual private network", which would be application independent and the second is to receive transfer requests over the SWIFT system with a direct interface to GLOBUS for processing the data. Both have distinct capabilities.

In January 2003, the ECCB issued a "Request for Proposal" (RFP) to enhance the capabilities of the GLOBUS software system which would allow commercial banks and other authorized users to directly access their respective accounts at ECCB, monitor transactions, initiate transfer requests, reprioritize requests in queue, manage their liquidity positions and review the status of their accounts at any time during the working day. Some of these features are already available under dial up arrangements which allow banks to "read only" information for their respective account (i.e. account balances, processed transactions for verification and reconciliation purposes), but does not allow initiation, authorization or reprioritization of transactions.

Information was solicited from vendors in response to the RFP for implementing STP for incoming transfer instructions by GLOBUS. The first concept would have the GLOBUS system receiving the

request from the SWIFT network. GLOBUS would automatically read and verify the authenticity of an incoming transaction. It would then take the contents of the message and process the data as if it was a transaction entered by ECCB staff. The system would then advise the receiving bank about the credit to its account and related beneficiary data. While the interface to SWIFT currently exists for sending advices, to achieve the STP mode of operation would require modifications to the GLOBUS software to receive and authenticate the validity of incoming messages from the SWIFT network, select the appropriate data elements from the SWIFT message for processing, and to post a transfer of balances between sender and receiver accounts.

The second approach is to use the VPN (being installed in June 2003) to allow banks remote access to their accounts for entering, authorizing and reprioritizing transactions in addition to the features currently available under a dial up capability. This would require ECCB to purchase a web browser with software interfaces to the GLOBUS system. The clerks at the banks, and other authorized users, would input transaction information directly into the GLOBUS system similar to the data entry, verification and authorization process used by the ECCB staff. The primary difference is that authorized users would only be able to access their respective account while the ECCB staff currently accesses any account. Users entering data would be fully responsible for accuracy of the data and any errors would require resolution on a bilateral basis between the sender and the receiver of the disputed transaction. Banks would enjoy a lower access charge since the internet connection would not involve a long distance call from seven countries in the ECCU outside of St. Kitts. This access charge is also considered lower than the SWIFT usage fee.

In June 2003, ECCB is planning to install the hardware and software for a VPN with the appropriate security safeguards and unauthorized intrusion detection capabilities. The system is being developed by IBM and will be using CISCO hardware for encryption, firewalls and other security safeguards. It will be application independent. ECCB is funding the project.

Costs of acquiring either of the previously discussed enhancements (SWIFT inward processing or remote access using the VPN) and installing interfaces to the existing software range from EC$ 200,000 to EC$ 450,000 in addition to the costs already expensed for the VPN. However, after discussions with the users and based on the volume currently being processed, ECCB may wish to initially provide only one option for accessing GLOBUS by authorized users, rather than providing the users with two options. It is noted that some authorized users (governments and other statutory bodies) do not have direct access to the SWIFT network.

The amounts for the software installation seem rather high when one looks at the volume (currently an average of 50 bank to bank transactions per day, but a reported peak of 300 on one day). These transactions represent transfer of funds for direct presentment of large value cheques, FX deals, interbank market transactions and other bank-to-bank transactions. (This volume does not include the multilateral net settlement transactions.) It is hoped that remote access, at a modest connection cost, will be highly reliable and support an increase in the number of intercountry bank-to-bank transactions. The end result should reduce the time to move funds between countries and improve the availability of funds for customer accounts to facilitate ECCU inter country business. It should also provide for improved efficiencies with government and other authorized user transactions. No decision has been reached by ECCB in selecting a vendor to meet the needs as outlined in the RFP.

ECCB should accrue some offsetting savings for this software expense through possible staff reductions for internal procedures associated with the need for data entry, verification and assuring data is entered

correctly by the ECCB staff. Allowing direct access to initiate transactions by users will eliminate this need. However, about one third of the transactions (on average 40 per day) relate to the cheque clearings multilateral net settlement entries and securities exchange multilateral net settlement. The BMOD staff enters this data, but under the proposed remote access approach, each representative office and the Eastern Caribbean Securities Exchange, could enter the data for their respective multilateral net settlement transactions.

E. Cost recovery and pricing

ECCB only charges a fee for advising a bank of posting a credit transaction. The advice, when requested, is forwarded over the SWIFT network and the charge to the receiving bank is EC$ 5. This fee has been in place for some time. There are no other charges for central bank payment services assessed by ECCB.

