A Study Looking the Electronic Funds Transfer

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The aim of this paper is to present the characteristics of the most important electronic funds transfer in the world, both interperson and interbank. We identified the following informations: location, type, owner, operator, number of transactions, transsactions value, clients, financial scheme and the message format.
Keywords: electronic funds transfer, ACH, SWIFT, CHIPS, TARGET.

The electronic funds have appeared as a necesity in the nowadays financial industry. The most important reasons are the following: [Patriciu et. all,2004]
▪ transaction processing low cost (about 1 dolar/transaction);
▪ low time processing (some minutes to maximum 1 day);
▪ low risk in the financial messages transmission (private, personal communication networks).

Definition: The electronic fund transfer system (EFT - **E**lectronic **F**unds **T**ransfer) represent a set of devices and specific procedures used to make possible the movement of the monetary flux from the payer to the payee, in an exclusive electronic medium. [Patriciu et. all,2004]

Electronic Funds Transfer between persons. Generalities
The electronic funds transfer between per-

sons are made using the two well-known services, MoneyGram and Western Union. They suppose that the sender and the receiver are in an agency where is the logo of the two services. The location of these systems are banks.

The money transfer made by using the two systems isn't especially the result of an commercial act. So it not suppose a payment, because there is a simple money sending from a person to another.

Electronic Fund Transfer systems between persons implementations
We will present the most important characteristics of the two services mentioned above. We used the informations from the book [Vasilache,2004] and the two companies sites.

Western Union   (www.westernunion.com)

Characteristics	Description
Location:	International
Owner:	First Data Corporation
Operator:	225.000 locations in over 195 countries
Services:	Money transfer and messages services
Financial scheme:	A sender (a person) gives to the operator in an agency the money he want to transfer, he mentions the name of the receiver that will receive the money and the agency address. At the sum will be added comissions (10%-15% from the value). The operator will initiate the transaction using a computer and will comunicate to the sender the **MTCN** (**M**oney **T**ransfer **C**entral **N**umber), which is the number of the money transfer transaction. The money could be spended in different currencies and could be received in local curency or US $. The spender will comunicate to the receiver this number and the receiver could take the money from the destination agency using this number. He must known the value, the sender identity and the location from where he receives the money.
Message format:	The message is a payment order to the bank where the agency act.

Moneygram   **(www.moneygram.com)**

Characteristics	Description
Location:	International
Owner:	Viad
Operator:	60.000 locations in over 100 countries
Services:	**MoneyGram® money orders** – payment order **MoneyGram® money transfers** – money order **ExpressPayment® emergency bill payments** – bills
Financial scheme:	The same
Message format:	The message is a payment order to the bank where the agency act.

Electronic Funds Transfer between banks. Generalities

The banks that use the electronic funds transfer service obey to the same rules as follows:
- the data format;
- the transfer details;
- the time table;
- the commisions;
- special conditions etc.

All the grown economies have one or more such a services. At this moment they try to unfied these systems (**SWIFT** - **S**ociety for **W**orldwide **I**nterbank **A**ssociation **T**ele-communication, SEPA - **S**ingle **E**uropean **P**ayment **A**rea).

Between the electronic funds transfer, the interbank electronic transfer has the big volume of money transfer, both number of transaction and the value of the transfered funds.

The most important characteristics of the interbank electronic funds transfer are:

1. The transfer is made after a transfer order addressed to a bank which is a central bank where are the two bank accounts and the funds transferred are central bank money.

2. The transfer could be made in real time (from some seconds to some minutes) or could be made in a bank day.

3. The transfer could be **individual** (**gross**) or **net**.
- the individual transfer suppose that every transaction is processed separately;
- the net transfer suppose the calculus of the reciproc net financial position between every two banks, which represents the result of the all reciproc sendings and receivengs of funds by a day and generally until a fixed and known date.

4. The transfer could be:

- **domestic** (**national**) – the orders transfer are addressed to the central bank;
- **transfrontalier** (**international**) – the orders transfer are addressed to the bank agreed by all banks in the system.

The systems could be used by the participants to make different types of payments:
- between persons (**P2P** - **P**erson to **P**erson);
- between persons and companies (**B2C** - **B**usiness to **C**ustomer);
- between companies (**B2B** - **B**usiness to **B**usiness);
- to the central or local administration (**P2G** - **P**erson to **G**overnment, **B2G** - **B**usiness to **G**overnment).

