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(54) Title: OPERATIONALIZATION SYSTEM OF A STOCK MARKET TRANSACTION

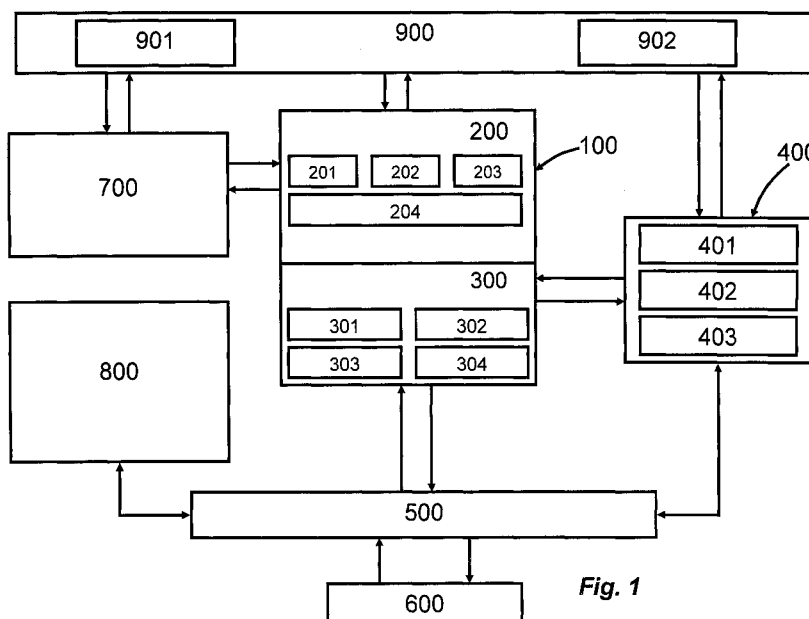


Fig. 1

(57) Abstract: The present invention refers generally to an electronic trading system and, more specifically, to a commercial transactions system that can combine various modules on a platform to carry out different functions in a commercial trading environment, particularly in a trading stock exchange for negotiating various instruments. According to an embodiment of the present invention, the system comprises a trading system (100); a control system (700); a communications system (400); and an integration system (500), characterized wherein said trading, communications, control and integration systems are integrated with each other to promote the operationalization of a stock market transaction.

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## **“OPERATIONALIZATION SYSTEM OF A STOCK MARKET TRANSACTION”**

### **FIELD OF THE INVENTION**

The present invention refers generally to an electronic trading system and, more specifically, to a commercial transaction system that can  
5 combine various modules on a platform to carry out different functions in a commercial trading environment, particularly in a trading stock exchange for negotiating various instruments, such as derivatives (commodities, options and futures), shares, stock options, government securities, private securities, currencies and exchange, swaps and merchandise for purchase and sale.

### **DEFINITIONS**

10 For the present specification and interpretation of the claims, further ahead, the following definitions are adopted:

- Stock Exchange: real or virtual environment, where assets, commodities, options, exchange, etc., are negotiated either by conventional  
15 means, such as the presential trading floor, in which persons gather at a physical site to carry out transactions directly with one another, or by electronic means, through which a purchaser, for example, by way of a broker, negotiates the purchase of goods/assets available on the market, that are sold by sellers, for example, also by way of their brokers, over electronic communication  
20 terminals.

- Clearing: clearing and settlement house for operations carried out in trading environments. Processes of risk assessment, establishment of guarantees and multilateral clearing of obligations are used. Generally, clearing houses provide for bilateral trading, negotiations with central counterparty,  
25 delivery versus payment (DVP), payment versus payment (PVP), real time gross settlement (RTGS) and deferred net settlement (DFS).

- Derivatives: financial instruments whose value is pegged to a good, asset or instrument. Normally, there are four kinds of derivatives: (1)

term: non-standardized contracts entered into by private parties in which the obligations are deferred to a future date; (2) futures: standardized contracts used to protect the investor from normal price fluctuations of the merchandise by its future delivery price (days, months, years); (3) options: used on the commodities market and share futures market, and are contracts that reserve the holder the right to purchase or sell merchandise or instruments at a future date and at a pre-set price; and (4) swaps: a contract that allows one investment to be changed for another at a set future date, or adjustment rate or conditions of a same asset.

