



- (51) **International Patent Classification:**  
G06Q 40/06 (2012.01) G06Q 30/02 (2012.01)
- (21) **International Application Number:**  
PCT/IB20 14/066429
- (22) **International Filing Date:**  
28 November 2014 (28.11.2014)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (72) **Inventor; and**
- (71) **Applicant : TOFILIS, Michael [CA/AE];** Khaldiya - Shaheen complex next to ORYX Hotel - Block A Apt.401, Abu Dhabi (AE).
- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,

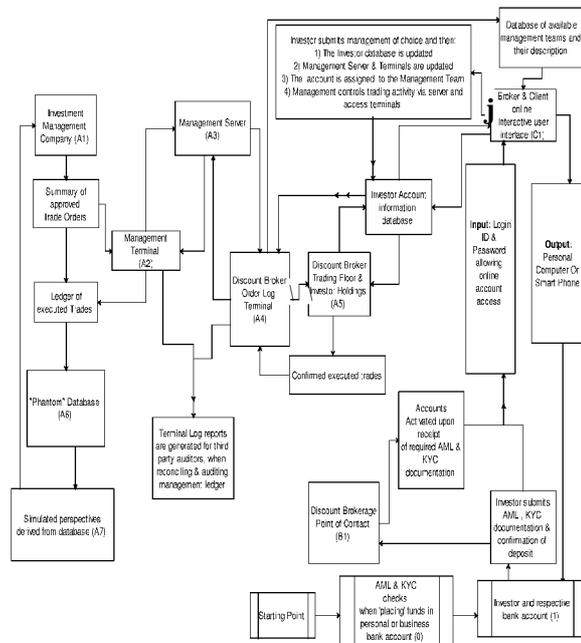
KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report (Art. 21(3))
- with amended claims (Art. 19(1))

(54) **Title:** VIRTUAL FUNDS



(57) **Abstract:** Asset management companies connect directly to participating discount brokerages using an Enterprise Service Bus and online terminals. The Enterprise Service Bus distributes trade orders placed by portfolio managers to respective discretionary client accounts at any discount broker. Each asset management company, via a phantom database, virtually groups and manipulates client holdings, without changing ownership. Holdings are analysed collectively as one or several funds, and separately (as needed), based on varying investor goals and constraints. Investors continue maintaining direct ownership of holdings, and managers directly invest client holdings by theoretically rather than physically, grouping monies into funds. This method design also increases management flexibility and prevents the disproportionate sharing of transaction costs usually borne by investors joining a fund at different times.

**Description:**

Financial markets evolved to produce simplified portfolio management products and tools, such as Exchange Traded Funds (ETFs), and discount brokerages. However, average investors rarely receive proper guidance on how to use such products. Instead, they are encouraged by discount brokers to take short-term positions, or otherwise invest their monies in mutual funds through sales representatives, usually labelled as Financial Advisors. Mutual fund structures were products of environments not yet exposed to advanced communications' technologies; and have grown to centralize, and restrict gains shared amongst non-institutional investors and their respective portfolio managers.

When setting up a mutual fund, the manager (usually a General Partner) outsources legal and administrative services, through third party administrators (or ones, bought out by the asset management companies themselves). Lawyers set up a fund partnership, where limited partners (investors) can own, and redeem shares. Fund accountants are constantly calculating the net asset value (NAV) per share, and forwarding relevant information to investors through fund administrators. Administering investor contribution and redemption requests is quite costly and time consuming. These operational processes are financed by investor savings, and are very expensive and inefficient, considering available technologies.

Using the new systems method, discount brokerages can efficiently channel professional discretionary portfolio management services to large numbers of investors. The idea is to include online discount brokers, in the asset management process to provide 'virtual funds' as an alternative to mutual funds. The system design minimizes management fees, and simplifies legal and operational procedures. The direct accessibility and decentralization of management services via discount brokerages, allows for centralizing and limiting sales and administration costs.