The ECCB is planning to initiate a study to develop a pricing scheme that will reduce the subsidization of these services and obtain a level of cost recovery. The objective of full cost recovery will be a longer term development that may occur over several years before it is fully achieved. This is because ECCB has a goal of implementing a superior payments system for the ECCU and concurrently developing processes that will assure observance of all Core Principles, of which cost recovery is reflected in Core Principle VIII. However, once ECCB agrees (using the Payments Council as an advisory group) on an approach for cost recovery, it should disclose its objective through some form of public notification.

In developing a cost recovery scheme two types of costs need to be considered - capital (development) and operational (transactional). Capital costs are considered those that represent expenditures for equipment and other assets that have an expected use over a period of time longer than one year. Examples are computers and related equipment, software, furniture and fixtures. Costs for these type items are usually depreciated, or amortized, at an agreed upon rate using estimated life expectancy of the asset. Each asset is considered to have its own projected life and a monthly charge would be incorporated in total monthly costs for use of these assets.

Operational costs consist of three categories; direct, allocated (shared) and overhead costs. The direct costs are generally easy to identify. They represent resources that are solely dedicated for the operation. This would include people, supplies, equipment, software maintenance, leased communications capabilities, utilities (e.g., electric, telephone, etc.), maintenance contracts and other resources dedicated to support the operation of the payment system with a short useful life. However, at ECCB there are only a few transactions that can be identified to be payments on an average day. Therefore, people are performing many activities, several of which may not be related to payments. Further, the computers and GLOBUS software perform a variety of activities that go to support other ECCB requirements in addition to payment activities. Thus, there may be few identified direct costs and more shared resources relative to transaction processing as described below.

Allocated costs become more controversial, especially when people and other resources are devoting time to more than payment system activities. Some type of formula needs to be developed which would allow for allocation of these shared resources that are used to support multiple activities. These formulas may be developed on the basis of daily time sheets, or from time measurement studies that are periodically updated to determine how people are using their time for various assigned activities. Other allocation techniques may be based on the number of transactions processed as a percent of total transactions, or some method of percentage allocation based on the number of different activities

assigned. For management, sometimes the allocation is related to the number of people being supervised and prorated among the various activities assigned. Alternatively, allocations might be a percentage of total expenses as they relate to budgeted expenses.

Lastly, overhead costs, however defined, must be prorated to the various activities making use of the resources. Some areas which involve costs but have little realized value are unused capacity of computer hardware and software which are often installed to allow for processing new applications, process increasing (or anticipated) transaction volumes, or to meet peak period demands for service when transactions are unusually high in number. Another unused capacity is space that may use air conditioning, cleaning and other maintenance resources. A realistic and logical approach is needed for assigning these costs to the payment system.

Typical overhead costs relate to maintaining buildings (e.g. cleaning, air conditioning, repairs, protection services, or special employee areas such as cafeteria and dining rooms, libraries, etc.) executive management and other expenses that cannot be allocated to any given area. Allocation of these overhead expenses could be on the basis of percent of space assigned to total space available, number of employees assigned to a direct area as a percent of total employees of all areas, or an allocation of time consumed for the primary purposes for the existence of ECCB (i.e. monetary policy, supervision of banks, distribution and maintenance of currency, administrative responsibilities, etc.)

The process of identifying costs for operating the payment system is not an easy task when one looks at all the associated costs that are involved which consume only part of a person's time and effort and the use of other resources for multiple purposes. In addition, the sharing of resources (people, material, supplies, etc.) makes the public understanding of such costs more difficult. Such a project will be lengthy and time consuming to fully understand and justify all costs.

ECCB has already made some substantial investments with the installation of the GLOBUS on line real time accounting software package that is providing the infrastructure for the RTGS system. In addition, enhancements have been implemented and since these costs may be more accounting related than payments related, the ECCB will have to make a decision as to how much should be allocated to the payments arena. Similarly the costs of installing a VPN already funded will need to be reviewed in a similar manner. Analysis of the planned enhancements should be reviewed as a service to banks with consideration as to how implementation costs might be recovered by the payment system. Charges to users could be based on type of access, especially if there are different options, basic services (e.g. account balance, inquiries, etc.) plus a usage (transaction) charge depending on the number of transactions.

Once costs have been identified for the operation of the payment system and generally agreed they are representative, then volume figures are obtained to determine unit costs. If processing costs are calculated on a 12 month basis, then volume figures should represent the similar period. Based on this data and the role of ECCB in the payments area will determine the level of unit pricing it wishes to assess and would identify the level of costs that it would recover.

