



What is the VIBER?

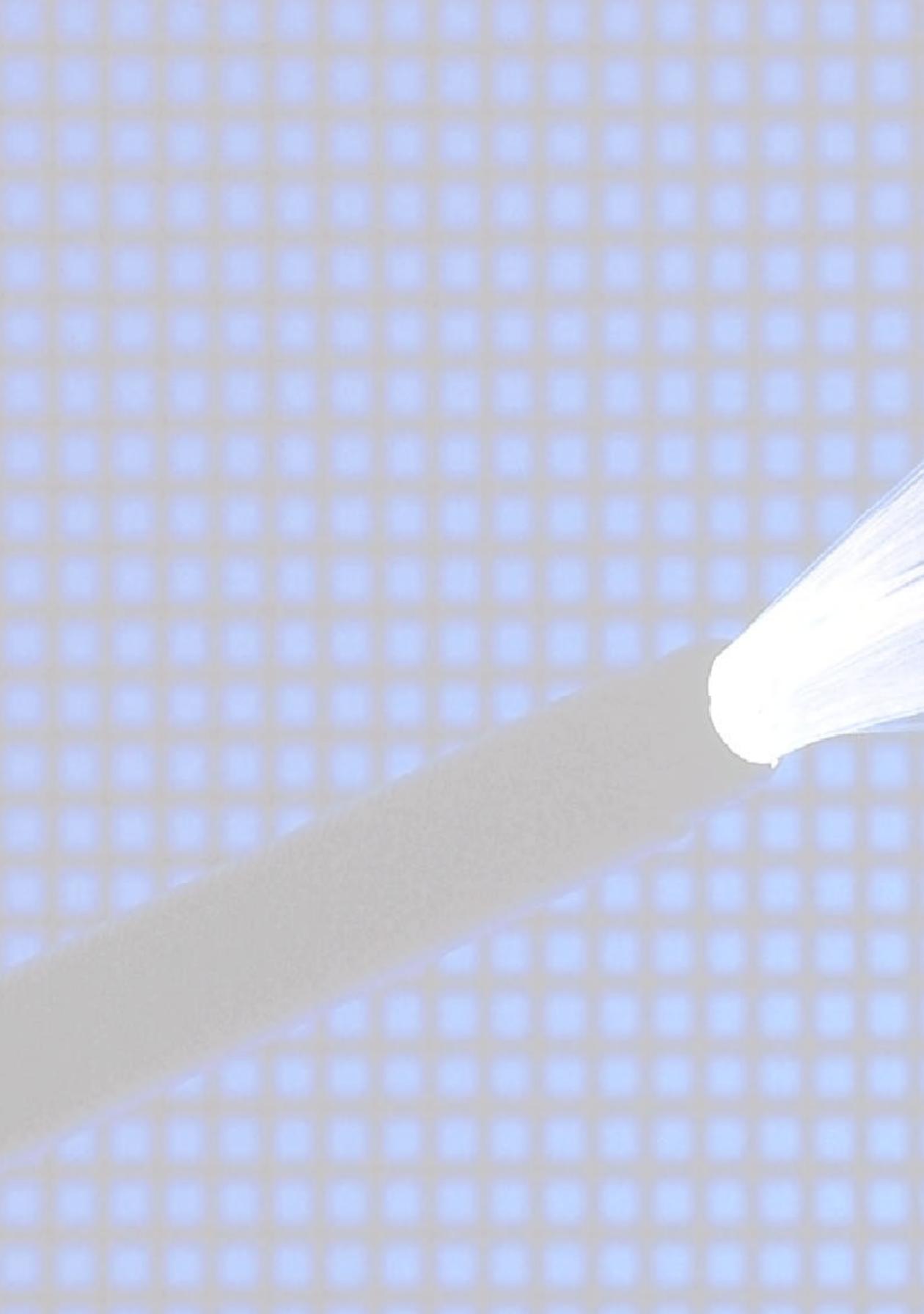
(Real-time
Gross
Settlement
System)

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Contents

| | |
|---|----|
| General overview | 5 |
| The purpose of implementing VIBER | 8 |
| Members and users of VIBER services | 10 |
| The structure of VIBER | 12 |
| Operation of VIBER | 14 |
| Upgrading VIBER | 17 |



General overview

The Real-Time Gross Settlement System (known by its Hungarian acronym, VIBER) is a new domestic payment system developed and operated by the National Bank of Hungary (NBH). The launch of VIBER is an important milestone in the comprehensive development of Hungary's payment systems. VIBER begins operation on September 3, 1999. The system will be implemented in several steps and from the second half of 2000, customers of banks may also request that their transfers be directed through VIBER.