- Instrument: any financial instrument that can be traded in a stock market environment, such as, but not limited to, exchange contracts, commodities, derivatives, government securities, shares, etc.

- Equilibrium price auction: modality in which the bidders bid on the quantity offered or just the demand. The price starts at a threshold, being increased or decreased by way of increments (price tick), until the quantity offered matches the quantity demanded, when the transactions are then carried out with the bidders.

- Uniform-price auction: where the theoretic price of the instrument is calculated, for example, based on the prices of offers having lower quantities. At the end of the auction, the transactions are finalized all at the same price, that is, at the theoretic price.

- First Price Auction: in which the operation is finalized by the bidder who tenders the best price for the instrument. In the case of a sales auction, the best price will be the highest price offered, and in the case of a purchase auction, the best price will be the lowest offered.

- Intraday Limit: analysis of the volume of operations carried out in one day by financial intermediaries and cleared in the position of clearing member, for the purpose of risk control and due regard to limits, without

prejudice to the liability of each clearing member, such that the registration of new operations can be barred for a certain clearing member if he does not request the deposit of additional guarantees.

5 - Offer: reflects the moment in which an order is entered into a stock market trading environment.

- Order: instruction given by a client to his broker, for execution of purchase or sale of a certain item (trading instrument), for an offer to be made.

10 - Participant: denomination of any party – private citizen or legal entity – who plays a specific role in the negotiating and clearing process of stock exchange operations. It includes, but is not limited to, brokers, distributors, special operators, clearing members and private citizen clients.

System: as used herein, the term "system" means one or more devices of an electronic, electric, electro-electronic, mechanical or electro-mechanical nature, capable of carrying out functions by commands of electric,  
15 electronic, electro-electronic origin, or any equivalent form capable of commanding such operation.

- Supervision of stock exchange: system player in charge of supervising the market.

### **BACKGROUND OF THE INVENTION**

20 Stock exchanges are places (or systems) in which the trading of financial instruments, such as assets, commodities, options, exchange, etc., takes place, either by conventional means, such as floor trading, in which people gather in a physical place to carry out transactions directly with each other, or by electronic means, through which a purchaser, by way of a broker,  
25 negotiates the purchase of goods/assets available on the markets, which are sold by sellers, also by way of their brokers, over electronic communication terminals.

In other words, stock exchanges can roughly be defined as

centralizers of purchase and sale negotiations on financial, capitals and exchange markets, concentrating the purchase and sale offers and demands, and the working thereof is subject to approval by a regulatory agent.

Other functions can be performed by a stock exchange, such as  
5 developing, organizing and operationalizing free and transparent markets for negotiating instruments and/or contracts that have as reference financial assets, indices, indicators, rates, commodities, currencies, etc., generically called futures market.

Besides these activities, there are also others that can be  
10 developed, such as registration, clearing and financial settlement of the operations carried out in their trading environments, and that also depend on approval by a regulatory agent.

Accordingly, stock exchanges generally have systems for negotiating, recording, clearing and settling the purchase and sale operations.  
15 Electronic systems for such purposes have been implemented at the world's main stock exchanges so as to facilitate transactions at a global level with greater speed and security, to monitor and regulate the markets and the norms in order to ensure payment of the obligations undertaken, in view of the operations carried out on their trading floors and/or recorded in any of the  
20 negotiation, clearing and settling systems.

Hence, it is an objective of the present invention to provide an electronic trading operationalization system in regulated environments (stock market environments), built from a platform that supports one or more systems or subsystems that can be combined or withdrawn selectively in order to add or  
25 eliminate specific functions, depending on the type of transaction made.

#### **DESCRIPTION OF THE INVENTION**

In order to achieve the above objective, among others, the present invention discloses an operationalization system of a stock market transaction,

comprising at least one of:

- a trading system;
- a control system;
- a communications system; and
- 5 – an integration system,

wherein said negotiation, communication, control and integration systems are integrated together to promote the operationalization of a stock market transaction.

According to an additional embodiment, the system of the present invention may also comprise a simulation system, to perform investment and trading simulations, for instructive or training purposes, for example. The simulation system is not designed to interfere in the other systems of the invention, but can be integrated with the other systems to use real data in relation to a type of instrument, so that simulated trading has parity or similarity with real transactions.