Interbank Electronic Fund Transfer systems implementations

We will present the most important interbank electronic funds transfer, especially those who have a big value of the transaction. We used the informations from the book [Vasilache, 2004] and the companies sites.

A. ACH (Automated **C**learing **H**ouse)

Definition: The clearing is the procedure by which an organization acts as an intermediary and assumes the role of a buyer and seller for transactions in order to reconcile orders between transacting parties.[1]

Clearing is necessary for the matching of all buy and sell orders in the market. It provides smoother and more efficient markets, as parties can make transfers to the clearing corporation, rather than to each individual party with whom they have transacted. (www.investopedia.com)

Definition: The clearing house is an agency

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[1]   **www.investopedia.com**

or separate corporation of a futures exchange responsible for settling trading accounts, clearing trades, collecting and maintaining margin monies, regulating delivery and reporting trading data (www.investopedia.com).

Clearing houses act as third parties to all futures and options contracts - as a buyer to every clearing member seller and a seller to every clearing member buyer (www.investopedia.com**)**

Characteristics	Description
Location:	SUA
Type:	Domestic, by batch, it isn't in real time
Owner:	Operate according to the rules of NACHA organization and is formed from 12000 financial institutions The owner of the automated clearing house is the **Federal Reserve Banks** (the central bank and its subsidiary) or some private operators.
Operator:	There are four ACH operators. One is the central bank, **Federal Reserve ACH Operator** and three private, one of them is **VisaNet ACH Services**.
Number of transactions:	2001 - 8 billion of transactions
Transcations value:	22,2 trillion $, cumulated
Clients:	3,5 million companies and over 100 million clients
Financial scheme:	The ACH transactions (ACH entries) could be: **debit** or **credit** transaction. A **debit transaction** (debit order) is emitted by an originator to a receiver, namely the receiver's account is debited in favour of the originator account. A **credit transaction** (credit order) produces the invers effect, the receiver's account is credited from the originator account. The banks who execute a credit transaction (they are debited) have the responsability to find out if there are enough funds in the account that will be debited.
Message format:	The transactions are standardized messages, in many formats, according to the **NACHA** rules.

B. FEDWIRE

(http://www.federalreserve.gov/paymentsystems/coreprinciples/default.htm)

Definition: RTGS (Real Time Gross Settlement Service) – is an individual settlement service in real time, with an immediate finality. (http://www.ffiec.gov/ffiecinfobase/html_pages/gl_03.html#R)

Definition: Settlement – in the banking transactions is the process of recording the debt and credit positions of the parties implied in the funds transfer. (http://www.ffiec.gov/ffiecinfobase/html_pages/gl_03.html#R)

Characteristics	Description
Location:	SUA
Type:	Domestic, individual, in real time (**RTGS**), for high value transfers (over 50.000 $)
Owner:	**Federal Reserve Banks** (the central bank and its subsidiary). There are 9500 financial institutions in the system.
Operator:	Is operated by the **Federal Reserve Banks** (the central bank and its subsidiary).
Number of transactions:	2002 - 458.000 transaction/day
Transcations value:	1,6 trillion $, cumulated The transaction cost is 0,168 $ and it depends on the number of transactions and not of the value of transaction.
Clients:	It is used by 9500 financial institutions
Financial scheme:	A transfer transaction initiated by a participant is an ireevocabale authorization gived to the central bank to debt the intiator's account hold by the central bank with a value and to credit with the same value the receiver's account hold by the central bank. The transfer is final and ireevocabale when one of the 12 regional banks have processed the transaction. In case of the initiator hasn't enough funds the transfers made by the receiver are guaranteed by the central bank.
Message format:	The message structure is compatible with the SWIFT and CHIPS international funds transfer sys-

Characteristics	Description
	tems.
	All the messages are codified and the participants who make the transfer are certified by name and password. The main centre where the transactions are processed (**EROC, East Rutherfond Operations Center**) has two reserve systems.
	In the future this system will be transformed in an international funds transfer system.

C. TRANSFOND (www.transfond.ro)

Transfond was found by the order named **Circular number 9/2001**, when the National Bank of Romania has set up Transfond S.A., a society with a private capital.