Two complementary payment systems will be operating in Hungary from September 1999. The Interbank Clearing System (or, as it was earlier referred to, the Interbank Giro System) has been in operation since 1994. This system has been developing continuously and will also play an important role in the future. The giro system is operated by the Giro Elszámolásforgalmi Rt. (a company jointly owned by commercial banks and the NBH).

Implementation of the real-time gross settlements system is not without antecedents: it carries on the account management services of the NBH. Over recent years, the NBH has provided important payment services to its account holders. The volume of turnover in the NBH system has been relatively modest, but its value has nearly corresponded to turnover in the giro system. The average value of a transaction on the NBH accounts is around half a billion forints (two million euros). The NBH modernised its account manager system over the past few years, but this was difficult for account holders to notice, as the paper-based method of submitting orders and notification of customers remained unchanged.

a new domestic payment system

two complementary payment systems

antecedents

The expectation that the central bank should provide electronic banking services has been voiced for years. With the implementation of the VIBER system, the demand for electronic messaging will practically be resolved for VIBER members.

high value, urgent payments

VIBER and the Interbank Clearing System complement each other harmoniously. VIBER is designed to handle high value, urgent payments, which occur in small numbers. The Interbank Clearing System specialises in handling and clearing large volumes of low-value commercial and private payment orders.

settlement prompt

The operating mechanisms of the two payment systems differ. In both systems, final settlement of banks' claims and liabilities arising from transmitted payment orders is effected in the settlement accounts managed by the central bank. In VIBER, settlement takes place immediately item by item for each transaction. In contrast, in the giro system the end-of-day net position is settled once a day.

prompt notification of the members

VIBER is a real time system, meaning that payments are settled immediately, within seconds or at most minutes, by debiting the settlement account of the sender and crediting the account of the receiver. Transactions are settled one after the other continuously, with simultaneous notification of the members involved. The VIBER account manager system is automated, i.e. there is no need for human intervention in settlement.

finality and irrevocability

The settlement of payment orders is effected in the settlement accounts of the members and orders performed are final and irrevocable.

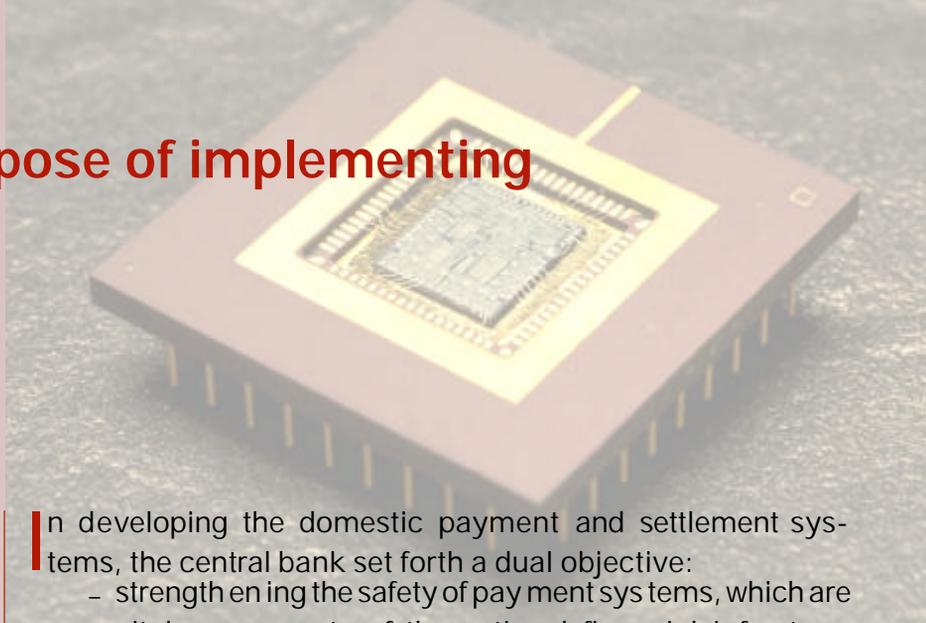
The beneficiary will be immediately notified of the incoming payment and will immediately have access to the amount credited, whereby the total amount of daily payments may exceed the value of the stock of money in the system by a multiple.

The establishment of a real-time gross settlement system is also an important fact from the perspective of accession to the EU. Every EU member state has a real-time gross settlement system and it is expected that newcomers also be prepared in this respect.