By advertising participating discount brokerages, affiliated asset management firms will collaterally gain market exposure. Essentially, marketing two complementary services by only advertising one. Investors, active portfolio managers, ETF providers (passive asset managers), and brokers, will share higher gains while reducing monitoring costs. This reverses the current process, which works towards guaranteeing minimum sales and operations (and regulation) fees to the respective service providers, while limiting net portfolio gains passed onto investors.

Today, investors can conveniently open several, online investment accounts of any type (e.g. individual, joint, trust, partnership). The interview and selection process with prospective clients who want to invest their savings with a portfolio manager will be liaised through discount brokers. This replaces sales and marketing operations performed by mutual fund wholesalers and financial advisors. Asset management companies selected by investors will be able to access and control discretionary accounts via the system described.

Asset management companies will use a phantom database to visually group their clients' holdings in the form of funds, without physically grouping investor holdings into funds. This is a key point of the method. Virtually grouping investor holdings, rather than physically, provides the advantages of physically grouping investor holdings, without the extra costs incurred. This has vast implications in regards to simplifying operations, increasing transparency, aligning interests and minimizing administration fees.

Asset managers can view investor holdings, in different forms using the Phantom database. The system can analyze them as one fund, a group of funds, or in their original form as separate investor holdings with different (or common) risk appetites and goals. Clients will use the existing discount brokerage interface to obtain relevant portfolio information, and place redemption, and contribution requests.

On the other hand, advertising ETFs, discount brokerages and asset management services, as complimentary products, allows these parties to align their interests together, and directly benefit investors. The new design repositions discount brokerages and ETFs and properly defines their roles in a way that will help eliminate creative marketing methods encouraging short term trading, where the investor usually comes in second place.

ETFs are simplified tools used for facilitating complex trades and mimicking index performance. They are traded as simply as public companies' shares. Built in fees range from 0.1% to 1% depending on the complexity of the ETF. Retail discount brokerages, provide easy access to ETFs, stocks, and options. In essence, offering investors a similar variety of market exposure, available to sophisticated fund managers. Its users and providers when offered without independent guidance, more easily abuse such accessibility. Today, discount brokerages continue survival by offering short-term trading schemes to increase trading frequency and revenues.

Ethical dilemmas are reduced when addressing situations affecting "priority of transactions", and "integrity of capital markets". For example, in cases where management decides to sell all shares of stock A, for all their clients. The manager would enter one sell order through his/her terminal. The Enterprise Service Bus distributes corresponding suborders to associated broker terminals. Alternatively, if certain clients are better suited to hold stock A, and buy puts instead, the manager is able to enter both trades simultaneously as follows: Sell all shares of A except for clients 1 and 2, hold shares A and buy Puts AAA. One asset management company can manage accounts held in different online brokerages.

Portfolio managers will provide services that are more rewarding when not restricted to one broker, approach, or investor type. Managers face less market manipulation issues, when executing smaller block trades where 'smart money' is not as easy to follow. They will deal with less transparency issues surrounding NAV manipulation and disproportionate transaction costs borne by investors entering and exiting the fund at different times. "What dawned on me is obviously as money comes in it incurs transaction costs, and the earlier investors bear a disproportionate share of that money coming in". Using the proposed method, speed and cost of execution are solely dependent on investors' choice of discount broker.

The new method will directly include ETFs in investor portfolios, to increase management flexibility and reduce management fees. However, if ETFs are included in mutual funds as they are today, they become ambiguous financial products further increasing management fees, and reducing transparency. "As Bohm emphasizes, "Unless we understand the subtleties of wholeness, we will not only divide what can't be divided, we'll try to unite what can't be united. Real differences and

similarities will become hopelessly mixed up<sup>2</sup>." The average investor still relies on mutual funds, and discount brokerages are investigated for promoting 'unwarranted' short term trading schemes. The new systems method will introduce a new concept called 'virtual funds' as an alternative to mutual funds, and utilize discount brokerages and ETFs in directly benefiting investors.

