(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
14 March 2002 (14.03.2002)

PCT

(10) International Publication Number
WO 02/21410 A1

(51) International Patent Classification[7]: G06F 17/60

(21) International Application Number: PCT/US01/41878

(22) International Filing Date: 23 August 2001 (23.08.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/656,079 6 September 2000 (06.09.2000) US

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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 02/21410 A1

(54) Title: METHOD AND SYSTEM FOR CREATING OR MANAGING RECOMMENDATION BASED FUNDS

(57) Abstract: A method and system for forming or managing an investment fund, in which total market value of assets of the fund is a capital of the inventment fund. In one embodiment of the method and system one or more analytical sources are designated. Then, at least one desired recommendation level is selected from the designated analytical source. Then, one or more financial instruments associated with the selected recommendation level provided by the designated analytical source are obtained. In another embodiment of the method and system at least one recommendation is selected from a set of recommendations provided by an analytical source. Then, at least one financial instrument that is associated with the at least one selected recommendation is obtained to form or manage the investment fund.

METHOD AND SYSTEM FOR CREATING OR MANAGING RECOMMENDATION BASED FUNDS

SPECIFICATION

FIELD OF THE INVENTION

The present invention relates to a method of creating or managing an investment fund.

BACKGROUND OF INVENTION

Numerous financial institutions routinely issue recommendations on securities and financial instruments that are traded on the financial markets. These recommendations are usually based on the financial institution's evaluation of the prospects for the particular financial instrument, the underlying business conditions, etc. Although, the investment public is thought to be generally receptive to such recommendations, reliable investment vehicles for utilizing the recommendations in a consistent and predictable manner are not readily available.

One object of the present invention is to provide a mechanism for allowing the consistent utilization of the investment recommendations provided by the financial institutions.

Another object of the present invention is to maximize the risk-adjusted return in an investment fund.

A further object of the present invention is to create or manage the investment fund based on the above-mentioned recommendation provided by the financial institutions.

SUMMARY OF THE INVENTION

To achieve at least some of these objects, the present invention provides a method and system for forming or managing an investment fund. With this method and system, at least one recommendation is selected from a set of

recommendations provided by an analytical source. At least one financial instrument that is associated with the selected recommendations is then obtained to form or manage the investment fund.

The present invention also provides a method and system for forming or managing an investment fund having a capital. One or more analytical sources are designated. At least one desired recommendation level is selected from the designated analytical sources. Then, one or more financial instruments associated with the selected recommendation level(s) provided by the designated analytical source or sources are obtained.

The obtained financial instruments according to the present invention may include shares of a common stock or other investment securities. Liquid assets used to obtain or purchase the financial instruments may include cash and/or freely marketable securities.

According to the present invention, the capital of the investment fund may be allocated by applying a mathematical algorithm. For example, the initial allocation of the capital the investment fund may be carried out in accordance with a first mathematical algorithm. Thereafter, the capital may be re-allocated upon an occurrence of a predetermined triggering event. The re-allocation of the capital may be carried out in accordance with a second mathematical algorithm. The first mathematical algorithm and the second mathematical algorithm may be either different or substantially the same.

The mathematical algorithms used to determine the allocation and/or the re-allocation of the capital of the investment fund according to the present invention may relate to a performance indicator of the financial instruments to be obtained or already held by the investment fund. The mathematical algorithms may also relate to a performance indicator of the investment fund as a whole, or may include an equal division of the fund's capital among all financial instruments associated with the recommendation(s) of a particular analytical source. For example, the indicator may include the ratio of an excess return to a variance of the excess return, the standard deviation of the return, and/or a price to earnings per share ratio. The indicator may also include the Sharpe's ratio.

The predetermined triggering events according to the present invention may include a new recommendation from the designated analytical source, a change in the recommendation level(s) for one or more financial instruments held by the investment fund, a withdrawal of liquid assets by the investors, a new investment of the liquid assets, a change in a performance indicator, and/or an expiration of a predefined time limit.

BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 shows an embodiment of a method for creating and/or managing an investment fund according to the present invention.