Before announcing prices it is useful to model the level of expected revenues and the impact that might occur should the volumes of transactions anticipated not materialize. Alternatively, plans should be made to determine what might happen should there be greater volumes than anticipated. Past history is often a useful indicator, but with the low volumes currently experienced by ECCB, this information may not be as useful. Indications of growth may be more beneficial and the analysis of different models

would be useful to provide some indications of net revenue generation from various pricing levels and help the decision making process for establishing prices.

Collecting recurring costs for monthly analysis is a major computer effort once the various cost centers have been identified. Use of programs will be important so that data may become available for analysis in a timely manner at the end of a collection period. Concurrently, assessing charges to the users and collecting those fees are equally important. This also relies heavily on computers collecting the data and posting the charge to the users account on schedule. Users should be made aware of charges and told in advance so that they may make provisions in their budgets. Also bilateral agreements should be designed so that users agree to pay the charges, understand processes for resolution of disputes, and recognize the ability of ECCB to periodically modify prices.

Analysis of projected data to experience (e.g. actual expenses, fees received and volumes processed as to original projections) would occur periodically so that adjustments could be proposed that would allow the ECCB to achieve its cost recovery objectives. It may be that ECCB would have a longer term objective to achieve full cost recovery. Implementation of this objective may start fairly early on a phased basis so that it will take a period of years before full cost recovery is achieved. It should be understood that ECCB will be in a learning mode as it attempts to understand the costs of operating the payment systems and the volume it will generate to offset those costs. Subsidization of payment services should be reduced to zero over time.

The current ECCB volume does not lend itself to rapid cost recovery and effort will be needed to make sure the authorized users understand the value of the payment system and the prices assessed. This will require an extensive educational process to assure bankers understand how they may provide increased value to their customers through improved availability of funds. Moving from a free service to a priced service often increases value to all parties.

F. Business continuation planning

The ECCB is taking a very positive role in addressing business continuation planning. It has established a Business Continuity Committee headed by the Managing Director. Other members consist of Directors of all departments along with Staff Members of the Support Services management and Human Resource Departments. The objectives of this Committee are to; ensure that the Bank is fully prepared to cope with disasters, oversee the Bank's return to business in the event of a disaster or other disruption, and develop the Bank's Business Continuity Plan and review and update on an ongoing basis. This latter objective should also include testing and enhancing the plan from time to time to assure all the components are in place and can function should there be a need to use the plan in an emergency situation.

The ECCB has made good progress in providing for reliability of payment services for the current payment system. They have redundant processors and power back up equipment that allow the Bank to maintain operations in case of temporary disruption of services and short term (less than one day) emergencies. The major threat to operations is hurricanes which can interrupt services for a lengthy period. In addition, ECCB has provided for the off-site storage of computer tapes containing databases and accounting information on a weekly basis. (Backup data is stored on site in a secure vault each day.) However, any business continuation plan always assumes two major elements; the availability of people with the proper set of skills and the availability of reliable telecommunication services.

The Telecom Company recently installed fiber optic cable in St. Kitts which is underground and quite well protected from water seepage in the public thoroughfare. It has been installed as a ring configuration around the business area near the Bank. Even the copper lines are said to be protected from such outages because of underground installation. ECCB telecommunication threat is not having two different accesses (for telephone lines) to its buildings and not having readily available alternate routing of cables to the central exchange of the local telephone service provider. On the other hand, telecom service has been satisfactory as of late.

The inter island communications for the ECCU is also vulnerable, but in many cases there are two cables between the islands and other connections operate in a ring configuration. Some satellite service is available. However, whenever one discusses the greatest vulnerability in communications services, it is the connection between the customer (in this case ECCB or the banks) and the closest telephone exchange, not the inter country connections.

There are competitors providing alternative service moving into the St. Kitts area. Some are using the local telephone services and others are developing their own infrastructure. It was noted that one private carrier was installing fiber optic cable, but it was on telephone poles rather than underground. Being on poles could make it quite vulnerable to high winds from hurricanes.

The ECCB recognizes that it must move forward and expand its current reliability capability into an effective business continuation plan to provide services should its headquarters become unavailable for some time. ECCB staff is looking at a variety of alternatives. One alternative is a separate site on St. Kitts that would be able to process the workload. Another alternative is expanding one of their Representative Offices in another ECCU country to function as an alternative site for processing and providing minimal services during periods of extended outages. Either approach would require additional equipment in the selected office along with some additional personnel skills to assure the operation would work when needed. Also, data would have to be forwarded on a timely basis so the alternate site could become operational within a short period of time.

Since hurricanes are the major threat, it is doubtful that ECCB would be able to relocate people on a timely basis to assure continuing operations. The remote location would need some minimal level of skills to support hardware as well as normal operating procedures of BMOD and other related areas.