Legend

- (0) Clients provide documentation proving identity, and place of residence in order to open a bank account. Clients' names are cross checked with criminal & terrorist lists. Deposits come into the account, in the form of checks or direct deposit. Small amounts of cash (under \$10,000) are also accepted. This box represents the steps required to initiate & activate a regular bank account. Most of these steps are repeated upon the activation & redemption of investment accounts.
- (1) Represents the investor and their corresponding bank account.
- (2) The Financial Advisor is the sales agent who attempts to sell different types of suitable investment funds to potential investors. Sales fees range from 2-6% of initial deposits, and trailer fees (another form of sales fees applied annually, on existing deposits) range from 0.1%-0.2%. The dealer is the institution employing the financial advisor. The dealer is the fund wholesaler and acting merchant. Sales & trailer fees are split amongst financial advisors and their corresponding institutions.
- (3) Investors submit their contribution & redemption requests using the online user interface. This is available through any online discount broker account. Investors access the user interface through their computers or smart phones. Investors submit their management team of choice using the same user interface. Accordingly, investors are able to browse through a list of management teams and their description. Teams' services and client suitability is illustrated in plain language description. The investment team will resume discretionary control of the assigned account, upon selection by the investor. Subsequently, investors can only submit redemption & contribution requests on assigned accounts.
- (4) Online interface displaying a) investor holdings & request status b) Available management teams & assessment interview appointments  
c) Assigned management team(s) d) Investor holdings (The system by default shows holdings in full detail, its up to the manager to hide transaction details to prevent the misuse of 'trade secrets'.
- (A1) – The Investment management company controls trading activity on assigned accounts.
- (A2) – The Management Terminal accesses the Management server, & sends trade orders to client accounts. Subsequently the orders are distributed through the management server to corresponding brokers and investors. Trade confirmations are then received through this terminal.
- (A3) – The management Server is a key part of this proposal. The technical term for this server is enterprise service bus. It's the central point of connectivity allowing brokers & management teams to share mutual clients (and potential mutual clients). This also allows for the sharing of positive externalities, if anyone one party on either side spends on marketing & advertising.
- (A4) – Discount Broker Order Log Terminal – receives & tracks trade orders sent from management companies & distributed through the management server (enterprise services bus).
- (A5) – Discount Broker trading floor and investor holdings
- (A6) – The "Phantom" Security Management Database represents investor holdings under management, for each management company. The name "Phantom" is derived from the idea that investors' monies are not physically regrouped into a fund but instead, the investment management company simply controls the trading activity on each investor's account. Investors under each management company can be distributed across more than one discount broker.\*
- (A7) Simulated perspectives are derived from the phantom database. The database of investor holdings under management is used to view holdings in different forms i.e. it can be viewed as a fund, or each investor's holdings is looked at separately.
- (B1) The discount brokerage point of contact. Toll free number or email.
- (C1) Broker & Client interactive user interface.
- (D) Third party administrators provide the following services:  
Legal / Administration services / Accounting / Auditing. These services cost investors 2-3% of their investment annually and fall under the (D) category.
- (D1) Client relations point of contact. Provides & updates information regarding required documentation, investment value & progression of redemption & contribution requests.
- (D2) The legal department establishes the fund Partnership in order to facilitate the conversion of client deposits into fund shares & vice versa. The accounting department calculates and tracks the Net Asset Value per share.  
Investment value\* = NAV x (# of shares)
- Fund accounting calculates the NAV, factoring in: daily market prices & redemptions/contributions. Relevant information & updates are communicated to investors or their representatives, through the administration department.
- (D3) The Server is used today to reconcile trades & audit the management ledger. The new process aims to reduce costs involved under the (D) umbrella by preventing the duplication of services and automating other ones.

### Claims

1- Using the new systems method, discount brokerages can efficiently channel professional discretionary portfolio management services to large numbers of investors. The idea is to include online discount brokers, in the asset management process to provide 'virtual funds' as an alternative to mutual funds. The system design minimizes management fees, and simplifies legal and operational procedures. The direct accessibility and decentralization of management services via discount brokerages, allows for centralizing and limiting sales and administration costs.

2- By advertising participating discount brokerages, affiliated asset management firms will collaterally gain market exposure. Asset management companies will be affiliated and accessed through all member discount brokerages. Essentially, marketing two complementary services by only advertising one. Investors, active portfolio managers, Exchange Traded Fund providers (passive asset managers), and brokers, will share higher gains while reducing monitoring costs. This reverses the current process, which works towards guaranteeing minimum sales and operations fees to the respective service providers, while limiting net portfolio gains passed onto investors.