Fig. 2 shows another embodiment of the method according to the present invention.

Fig. 3 shows an exemplary diagram of a method for providing an initial allocation of capital in the investment fund according to the present invention.

Fig. 4 shows an exemplary system according to the present invention.

Fig. 5 shows an exemplary diagram of a method which provides a re-allocation of capital of the investment fund according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following definitions will be used throughout the description of the method and system according to the present invention.

Analytical source - an entity that issues recommendations for securities in the ordinary course of business (*e.g.*, a financial institution, a group of financial analysts, a sub-group of analysts which analyses a specific industry or a sector or a single financial analyst).

Liquid asset - cash or freely marketable securities readily convertible to cash.

Recommendation - a set of one or more recommendation levels used by the analytical source to describe the estimated market prospects of a specific financial instrument.

Recommendation level - a rating that the specific financial instrument is given by the analytical source.

Capital of the investment fund - a total market value of the financial instruments and liquid assets held by the investment fund.

The investment public always seeks to maximize its investment returns. Recommendations by the financial analysts may be important "barometers of strength" for a particular financial instrument. They often influence the buying and/or selling decisions of the investment public that uses these recommendations as tools for the maximization of the investment returns.

A recommendation, as defined herein above, can be a set of possible recommendation levels used by an analytical source to describe the market prospects of certain financial instruments. The recommendation levels are usually short phrases indicating the recommended action with respect to the particular financial instrument, such as "Buy", "Hold", "Sell", etc. Indeed, the recommendations may include, for example, three recommendation levels (*e.g.*, "Buy", "Hold" and "Sell"), four recommendation levels (*e.g.*, "Strong Buy", "Buy", "Hold" and "Sell"), etc. Various types of the recommendation levels may also be used by different analytical sources. These levels may be, *e.g.*, "Underperform", "Market Perform" and "Outperform"; "Sell", "Hold" and "Accumulate" and so on. The recommendations may be "upgraded", for example, from "Hold" to "Buy", or "downgraded", for example from "Hold" to "Sell". An upgrade or downgrade constitutes a change in the recommendation level.

As an example, shares of Company A's stock may be trading on the New York Stock Exchange® at $35 per share on a particular date. The financial analyst familiar with the business of Company A has previously maintained a "Hold" recommendation level for Company A's shares of its common stock. However, upon a review of the recent business performance of Company A, this financial analyst has upgraded Company A's common stock to "Buy", informing the investment public that, in his or her view, the shares of Company A's stock should rise in value. The investment public may react to the analyst's change in the recommendation level by

buying the shares of Company's A common stock. As a result, the price of the Company A's shares may rise to, for example, $40.

The investment public may disagree with the recommendation of the financial analyst. The degree of the market reaction to the recommendation is likely to depend on the analyst's reputation and track record. The method of outputting the financial data and recommendation data, which allows the public to follow and evaluate the track records of financial institutions is described in co-pending U.S. Patent Serial Application No. 09/295,220 filed on April 21, 1999, which is incorporated herein by reference in its entirety. The public may choose to follow the recommendations of one analytical source, and/or and ignore the recommendations of another. The method and system according to the present invention allows the investment public to make such choices in a consistent manner by providing an investment vehicle for the investors seeking to follow the recommendations from a specific analytical source or sources. Indeed, with the present invention these investors may invest in the financial instruments (e.g., the funds) which are rated by the financial analyst in a particular manner.

Referring to Fig. 1, the investment fund is created and/or managed by the method and system of the present invention by selecting at least one recommendation (or recommendation level) from a set of recommendations (or recommendation levels) provided by an analytical source (step 1). In step 2, at least one financial instrument that is associated with the selected recommendation(s) or recommendation level(s) are obtained.

The typical analytical sources are a financial analyst, a financial institution or a group of analysts. The financial instruments may include shares of stock, bonds, options and futures, Real Estate Investment Trusts (REITs), or any other investment securities or vehicles used for the investment purposes for which the analytical sources provide their recommendations. The financial instruments may be purchased or obtained in any other manner. Basically, the method and system of the present invention provides an ability to utilize a consistent investment scheme to invest in the financial instruments that are associated with the recommendations generated by the analytical source. In particular, the method and system of the

present invention enables an investment in the particular financial instruments that have associated therewith a desired (or undesired) recommendation level from the designated analytical source.