The real-time gross settlement systems of member countries participating in the monetary union of the EU have been linked together and are being operated as a uniform network under the name TARGET. The NBH is technically prepared for linking VIBER to TARGET.

*TARGET
compatibility*

The purpose of implementing VIBER



safety

efficiency
credit risk
liquidity risk

In developing the domestic payment and settlement systems, the central bank set forth a dual objective:

- strengthening the safety of payment systems, which are vital components of the national financial infrastructure;
- improving the efficiency of the systems.

Credit risk, which poses the greatest threat to the safety of payment systems, has already been successfully eliminated from the accounting system of the NBH, as orders are settled subject to cover check in both the account manager system and VIBER. The principle of cover checking substantially reduces *liquidity risk*, as well. This type of risk, however, cannot be fully eliminated from any payment system. In gross settlement systems liquidity risk appears as a risk of *gridlock*. Gridlock occurs if payments cannot be settled owing to insufficient liquidity of the participants. The banking sector has an interest in holding the lowest level of reserve balances possible under the given circumstances, hence it needs to have appropriate tools to balance the demand for a smooth, secure flow of payments and efficient liquidity management.

The following features of the system facilitate efficient liquidity management:

- immediate notification on settlement;
- central records of payment queues;
- account holders can set priorities for their payment orders and rearrange their own queue;
- enquiring of queued incoming payments in favour of the account holder;
- automatic resolution of gridlock;

- collateralised, intra-day central bank credit facility;
- extended operating hours.

In addition to credit and liquidity risks, *operational risk* (risk of human error or failure of hardware, software or communication components as well as breakdown of vital utilities) deserves particular attention. From this point of view, the most important factors are the central component of the system, the account manager system of VIBER, and the communication network.

operational risk

VIBER's backup accounting system is in operation continuously; in the event that the system is interrupted, the backup system can take over functions within a very short period without losing or damaging messages. Communication among the members of the system is provided by S.W.I.F.T. which is used by thousands of banks world-wide and is a highly reliable, well-tested network. Both VIBER's account manager system and the S.W.I.F.T. network are Y2K compatible.

Currently, credit transfer transaction between clients of two banks cannot be completed within one day. VIBER will make this possible when customer transactions are accepted. This service can contribute to the reduction of the cost of financial intermediation and provides customers with an efficient risk management tool. Same day transfers are particularly important for the money and capital markets. Same day transfers reduce the level of exposure and counterparty risk, thereby assisting in the growth of trading and improving the *efficiency* of the operation of commodity and financial markets.

customer transactions

VIBER can eliminate *principal risk* of securities market transactions through the link established between VIBER and the real-time gross securities settlement system of KELER Rt. (Central Clearing House and Depository Ltd.). The cash settlement of so called DVP (Delivery versus Payment) securities transactions can only be effected if the securities to be delivered are available. With the implementation of VIBER, members of the system may continuously use this facility, enabling them to trade the same securities several times on the same day.

DVP transactions

PARTICIPANTS AND USERS OF VIBER SERVICES

director in direct participation

The *participants of VIBER* include credit institutions, the Hungarian State Treasury, KELER Rt. and the NBH.

A credit institution may be a *direct or indirect (correspondent) participant* of VIBER. Pursuant to Act CXII of 1996 on Credit Institutions and Financial Enterprises, credit institutions authorised to provide payment services (not including co-operative credit institutions) are required to link up directly with national payment systems; hence they must become direct participants of VIBER and the Interbank Clearing System.

Credit institutions which are not required to become members of VIBER may also link up with VIBER indirectly, irrespective of whether they are clients of NBH or keep their accounts with the Magyar Takarékszövetkezeti Bank Rt. (Bank for Hungarian Savings Co-operatives Ltd.).

The *Hungarian State Treasury* can be regarded as a quasi-bank organization as far as its business administration is concerned and, as such, participates in the system.

KELER is a highly important member of the system. To a certain extent, it functions similar to a bank, as it keeps cash accounts for investment service providers. As the operator of the securities settlement system, it manages the securities that serve as collateral for intraday credit and provides the securities side settlement of DVP securities transactions.

The *NBH* participates in the system not only as an ordinary participant, it also operates VIBER and within this framework administers the settlement accounts of the other participants.