Characteristics	Description
Location:	ROMANIA
Type:	Domestic, individual, in real time (**RTGS**), for high value transfers (over 50.000 RON), but it can be used for low value transfers.
Owner:	The shareholders are all the romanian banks and the National Bank of Romania is the main shareholder.
Operator:	Transfond SA
Number of transactions:	2003 - 75.000 transactions/day (for paper-based payment – money orders)
Transcations value:	The transaction cost is between 15 and 30 RON.
Clients:	National Bank of Romania, romanian banks, the State Treasury, the authorized settlement houses and other settlement account owners.
Financial scheme:	The system processes the high value payments which are receptioned by the accounts opened at the National Bank of Romania. A transfer transaction is refused if there aren't enough funds in the payer's account.
Message format:	For the foreign currency the system used the SWIFT format message. In the future the Transfond system will be integrated in the european system TARGET.

D. SWIFT (Society for Worldwide Interbank Association Telecommunication) (www.swift.com)

Characteristics	Descriere
Location:	International
Type:	Transfrontalier, with individual settlement in real time (RTGS) or with net settlement
Owner:	It is formed by over 7.800 financial institutions from over 200 countries
Operator:	The system has a powerful centre for transanction processing and a reserve one (in US and Holland)).
Number of transactions:	20 Decembre 2005 – 11,5 million
Transcations value:	It doesn't exist informations
Clients:	Bank's customers
Financial scheme:	**FIN** is the main name of the transport and processing of the financial messages. The financial scheme could be: ▪ **Y** (the payment messages could be kept in the central instittution until it issues an authorization or a payment/transfer refuse); ▪ **T** (the messages are sent direct and immediately to the receptor, without the waiting of the central institution authorisation). The Central Bank could belong to a national banks systemor could be a central financial institution, multinational, which provide transfrontalier interbanks settlement. Each participant could have an SWIFT certfied application which is the interface with the system.
Message format:	The messages are codified and their integrity is verfied by an MAC code. The financial messages are SWIFT standardized according to SWIFT rules (messages in MT format, using the ISO 15027 standard).

E. CHIPS (Clearing House Interbank Payments System) (www.chips.org)

Characteristics	Description
Location:	SUA
Type:	Transfrontalier, but also domestic, in real time, final and irrevocable, with transfer only in USD
Owner:	A big group of banks
Operator:	CHIPS Co.
Number of transactions:	270.000 tranzactions

Characteristics	Description
Transcations value:	1,4 trillion USD
Clients:	It is formed from big banks from 19 countries and executes 95% from the external payment in US
Financial scheme:	It uses a proper multi-lateral netting method, using a pre-funding procedure to make the liquidities eficient. Let's suppose that bank A sends 500 million to bank B, which imply a shorten of the available liquidity in the waiting of the payment that must be made to bank C. To eliminate this inconvenient, bank A takes this payment in a waiting queue of the system, where this payment transaction will wait until the Bank C makes the payment. After the arrival of this last transaction, the szstem executes simultaneously a debt of the bank A position and a credit of bank B, with the same sum of the bank A position. As a result of this matching and netting the liquidities of bank A remain the same. In case of doensţt exist such a matching, the pazment will be made at de finish of the day. Evera bank must pefund his account with a sum dynamic established by the system. For the final transaction settlement CHIPS uses the american system Fedwire, and it has the quality of concurent and customer.
Message format:	It is compatible with **Fedwire** for the final settlement.

F. TARGET (<u>T</u>rans-European <u>A</u>utomated <u>R</u>eal-Time <u>G</u>ross <u>S</u>ettlement Expres <u>T</u>ransfer) (www.ecb.int/ecb/legal/pdf/l_01820060123en00010017.pdf)

Characteristics	Description
Location:	European Union
Type:	Transfrontalier, with real time gross settlement (RTGS), in euro It was created by interconnection of the national euro systems, RTGS type, with the TARGET centre processing of the EMU (European Monetary Union)
Owner:	**ECB** (**E**uropean **C**entral **B**ank)
Operator:	**ECB** (**E**uropean **C**entral **B**ank)
Number of transactions:	261.000 tranzactions
Transcations value:	1,65 trillion Euro
Clients:	3400 banks, with the access to system of about 43.000 banks from whole the world
Financial scheme:	It uses de SWIFT FIN for its network services and messages transfer To initiate a transfrontalier payment, the participants send the message with de payment order (the transaction) in euro to their national systems, RTGS type, coupled with TARGET, and this system will execute the transaction The participant will receive the payment message in a format specific to his national system The liquidities from the TARGET system are available permanently to all of participants. The national central banks will provide to the participants the intraday credit, free of charge, in a limit of a sum which will be establish by each participant.
Message format:	**SWIFT** compatible

References

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