As shown in Fig. 2, the method of the present invention may designate the analytical source or sources (step 10), select a desired recommendation level (step 20), and obtain the financial instrument(s) that carry the selected recommendation level from the designated analytical source(s) (step 30). The decision to obtain the financial instrument(s) can be performed when the recommendation at the selected level has been issued by the designated analytical source(s).

For example, the investment fund according to the present invention which is designated as *Goldman Sachs® Buy*[1] should preferably obtain all financial instruments carrying the "Buy" recommendation level from Goldman Sachs®. The investment fund designated as *Thomas Weisel Market Perform* should preferably obtain financial instruments rated as "Market Perform" by Thomas Weisel, and so on. Thus, the *Goldman Sachs® Buy* fund is formed and managed by designating Goldman Sachs® as the analytical source, selecting the "Buy" recommendation level of the selected analytical source, and obtaining or purchasing all financial instruments carrying the "Buy" recommendation level from Goldman Sachs®.

In addition, the investment fund designated as *Goldman Sachs® Buy* and *Thomas Weisel® Market Perform* may also consist of all financial instruments that carry a "Buy" recommendation from Goldman Sachs®, and, simultaneously carry a "Market Perform" recommendation from Thomas Weisel®. A usage of other variations and/or combinations of different financial instruments carrying various recommendations are also conceivable according to the present invention. Indeed, the funds of the present invention are not limited by a single recommendation level. In fact, such fund may consist of all financial instruments rated as "Buy" as well as "Hold" by Goldman Sachs®.

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[1] It should be noted that all registered trademarks mentioned in the specification of the present invention are used only to describe the method and system of the present invention and no association is implied between the inventors thereof and the owners of the registered trademarks described herein.

Usually, the analytical source issues recommendations for several financial instruments. Therefore, it is preferable to allocate the capital of the investment fund among several financial instruments carrying the desired recommendation level. To determine the initial allocation of capital, it is possible to apply a particular mathematical algorithm that may be chosen at the creation of the fund, and made known to the investment public.

Fig. 3 shows a method for the creation and initial allocation of the capital in the investment fund according to the present invention. Initially, in step 100, the desired analytical source is designated and made known to the potential investors (*e.g.*, the financial analyst-Smith). Also, in step 200, a first mathematical algorithm used to determine the initial allocation of the fund's capital is chosen and disclosed to the investment public (*e.g.*, the capital of the fund is divided equally among all financial instruments). In step 300, the desired recommendation level is then selected from the designated analytical source(s) (*e.g.*, the "Buy" recommendation level). The liquid assets are then collected from the investors to create the capital of the fund (step 400). At the time of the fund's creation, the designated analytical source(s) may provide several outstanding recommendations. After the liquid assets are collected, the capital of the fund is invested in the securities that carry the designated recommendation level from the selected analytical source (step 500), and the initial allocation of the capital of the investment fund in accordance with the chosen first mathematical algorithm is provided (step 500).

After the analytical source is designated, the recommendation level is selected and the mathematical algorithm is chosen, the investment activities of the fund may be automated by utilizing the appropriate computer hardware and software known in the art. One exemplary embodiment of the system according to the present invention is shown in Fig. 4.

Fig. 4 shows an exemplary embodiment of a system 50 according to the present invention. The system 50 includes an arrangement 55 which is connected (*e.g.*, via a wired connection or a wireless connection) to a communications network 30. In this exemplary embodiment of the system 50, the arrangement 55 includes a storage device 10, a communications device 15 and a computing device 20. The

storage device 10 may be a hard drive, a Read-Only-Memory ("ROM") device, a Read-Access-Memory ("RAM") device, a laser disk storage device, etc. The communications device 15 may be a network card, a modem, etc. The computing device 20 may be a general purpose microprocessor (*e.g.*, an Intel® Pentium® processor) or a special purpose processor.