3- Advertising ETFs, discount brokerages and asset management services, as complimentary products, allows these parties to align their interests together, and directly benefit investors. The new design repositions discount brokerages and ETFs and properly defines their roles in a way that will help eliminate creative marketing methods encouraging short term trading, where the investor usually comes in second place.

4- Asset management companies will use a phantom database to visually group their clients' holdings in the form of funds, without physically grouping investor holdings into funds. Investors will be accessible through all discount brokerage. Virtually grouping investor holdings, rather than physically, provides the advantages of physically grouping investor holdings, without the extra costs incurred. This has vast implications in regards to simplifying operations, increasing transparency, aligning interests and minimizing administration fees.

5- Asset managers can view investor holdings, in different forms using the Phantom database. The system can analyze them as one fund, a group of funds, or in their original form as separate investor holdings with different (or common) risk appetites and goals. Clients will use the existing discount brokerage interface to obtain relevant portfolio information, and place redemption, and contribution requests.

6- Portfolio managers will provide services that are more rewarding when not restricted to one broker, approach, or investor type. Managers face less market manipulation issues, when executing smaller block trades where 'smart money' is not as easy to follow. They will deal with less transparency issues surrounding NAV manipulation and disproportionate transaction costs borne by investors entering and exiting the fund at different times. Using the proposed method, speed and cost of execution are solely dependent on investors' choice of discount broker.

7- Ethical dilemmas are reduced when addressing situations affecting "priority of transactions", and "integrity of capital markets". For example, in cases where management decides to sell all shares of stock A, for all their clients. The manager would enter one sell order through his/her terminal. The Enterprise Service Bus distributes corresponding suborders to associated broker terminals. Alternatively,

if certain clients are better suited to hold stock A, and buy puts instead, the manager is able to enter both trades simultaneously as follows: Sell all shares of A except for clients 1 and 2, hold shares A and buy Puts AAA. One asset management company can manage accounts held in different online brokerages.

8- The new systems method will introduce a new concept called 'virtual funds' as an alternative to mutual funds, while utilizing discount brokerages and ETFs.

## AMENDED CLAIMS

received by the International Bureau on 25 March 2016 (25.03.16)

A method of fund management, where assets under management (AUM) are not physically grouped into a partnership fund, but rather, where investors maintain direct ownership of their holdings at any discount brokerage of their choice, and investor funds (assets under management) are visually grouped and remotely managed and controlled by investor selected fund managers through a single network system centralized via all discount brokerages in the country, said method comprising:

1. Centralization and accessibility of fund management services through discount brokerages allowing fund managers to concurrently benefit from marketing and business development activities performed by discount brokerages.
2. Fund managers can view assets under management (AUM), separately as per each investor's holdings and Investment Policy Statement (IPS), or visually group assets under management using a phantom database, in order to view them as one or several funds and customize or group trade orders as needed, without physically grouping investor holdings and undergoing costly administration activities, as in the case of mutual funds or hedge funds.
3. Investors shall easily obtain real time monetary valuations of their portfolios' fair values and better understanding of their investment holdings, without the need for calculating the Net Asset Value (NAV) per share, as in the case of mutual funds or hedge funds.
4. Investors shall clearly and fairly pay applicable transaction and trading costs based on the executed transactions relating to their own accounts, rather than paying disproportionate transaction costs borne by investors entering and exiting a mutual fund or hedge fund at different times.
5. Exchange Traded Funds (ETFs) shall be utilized on a wide scale for the purpose they were designed for, which is to directly integrate and simplify otherwise complicated and risky bets (risky as in the case of shorting and covering) into relatively small retail accounts at minimal cost and lower risk, as opposed to integrating ETFs into mutual funds, which are large pooled accounts, where such bets can be implemented more efficiently and at lower costs, directly without the use of ETFs.
6. The centralization of fund management services through discount brokerages, while investors maintain direct account ownership, facilitates efficient monitoring operations and less cumbersome regulation and compliance processes.
7. Retail investors with relatively smaller investment holdings shall have access to direct fund management services usually only offered to extremely high net worth individuals or institutions, by opening an online account at any discount brokerage.
8. Fund managers shall have more flexibility in utilizing their expertise when their investors' Investment Policy Statements are customized based on risk tolerances and return requirements, but not restricted to a specific fund strategy, asset class, geographical area, or fund prospectus as in the case of mutual funds or hedge funds.
9. The segregation of investor holdings rather than pooling, allows for more efficient operations where contribution and redemption requests are executed at more flexible price entry and exit points.