According to another embodiment, the system of the invention may comprise a services system, in which infra-structure and support services are available to the other systems of the present invention.

According to particular aspects of the invention, the trading system may comprise one or more of the following aspects:

- The trading system comprises a trading nucleus subsystem;
- The trading system comprises a subservices business system;
- The trading nucleus subsystem comprises an order book module;
- The trading nucleus subsystem comprises a trade matching module;
- 25 – The trading nucleus subsystem comprises a broadcast module;
- The trading nucleus subsystem comprises an auction module;
- The subservices system comprises an enrollment module;
- The subservices system comprises a record module;

- The subservices system comprises a risk module;
- The subservices system comprises a rules module;
- The communications system comprises a messages subsystem;
- The communications system comprises an information broadcast  
5 subsystem;
- The communications system comprises a subservices communications system; and
- The services system comprises a technology services monitoring system; and
- 10 - The services system comprises a trading services monitoring system.

#### **BRIEF DESCRIPTION OF THE DRAWING**

The present invention will now be described in relation to particular embodiments, with references to the appended drawing, provided merely to illustrate the present invention. The drawing is schematical, and is intended to  
15 describe the invention in an instructive manner, without imposing any limitations other than those contained in the claims further ahead, and figure 1 is a schematic depiction of the system of the present invention.

#### **DESCRIPTION OF PARTICULAR EMBODIMENTS**

Figure 1 represents the system of the present invention, consisting  
20 of a system that supports one or more systems, subsystems and modules. In other words, depending on the operation to be carried out at the stock exchange, one or more subsystems or modules may be contained such that if not used they do not necessarily have to be present. In this sense, the present invention provides a wide modularity and scalability, since only subsystems and  
25 modules that have real use will be incorporated, depending on the type of goods that are commercialized, e.g. commodities, shares, exchange of currencies, etc., as well as the way in which said goods are commercialized, whether by electronic or conventional floor trading, or by auction etc.



The system of the present invention comprising a trading system (100) may comprise a system suitable for trading any instrument, be it derivatives, options, exchange contracts, fixed income etc, that is, a system to carry out stock exchange operations of purchase and sale of assets. Said system can be carried out by electronic means, in which the placement of orders, both purchase and sale, are performed remotely through electronic communication channels, such as the internet, for example. The generation of orders, the placement of orders in the book and the matching of operations can be done electronically, automatedly, according to parameters established by the participants.

The trading system (100) comprises, in turn, a trading nucleus subsystem (200) and a subservices business system (300).

The trading nucleus subsystem (200) is designed to administer the negotiations that are carried out in a stock market environment and to provide tools that allow trading to be carried out, in an organized and transparent manner, in line with regulatory impositions. Therefore, the trading nucleus subsystem (200) has an order book module (201), in which the purchase and sale orders are listed according to the type of instrument (derivatives, exchange, etc.) and order of entry in the business book. The list of orders included in the book may follow the FIFO rule (first in – first out), for example, that is, the first orders to be included are the first available for finalizing a transaction.

The trading nucleus subsystem (200) additionally comprises a trade matching module (202), by which a negotiation is sealed when there is a matching of purchase and sale values and the quantities negotiated. Therefore, when there is parity between the offer of purchase and sale, either in relation to the individual values and the volume of the instruments negotiated, the deal is finalized, but is still subject to clearing, as can be seen ahead.

A dispatcher module (204) is also comprised in the trading nucleus subsystem (200). The dispatcher module (204) is designed to organize the entry of offers, guaranteeing the sequence of entry and disclosing to the market the orders included in the book (201) and, additionally, the trading nucleus subsystem (200) may also comprise an auction module (203), in which, optionally, an auction of a certain instrument can be carried out instead of a mere matching of transactions by the matching module (202). This auction module (203) may be desirable for carrying out a deal in an auction modality, if the instrument or type of negotiations requires this form of finalizing the transactions. The auction modalities may vary, such as, but not limited to, a first price auction, uniform-price auction, equilibrium price auction.