The arrangement 55 utilizes the communications device 15 to connect to the communications network 30. The computing device 20 is connected to the communications device 15 for receiving data from and transfer the data to the communications network 30. Generally, various user display devices may be connected to the communications network 30. For example, these user devices may be a personal computer 35, a laptop computer 36, a workstation 37 and/or other communication devices. These user devices communicate with the arrangement 55 via the communications network 30 to possibly receive display data generated by the arrangement 55.

The arrangement 55 is adapted to receive various information via the communications network 30. Such information generally includes financial data for financial instruments 40 and financial analyst analysis rating data 45 (e.g., the recommendations) for these financial instruments. The arrangement 55 may also receive ratings standard data 48 (e.g., the recommendation levels) for each financial analyst.

The financial data 40 may include stock names and corresponding stock prices. The financial data 40 may also include the financial information on options and other financial instruments. In addition to the description of the recommendations provided above, the financial analyst analysis data 45 may provide a list names of financial analysts, their rating statuses for one or more stocks, and particular points in time when the rating statuses were issued. The financial analyst analysis data 45 may also provide one or more stocks, the rating statuses for each of the stocks by the investment banks which evaluate the particular stock, and the points in time when the rating statuses were issued by the financial analysts. In addition to the description of the recommendation levels provided above, the ratings standard data 48 may include names of financial analysts and rating lists for each financial

analyst. In particular, the financial analyst rating standard data 48 may provide a name of a particular financial analyst (*e.g.*, Bear Stearns) and a rating list of this financial analyst (*e.g.*, Strong Buy, Buy, Above Average, Accumulate, Hold, Below Average and Sell).

An exemplary operation of the system 50 according to the present invention is as follows. The arrangement 55 may request the data 40, 45, 48 from a data provider (*e.g.*, an information server) via the communications network 30. Then, the data provider transmits a data stream which includes the requested financial data 40 and the requested financial analyst analysis data 45 to the arrangement 55. The data provider may also transmit the financial analyst ratings standard data 48 to the arrangement 55. The arrangement 55 receives this data stream from the communications network 30 via its communications device 15, and records the data provided in the data stream in the storage device 10. The storage device 10 may include one or more databases to conveniently maintain the currently received data, along with the data which was previously received. These databases may include the financial data 40 which can be correlated with the financial analyst analysis data 45 using, *e.g.*, an indexing procedure.

A user (*e.g.*, the investor) may be connected to the communication network 30 via a display device (*e.g.*, the personal computer 35, the laptop 36, the workstation 37, a printer, etc.). Then, the user may want to participate in investing in one or more of the funds created and/or managed using the data 40, 45, 48. Using the method shown in Figs. 1, 2, 3 and 5 described herein, the arrangement 55 may create and/or manage the funds associated with the recommendations issued by the particular financial analyst(s). In addition, the arrangement 55 may allow the user to invest in these funds, manage his or her assets within the funds, and/or sell the assets from one or more of the funds. The arrangement 55 may execute one or more of these functions by retrieving the information regarding the ratings or other analyst data from the storage device 10 (by the computing device 20) and executing the method according to the present invention described herein with reference to Figs. 1, 2, 3 and 5.

The management and investment practices of the investment funds according to the present invention are similar to the currently existing index funds (*i.e.*, S & P 500 index funds, Dow Transportation index fund, etc.) in which the investment decisions and the capital allocation are guided by predetermined mathematical algorithms. In contrast, the traditional mutual funds are managed by individuals with a significant degree of discretion. Therefore, the investment funds according to the present invention may be called the Recommendation Based Funds (RBF).

Example 1 provided below shows the initial allocation of the capital in a hypothetical Recommendation Based "Buy" Fund. It should be understood that this example is provided only as an illustration, and in no way limits the present invention.

Example 1. Creation of John Smith Buy RBF.

1. John Smith is designated as the analytical source.

2. The first mathematical algorithm is chosen, and includes an equal division of the capital among all financial instruments that carry the recommendation level to be selected from John Smith.