10. Economies of scale in fund management of publicly traded securities are realized when investor accounts remain under their original ownership, rather than being pooled into and redeemed out of a partnership fund such as mutual funds or hedge funds.
11. Discount brokerages shall stand to improve profitability by focusing on improving the value of their trade execution services, rather than focusing on promoting questionable short term trading schemes in order to increase trading commissions.

Fig. 1

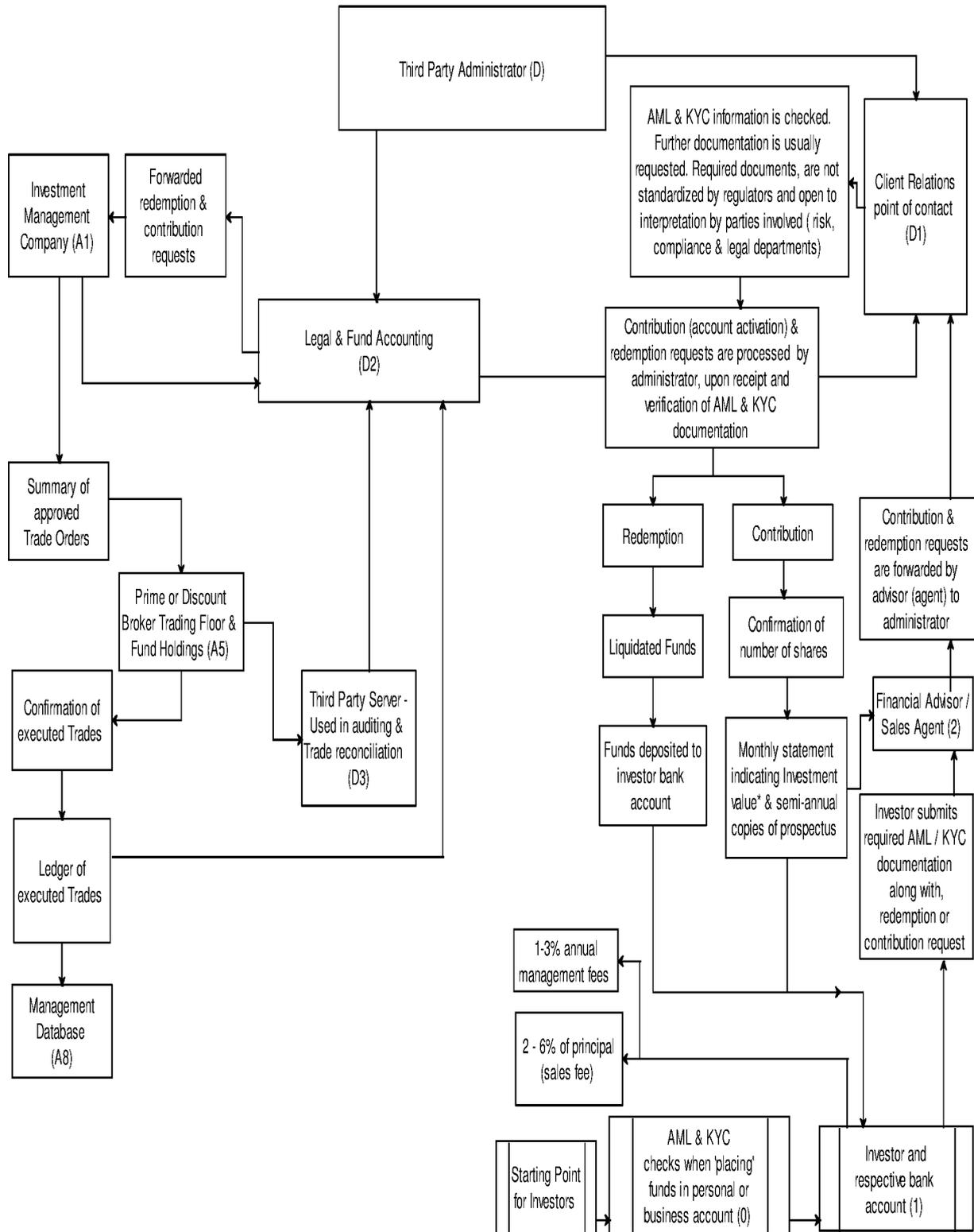


Fig. 2

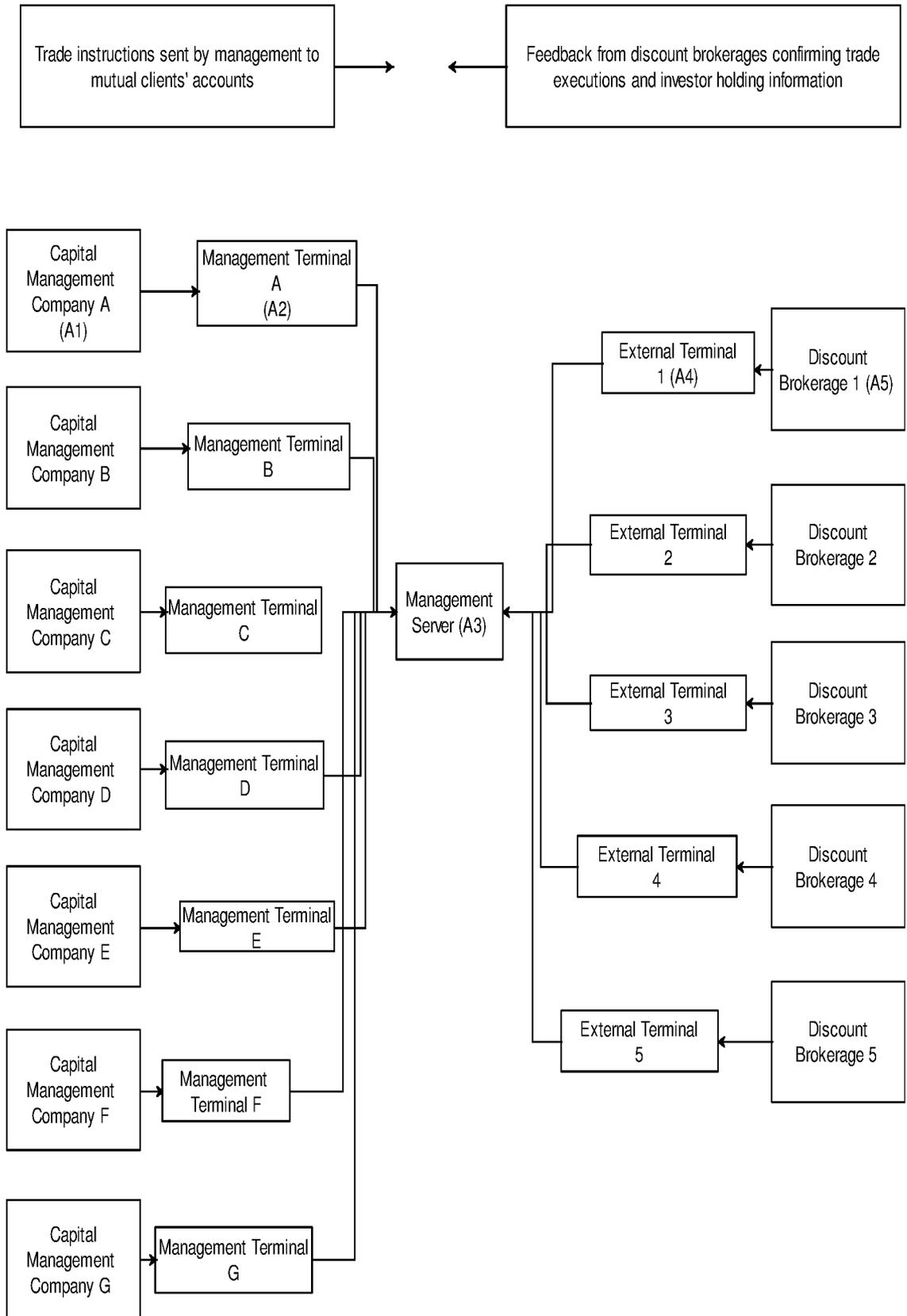
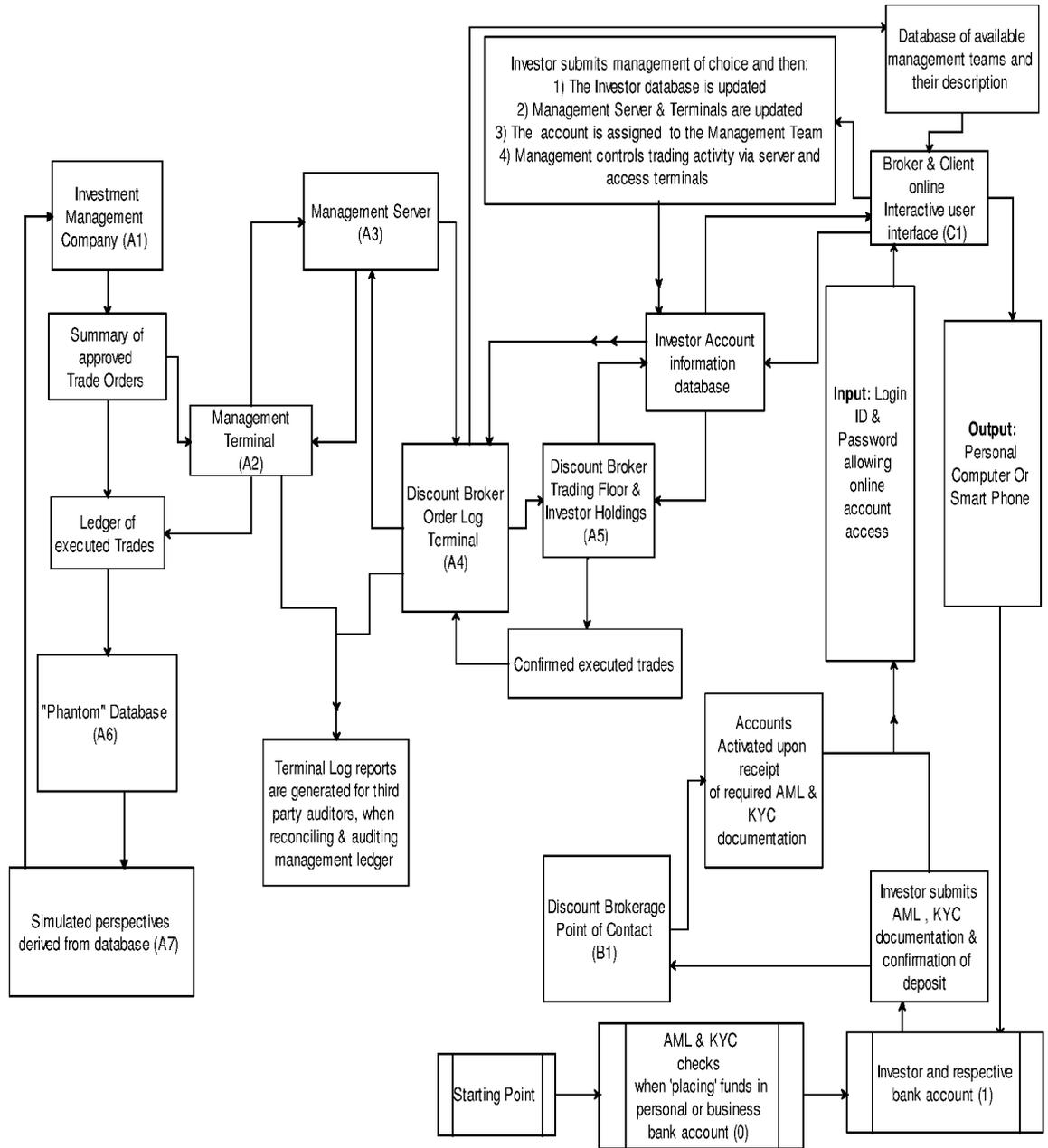