The trading system (200) may also comprise a subservices system (300) through which services are offered to the participants in a stock market environment to carry out a transaction, which in turn consist of an enrollment module (301), a risk module (302), a rules module (303) and a record module (304).

The enrollment module (301) is designed to enroll participants in the stock market environment, while the record module (304) will keep a record of the transactions carried out by that participant, which will be useful in the phases following clearing and settlement. The risk (302) and rules (303) modules are complementary and make additional functions available to the participants. So, the rules module (303) may concentrate the rules, both official regulations as well as any rules defined under stock exchange policies, and make them available to the participants, so that they are aware or can consult, in real and immediate time, a certain regulatory or stock exchange norm for carrying out an operation with an instrument. The risk module, on the other hand, provides information on the intraday limits that a certain participant can negotiate in financial volume, without creating additional risks for the market.

The system of the present invention also comprises a communications system (400) which, in turn, comprises a messages subsystem (401), an information broadcast subsystem (402) and subservices communications system (403). The purpose of the messages subsystem (401) is to broadcast messages to the market, through or among the participants. Said messages may be messages coming from management or supervision of stock exchange, or messages from outside sources (such as traders) for other participants, including the management or supervision of the stock exchange. The messages can be of any nature, such as, for example, messages of interest to traders, or messages for management of the stock exchange, when a certain function is not working, etc.

The information broadcast module (402) broadcasts to the market and participants various items of information directly or indirectly related to the stock market trading environment. Information directly related to the stock market trading environment includes data on the quotation of a certain instrument or the financial summary after a round of negotiations, among others. Examples of information indirectly related to the stock market trading environment are new items that may affect the trading of a certain instrument, minutes of meetings of boards of directors of companies whose assets are traded in the stock exchange, etc.

The subcommunications system (400) may also combine a communications services module (403) to facilitate and to allow easy communication and exchange of information between the participants. The communications services may include various channels in isolation or simultaneously, such as, but not limited to, chat, voice over IP, voice messages, videoconferencing, etc.

Both the trading system (100) and the communications system (400) are combined to an integration system (500). The integration system is

designed to allow integration between the various channels of communication and interfaces with the trading system (100) and communication system (400), so that the participants can interact with the trading system to carry out a transaction, for example, or obtain market information on a certain instrument  
5 through the communications system.

The integration system may hold, for example, an FIX (Financial Information Exchange) integration service, which is an open protocol for exchanging information. Information can be broadcast and exchanged through various communication channels (600), such as, but not limited to, internet,  
10 extranet, private networks (PN), virtual private networks (VPN), cellular network, Wi-Fi, etc.

Accordingly, integration through an FIX protocol allows various communication channels for different media to have a single access point, through which communication between participants and the trading system is  
15 integrated, and potentially other systems according to the invention. Media may vary, such as PCs, cell phones, PDAs, etc. and the interface customized for each one of these media.

The present invention may also comprise a control system (700), through which control services of stock exchange operations carried out on the  
20 trading system (100) are provided and implemented. The control services may include the control by supervision of stock exchange to enable or disable the closing or clearing of a certain transaction. The control that can bar the performance of a transaction by a certain participant includes, for example, when this participant exceeds his intraday operating limit, and must make a  
25 deposit of new guarantees to carry out the transaction. At clearing phase, a transaction can be cancelled for carrying out an unintentional operation wherein the end bidders are the same persons. The control may also identify behaviors or trading patterns that digress from the regulatory norms or stock exchange

policies, and prevent the closing or clearing of the transaction.

The invention may also comprise a simulation system (800), in which investments and transactions can be simulated for instructive or training purposes for new participants, for example. The simulation system does not  
5 interfere in the trading system per se, since the transactions generated on this system are merely virtual and are designed to simulate a stock market trading environment. However, said system may use real market data in relation to a type of instrument, coming from communications system (400), to generate virtual transactions having parity or similarity with real transactions carried out in  
10 the trading system (100).

The system of the present invention may additionally comprise a services system (900), through which infra-structure and support services are provided to other systems of the present invention. The services system may include a technology services monitoring system (901) and a trading services  
15 monitoring system (902). The technology services monitoring system may include monitoring services of the other systems of the invention and support to the participants in any bad operation or operating problems of one or more systems of the invention. Further, the trading monitoring system (902) performs the supervision, confirmation and calculation of the transactions carried out at  
20 the stock exchange, which may be processed in real time, and data or information related to the transaction can be made available to the communications system (400).