The Hungarian State
Treasury

KELER

National Bank of
Hungary

Initially, only direct and indirect participants of VIBER will be the users of its services. *Customers of banks* will be able to enjoy the advantages of the services from the second half of 2000. From that point on a customer can ask its bank to arrange for same day credit to the beneficiary of its transfer order.

customers of banks

The structure of VIBER

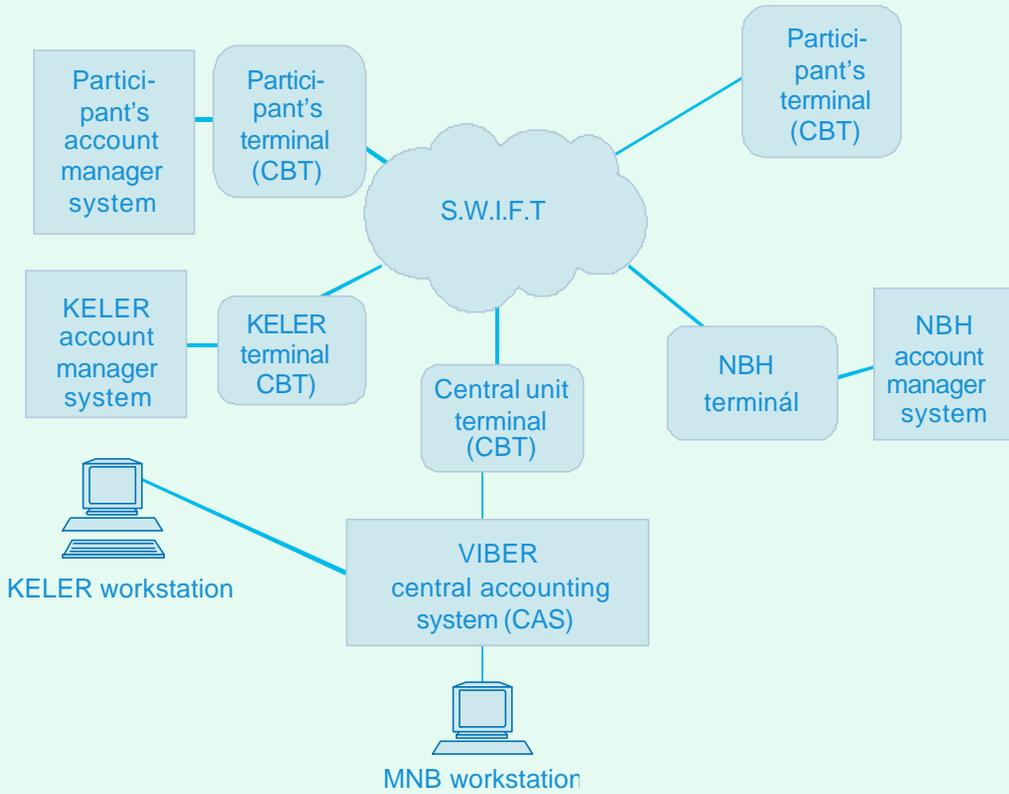
*central accounting
system(CAS)*

*S.W.I.F.T
Y-FIN copy service*

system monitoring

The heart of VIBER is the central (CAS) accounting system, which operates at the National Bank of Hungary. Participants send their payment orders through the S.W.I.F.T. logical terminal to one another. Participants use S.W.I.F.T.'s so-called Y-copy service to transmit orders. This means that the messages are not transmitted directly to the addressee: they are stopped and stored by S.W.I.F.T. and an extract of the message is transmitted to VIBER's central account manager system for the purposes of fund check and settlement in the central bank accounts. The central bank, which operates the system, cannot see the full message, for instance, why and on behalf of what customers the transaction is being effected – it only learns of the banks concerned and the amounts. If the central account manager system of VIBER verifies performance between the accounts of the banks with an answer message, the S.W.I.F.T. system transmits the order to the beneficiary.

At the special workstations installed at the NBH, it is possible to directly capture transaction data without using the S.W.I.F.T. network. The central bank initiates certain operations exclusively at the workstations, which are also capable of monitoring the system. By virtue of its special role, KELER has a limited-function monitor through which it is able to monitor the cash-side settlement of the securities transactions it submits.



Operation of VIBER

same day or forward value transfer orders

Members may only initiate transfer orders through VIBER. These may be due on the same day or they may have a forward value. The giro system will continue to process collection orders, checks, letters of credit, etc.

central bank transactions

Certain transactions related to the central bank are processed using a special procedure, such as cash withdrawal, loan disbursement or the placement of deposits. In such cases the relevant order will also have to be submitted on paper in the future. Data capture will be carried out by NBH staff members in the CAS, the remaining steps, however, will be automated just as in all other cases. The NBH will continue to book certain transactions in its account manager system before the opening and after the closing of VIBER (these include, for instance, foreign exchange transactions concluded with the central bank, loan and deposit repayment, settlements on closure, etc.).