Fig. 3



## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/IB2014/066429**

A. CLASSIFICATION OF SUBJECT MATTER IPC: <i>G06Q 49/06</i> (2012.01), <i>G06Q 30/02</i> (2012.01)		
According to International Patent Classification (ff C) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) G06Q		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used) Orbit, Google (discount brokerage asset management group fund virtual database clients holdings financial planning plurality reconcile database accounts)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CA 2293090 A1 (SNOW, B., et al.) 23 June 2001 (23-06-2001) *abstract, fig. 1, 7; page 3, line 33 - page 4, line 6; page 4, line 26 - 33; page 5, lines 21- 36; page 6, lines 4 - 16; page 7, lines 30 - 37; page 8, line 34 - page 9, line 16; page 19, lines 1 - 17*	1 - 8 (based on authority established abstract)
Y	US 7752107 B1 (BENT, B. et al.) 6 July 2010 (06-07-2010) *abstract*	
A	US 2003/0208432 A1 (WALLMAN, S. M.H.) 6 NOVEMBER 2003 (06-11-2003) *whole document*	
A	US 2004/0002910 A1 (MIZUKAMI, S.) 1 JANUARY 2004 (01-01-2004) *whole document*	
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* "A" "E" "L" "O" "P"	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance earlier application or patent but published on or after the international filing date 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) document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed	"T" "X" "Y" "&" 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 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 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 05 August 2015 (05-08-2015)		Date of mailing of the international search report 11 August 2015 (11-08-2015)
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C1 14 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001-819-953-2476		Authorized officer  Minghui Shi (819) 997-7623

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
**PCT/IB2014/066429**

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
CA2293090A1	23 June 2001 (23-06-2001)	US2007038544A1 US8560412B2	15 February 2007 (15-02-2007) 15 October 2013 (15-10-2013)
US7752107B1	06 July 2010 (06-07-2010)	US7672901B1 US7672902B1 US7680716B1 US7996308B1 US8019668B1 US8032456B1 US8239321B1 US8260705B1 US8380621B1 US8386382B1 US8571960B1 US8606676B1 US8688577B1	02 March 2010 (02-03-2010) 02 March 2010 (02-03-2010) 16 March 2010 (16-03-2010) 09 August 2011 (09-08-2011) 13 September 2011 (13-09-2011) 04 October 2011 (04-10-2011) 07 August 2012 (07-08-2012) 04 September 2012 (04-09-2012) 19 February 2013 (19-02-2013) 26 February 2013 (26-02-2013) 29 October 2013 (29-10-2013) 10 December 2013 (10-12-2013) 01 April 2014 (01-04-2014)
US2003208432A1	06 November 2003 (06-11-2003)	US7110971B2 AR016187A1 AU774433B2 BR9908683A CA2323425A1 CN1316077A CO4830485A1 EG21952A EP1062557A2 IL138388D0 JP2010061688A MXPA00008877A PE05922000A1 TW466427B W09946658A2 ZA9901954A	19 September 2006 (19-09-2006) 20 June 2001 (20-06-2001) 24 June 2004 (24-06-2004) 16 October 2001 (16-10-2001) 16 September 1999 (16-09-1999) 03 October 2001 (03-10-2001) 30 August 1999 (30-08-1999) 30 April 2002 (30-04-2002) 27 December 2000 (27-12-2000) 31 October 2001 (31-10-2001) 18 March 2010 (18-03-2010) 24 April 2002 (24-04-2002) 02 July 2000 (02-07-2000) 01 December 2001 (01-12-2001) 16 September 1999 (16-09-1999) 11 October 2000 (11-10-2000)
US2004002910A1	01 January 2004 (01-01-2004)	JP2004046873A	12 February 2004 (12-02-2004)