It should be understood that although the present invention has been described in relation to a particular embodiment, persons skilled in the art  
25 will be able to develop variations and alterations that fall within the ambit and character of the invention. Therefore, the appended claims should be interpreted as covering all potential equivalents.

**CLAIMS**

1. OPERATIONALIZATION SYSTEM OF A STOCK MARKET TRANSACTION comprising at least one of:
- a trading system (100);
  - 5 – a control system (700);
  - a communications system (400); and
  - an integration system (500),
- characterized in that said trading, communications, control and integration systems are integrated with each other to promote the operationalization of a
- 10 stock market transaction.
2. SYSTEM, according to claim 1, characterized by additionally comprising a simulation system (800).
3. SYSTEM, according to claim 1 or 2, characterized by additionally comprising a services system (900).
- 15 4. SYSTEM, according to claim 1, characterized in that said trading system comprises a trading nucleus subsystem (200).
5. SYSTEM, according to claim 1, characterized in that said trading system comprises a subservices business system (300).
6. SYSTEM, according to claim 4, characterized in that said
- 20 trading nucleus subsystem comprises an order book module (201).
7. SYSTEM, according to claim 4, characterized in that said trading nucleus subsystem comprises a trade matching module (202).
8. SYSTEM, according to claim 4, characterized in that said trading nucleus subsystem comprises a dispatcher module (204).
- 25 9. SYSTEM, according to claim 4, characterized in that said trading nucleus subsystem comprises an auction module (203).
10. SYSTEM, according to claim 5, characterized in that said subservices system comprises an enrollment module (301).

11. SYSTEM, according to claim 5, characterized in that said subservices system comprises a record module (304).

12. SYSTEM, according to claim 5, characterized in that said subservices system comprises a risk module (302).

5 13. SYSTEM, according to claim 5, characterized in that said subservices system comprises a rules module (303).

14. SYSTEM, according to claim 1, characterized in that said communications system comprises a messages subsystem (401).

10 15. SYSTEM, according to claim 1 or 14, characterized in that said communications system comprises information broadcast subsystem (402).

16. SYSTEM, according to claim 1, 14 or 15, characterized in that said communications system comprises subservices communications system (403).

15 17. SYSTEM, according to claim 3, characterized in that said services system comprises a technology services monitoring system (901).

18. SYSTEM, according to claim 3 or 17, characterized in that said services system comprises and a trading services monitoring system (902).