Whatever approach ECCB follows, it will require an investment of resources to provide for continuing operations. Depending on how they might structure the approach, it would be best that the resources are used on a continuing basis and not just tested periodically. Understanding procedures for daily operations and performing those procedures periodically facilitates the alternative operation in a cost effective manner and may assure the most effective use of the assigned resources. Part of the resources for business continuation will necessarily need to be included in the cost recovery for payment services, previously discussed.

G. Telecommunications capabilities

Telecommunications capabilities to support the payment system infrastructure need to be reliable and have alternatives available in case of severe, or lengthy, outages. Outages of less than 15 minutes can be tolerated from time to time. However, as users gain confidence in the RTGS operation and become more dependent on interbank electronic payments, the reliability of the telecommunications

infrastructure becomes more critical. Longer term outages become intolerable since the telecommunications is a major component to transfer payment system information.

Most providers of payment system services rely on local telecommunication providers for communication services. They can become victims of the available service provided because building one's own reliable communications network is economically prohibitive. Having frequent meetings with the telecommunications provider can often lower the risk of severe outages and improve the time frame for restoration of service following an outage.

In St. Kitts, as in all the ECCU countries, the most vulnerable service point is from the customer premises to the local telephone office where the switching is accomplished. This office may be the same office that services both the banks and the other authorized users because of the small populations, small economies and limited infrastructure services available. Alternate routing capabilities (i.e. having a separate access point to the bank and following a separate route through the telecom conduits and even accessing a different telephone office) are generally not available. However, on St. Kitts, the telecom company has recently installed a fiber optic cable in a ring configuration through the business district and the switching office. This will provide for an improved level of service for those who use the service. The vulnerable point then becomes the central switching office as the small economies make it difficult to support more than one switching office.

Any solutions for business continuation under a variety of scenarios will involve telecom planning to assure adequate resources are available for payment system services and are able to function when needed. There is no one best solution, but periodic testing and continuing to improve the business continuation plan will help ECCB meet the overall intent of Core Principle VII.

H. Liquidity management – intra day

With the introduction of GLOBUS and its real time posting to commercial bank accounts, the process has required banks to be more aware of continuous changing positions in their ECCB current accounts throughout the day. To this end, ECCB recognized that banks might, at times, have difficulty maintaining a balance in their account during the day. ECCB developed an intra day liquidity facility which became available in October 2001.

The facility is based on rediscounting Secondary Market Treasury Bills where the ECCB will buy back those bills that the bank originally purchased from the ECCB. The second approach is for the banks to provide collateral for an intra day loan. Lastly, there is nothing to stop the banks from borrowing and lending between themselves based on their credit worthiness among their peers.

ECCB procedures require that an intra day collateralized loan must be set up in advance and the collateral pledged to ECCB for this purpose. The arrangement is good for 90 days and the bank may borrow against this availability of credit during that time. Once the 90 days has expired, the credit must be renewed for another period of time up to 90 days. The GLOBUS RTGS system is already technically capable to accommodate the process of managing intra day liquidity as set up by ECCB.

In addition, to the above arrangements, banks may sell foreign currency to the ECCB. ECCB will act upon a foreign currency notice to receive funds after receipt of confirmation from the correspondent bank that funds are in the ECCB bank account. These ECCB accounts are maintained at the Bank of England, Bank of Canada, or the Federal Reserve Bank of New York. The funds must be available on value date.

There has been little usage of the intra day liquidity facility because of the ample supply of liquidity in the banking community and the low volume of transactions. As the GLOBUS system remote access enhancements become available to allow users to initiate transactions directly and to improve ECCU inter country flows of funds, it remains to be seen whether there will be usage of this facility.

I. Summary

The ECCB is determined to increase the level of observance of the Core Principles for Systemically Important Payment Systems. The cheque clearing system is a very important system in the ECCU today. Allowing authorized users direct access to GLOBUS should facilitate the transfer of large value payments more efficiently and potentially reduce the systemic importance of cheques over the longer term. Other parts of this project have addressed many issues of observing the Core Principles (Section 1.6.1-Legal and Regulator Framework, 1.6.2-Goverance, and 1.6.3-Self Assessment). This part has attempted to discuss several issues (e.g. business continuation, cost recovery, and intra day liquidity) where ECCB does not fully observe the Core Principles for the systems that it operates and outlines some of the work to be accomplished. ECCB will need to prioritize its workload and address these issues independently of each other and interdependently perform another Self Assessment in the future. ECCB is committed to achieving full observance of the Core Principles in the foreseeable future.