DVP securities settlement

The procedure followed for OTC DVP securities transactions is also specific. The VIBER members or KELER customers (investment service providers) should capture deal slip data in their information terminals installed by KELER (KID). From then on, they have nothing else to do: KELER will initiate settlement on the basis of the matched transaction slips. KELER checks availability of securities on the seller's account and blocks these securities, then forwards a transfer order to VIBER on behalf of the buyer. If one of the parties is a KELER customer, then KELER will be the counterparty of the VIBER member in cash leg settlement. Both legs of the trade are settled in real time, automatically on gross basis.

There is no partial settlement in the VIBER system. The transactions are settled on the FIFO (first in first out) basis. In the event that there is insufficient liquidity orders are queued. The system deletes queued payments at the end of the day or at the submitter's request. Queued payments are settled automatically if received payments or an increase of the intra-day limit provides sufficient liquidity for the first payment in the queue. The participant itself can facilitate settlement by rearranging its own queue, which is possible in two ways: by withdrawing orders and submitting them in a new order, or by changing the priority codes of the queued orders.

If several participants are queued and the system recognises gridlock, an automatic gridlock resolution mechanism enters into operation. This does not lead to the rearrangement of the queues nor results in negative liquidity for any participant at the end of the process i.e. gridlock resolution does not hurt the FIFO principle.

Credit institutions may block securities, which the NBH accepts for repo transactions, in favour of the NBH at KELER. The intra-day credit limit corresponds to the amount of blocked securities. During VIBER opening hours, a limit can be requested, raised or reduced at any time. Limit reduction is possible on the condition that the corresponding liquidity is available on the account of the participant.

A VIBER participant, which has requested intra-day credit for its payments in the giro system, will already have a limit at the opening of the day. Increasing or reducing the limit are both initiated at KELER. If the balance of the account of a VIBER participant bank shows a debt at the end of the day, the NBH will automatically extend a loan for one day using blocked securities as collateral, without separately concluding a credit or loan contract.

A participant of VIBER will continuously be able to monitor its current account position. It receives messages on both incoming and outgoing payments, on creation and termination of queues, as well as on any increases or decreases in the limit. Such information enables the participant to determine its own position.

*FIFO rules
queue management*

*automatic gridlock
resolution*

intra-day credit limit

enquiry function

The enquiry function allows for the comparison of the position calculated by the member and the actual position in the system as well as access to further information regarding which the system does not automatically send messages.

A participant is able to query the actual turnover in its account, the orders queued in its account, and the credit entries which have been initiated to its account but not yet settled due to the counterparty queue as well as its current limit.

In addition to this, on a daily basis, VIBER participants receive an account statement on their total VIBER turnover through the S.W.I.F.T. system.

With the introduction of VIBER, the opening hours of the NBH will be extended by one hour, providing more time for the settlement of payments than before.

pricing policy

For VIBER participants, the price of transactions consists of several components. A message transmission fee specified by S.W.I.F.T. must be paid on orders, notifications and enquiries. The NBH charges a transaction fee of HUF 1,200 on settled transactions to the holder of the debited account. The fundamental purpose of the pricing policy is that the costs incurred by the central bank in relation to the installation and operation of the system are recovered from the transaction fees.

Upgrading VIBER

The development of VIBER cannot end upon its implementation. The launch of the system is more like the beginning than the end of a process.

Upon start-up, system members will have to begin preparations for introducing customer orders in 2000. It will not be necessary to implement modifications in the central account manager system due to the introduction of customer orders.

The date for the introduction of the so-called monitoring facility has not yet been decided; the NBH, however, intends to implement this in the near future.

The central bank will have to find an appropriate solution for the management of penetration risk arising from the linkage of the systems so that members can use real-time monitors via which they will be able to continuously monitor changes in their account positions.

It is foreseeable that the operation hours of VIBER will have to be gradually extended in the future. This step is dictated first and foremost by the operation of the money and capital markets.

In order to utilise most effectively the possibilities of reducing principal risk by establishing linkage of the different systems extended opening hours are desirable. When extending the operating hours of VIBER, the opening hours of TARGET (currently from 7:00 a.m. to 6:00 p.m.) may provide a useful guide.

The date for shifting VIBER to settlement in euro and its integration into the TARGET system will be determined by Hungary's accession to the EU and the EMU.

preparations for introducing customer orders

monitoring facility

extension of operating hours