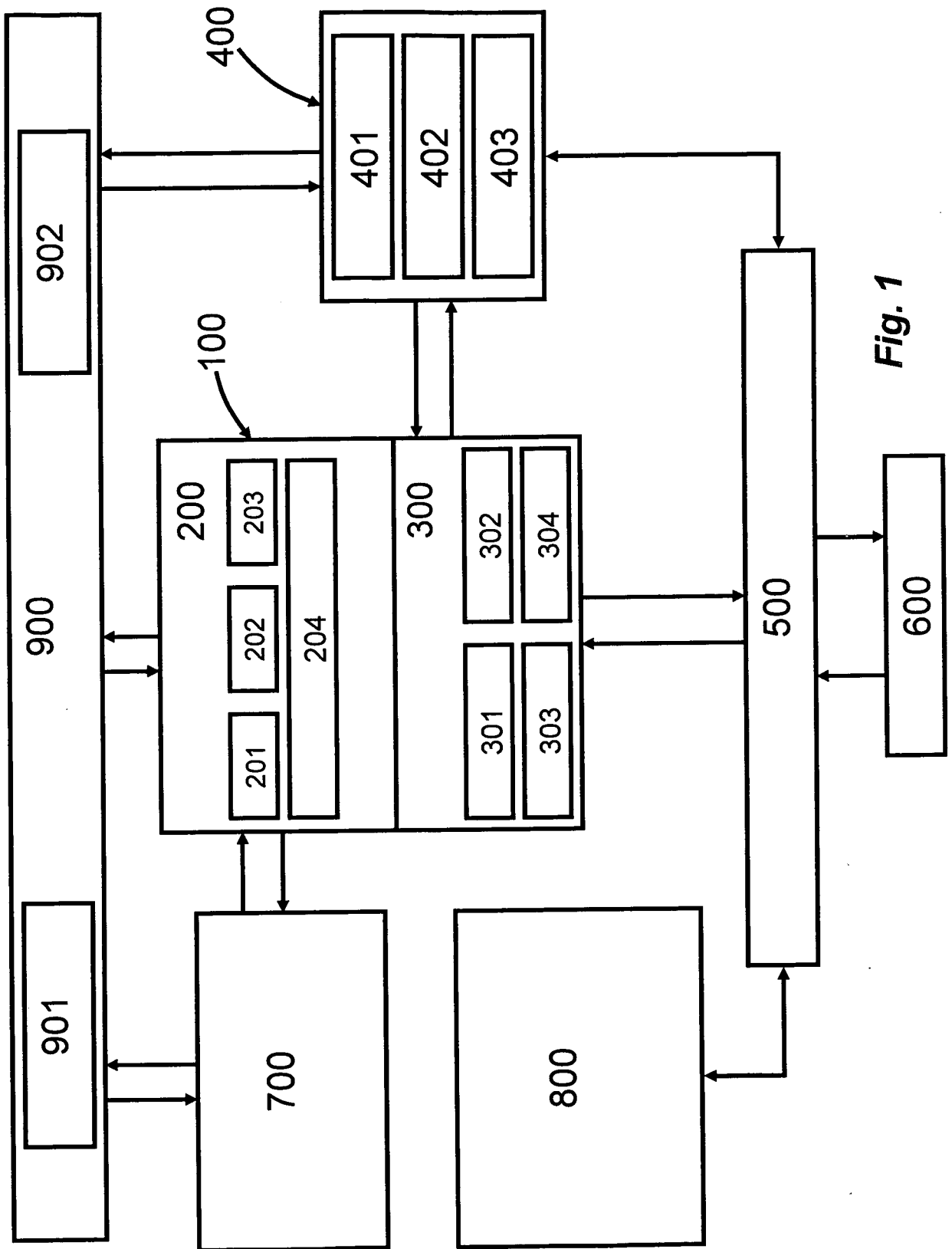


Fig. 1



## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/BR 2009/000120

A. CLASSIFICATION OF SUBJECT MATTER IPC <sup>8</sup> : <b>G06Q 40/00 (2006.01)</b> According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) IPC <sup>8</sup> : G06Q		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPODOC, WPI		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/071889 A2 (BALABON) 6 July 2006 (06.07.2006) <i>abstract, figures 10 and 11, paragraphs [0070] - [0074]</i>	1
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X	US 2003/130926 A1 (MOORE ET AL) 10 July 2003 (10.07.2003) <i>whole document</i>	1
	--	
X	US 4 412 287 A (BRADDOCK III) 25 October 1983 (25.10.1983) <i>abstract, figures 1 - 6 and their descriptions</i>	1
	--	
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 7 September 2009 (07.09.2009)		Date of mailing of the international search report 1 October 2009 (01.10.2009)
Name and mailing address of the ISA/ AT <b>Austrian Patent Office</b> Dresdner Straße 87, A-1200 Vienna Facsimile No. +43 / 1 / 534 24 / 535		Authorized officer <b>BEZIRGAN A.</b> Telephone No. +43 / 1 / 534 24 / 572

**Continuation of first sheet**

**Continuation No. II:  
Observations where certain claims were found unsearchable  
(Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

Claims Nos.: 2 - 18 because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

Claims 2 - 18 do not contain any technical features. They only name parts of a system and thus lack clarity.

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/BR 2009/000120

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/254876 A1 (COVAL ET AL) 16 December 2004 (16.12.2004) <i>abstract, figure 1 and its description</i>	1
X	WO 1995/026005 A1 (BELZBERG) 28 September 1995 (28.09.1995) <i>abstract, figures 1 - 4 and their descriptions</i>	1
X	WO 2003/001417 A2 (DIRECTA S I M P A) 3 January 2003 (03.01.2003) <i>figures 1 - 5 and their descriptions</i>	1

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/BR 2009/000120

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