3. The "Buy" recommendation level is selected.

4. The liquid assets are collected by the investors who are interested in investing in the financial instruments recommended by John Smith. The total of the collected liquid assets may be $9,000. On the date of the initial allocation of the capital, John Smith has "Buy" recommendations for the shares of a common stock of companies A, B and C. The chosen mathematical algorithm (*e.g.*, an equal division of capital) is applied to determine the initial allocation of the capital. Thus, John Smith "Buy" Fund should invest $3,000 in the shares of company A, $3,000 in the shares of company B and $3,000 in the shares of company C.

Although the equal division of capital is one of the simpler mathematical algorithms, other algorithms may also be used according to the present invention. For example, the chosen mathematical algorithm may relate to an indicator of the performance of the financial instruments to be obtained by the investment fund. The exemplary indicators of this nature can be price to earnings per share (P/E) ratio,

standard deviation of return, ratio of excess return ($E(R_e)$) to variance of excess return ($Var(R_e)$), etc., all of which are well known in the art. When such indicator is used as the basis for the above-described mathematical algorithm, the capital of the investment fund may be used to obtain the specific financial instruments in accordance with the relative weight of the indicator for the specific financial instrument to the total capital of the fund. Such allocation of the capital may, *e.g.*, further the goal of maximizing the risk adjusted return of the investment fund since these indicators are related to the performance of the financial instruments. For example, a smaller price per earning per share ratio (P/E) may indicate the strength of the shares of the particular stock.

Example 2 described below shows the initial allocation of the capital in a hypothetical Recommendation Based "Buy" Fund with the chosen mathematical algorithm based on the price to earnings per share (P/E) ratio. It should be understood that this example is provided only by way of an illustration, and in no way limits the present invention.

Example 2. Creation of John Brown Buy RBF based on P/E ratio.

1. John Brown is designated as the analytical source.

2. The chosen first mathematical algorithm is the allocation of the capital in accordance with the P/E ratios for the financial instruments to be obtained (*e.g.*, for which the exemplary algorithm is shown below) that carry the recommendation level to be selected from John Brown's recommendations.

3. The "Buy" recommendation level of John Brown's recommendations is selected.

4. The liquid assets of the fund are collected from the investors who are interested in investing in the financial instruments recommended by John Brown. A Recommendation Based Fund can be designated as John Brown "Buy" Fund. The initial liquid assets of the fund are provided by the investors and consist of, *e.g.*, $1,000. The John Brown "Buy" Fund purchases the financial instruments associated with a "Buy" recommendation from John Brown or from other sources. On the date of the initial allocation of the capital, John Brown has "Buy"

recommendations for the shares of a common stock of companies A_1, B_1 and C_1. The P/E for the shares of companies A_1, B_1 and C_1 are 50, 40 and 10, respectively. Thus, the John Brown "Buy" Fund preferably allocates the initial capital on the basis of the P/E ratios for shares of stock of companies A_1, B_1 and C_1 . Since the smaller P/E ratio may indicate the strength of the financial instrument, a part of the fund's capital allocated to the shares of the particular stock is preferably inversely proportional to the P/E ratio for the stock. The following is the exemplary mathematical algorithm that relates to the P/E ratios of the financial instruments obtained by the fund:

$$Y_{A1}=(P/E_{A1}+P/E_{B1}+P/E_{C1})/P/E_{A1}; \quad (1)$$

$$Y_{B1}=(P/E_{A1}+P/E_{B1}+P/E_{C1})/P/E_{B1}; \quad (2)$$

$$Y_{C1}=(P/E_{A1}+P/E_{B1}+P/E_{C1})/P/E_{C1}; \quad (3)$$

$$X_{A1}=X * Y_{A1}/(Y_{A1}+Y_{B1}+Y_{C1}): \quad (4)$$

$$X_{B1}=X * Y_{B1}/(Y_{A1}+Y_{B1}+Y_{C1}); \text{ and} \quad (5)$$

$$X_{C1}=X * Y_{C1}/(Y_{A1}+Y_{B1}+Y_{C1}), \quad (6)$$

where P/E_{A1}, P/E_{B1} and P/E_{C1} are the price to earnings per share ratios for stocks A_1, B_1 and C_1, respectively; X is the total capital of the fund; Y_{A1}, Y_{B1} and Y_{C1} are the fractions of the P/E ratios for stocks A_1, B_1 and C_1, respectively; and X_{A1}, X_{B1} and X_{C1} are the capital allocations (in dollars) for stocks A_1, B_I and C_1, respectively. Applying this algorithm to the exemplary numbers provided above, the following results are obtained:

$Y_{A1}=(10+40+50)/10=10$

$Y_{B1}=(10+40+50)/40=2.5$

$Y_{C1}=(10+40+50)/50=2$

$X_{A1}=1000*10/(10+2.5+2)=689$

$X_{B1}=1000*2.5/(10+2.5+2)=172$

$X_{C1}=1000*2/(10+2.5+2)=137$

Thus, using these results, the John Brown "Buy" Fund should preferably invest \$689 in the shares of company A_1, \$172 in the shares of company B_1 and \$137 in the shares of company C_1.

Another useful indicator of the performance of financial instruments is the ratio of excess return ($E(R_e)$) to a variance of excess return ($Var(R_e)$). Example 3

describes an exemplary use of this indicator in allocating the capital of a hypothetical RBF.

Example 3. Creation of John Johns Buy RBF based on the ratio of excess return to the variance of excess return ($E(R_e)/ Var(R_e)$).

1. John Johns is designated as the analytical source.

2. The first mathematical algorithm is chosen, and includes the allocation of the capital in accordance with the $E(R_e)/ Var(R_e)$ ratios for the financial instruments to be obtained that carry recommendation level to be selected from John Johns. The exemplary algorithm is described in further detail below.

3. The "Buy" recommendation level for John Johns as the designated analytical source is selected.

4. The liquid assets are collected from investors who are interested in investing in the financial instruments recommended by John Johns. The collected liquid assets of the fund are, *e.g.*, $10,000. The John Johns "Buy" Fund purchases the financial instruments carrying a "Buy" recommendation from John Johns or from another entity. On the date of the initial allocation of capital, John Johns has "Buy" recommendations for shares of a common stock of companies A_2, B_2 and C_2. The $E(R_e)/ Var(R_e)$ ratios for the shares of companies A_2, B_2 and C_2 are 0.1, 0.4 and 0.5, respectively. The John Johns "Buy" Fund allocates the initial capital on the basis of the $E(R_e)/ Var(R_e)$ ratios for the shares of stock of companies A_2, B_2 and C_2 . Since the larger $E(R_e)/ Var(R_e)$ ratios may indicate the strength of the financial instrument, the allocation of the capital of the fund invested in the specific stock can be directly proportional to the $E(R_e)/ Var(R_e)$ ratios for the particular stock. The following is the exemplary mathematical algorithm that relates to $E(R_e)/ Var(R_e)$ ratios for the shares of stock of companies A_2, B_2 and C_2 to be obtained by the fund.

$$Z_{A2}=R_{A2}/R_{A2}+R_{B2}+R_{C2}); \quad (7)$$

$$Z_{B2}=R_{B2}/R_{A2}+R_{B2}+R_{C2}); \quad (8)$$

$$Z_{C2}=R_{C2}/(R_{A2}+R_{B2}+R_{C2}); \quad (9)$$

$$X_{A2}=X * R_{A2}; \quad (10)$$

$$X_{B2}=X * R_{B2}; \text{ and} \quad (11)$$

$X_{C2}=X * R_{C2}$, (12)

where R_{A2}, R_{B2} and R_{C2} are the ratios of excess return to variance of the excess return for stocks A_2, B_2 and C_2, respectively; X is the total capital of the fund; Z_{A2}, Z_{B2} and Z_{C2} are the fractions of the ratios of the excess return to the variance of the excess return for stocks A_2, B_2 and C_2, respectively; and X_{A2}, X_{B2} and X_{C2} are the capital allocations (in dollars) for stocks A_2, B_2 and C_2, respectively.

Applying this algorithm, it is possible to determine the initial allocation of the capital for the John Johns RBF by using the exemplary numbers provided above.

$Z_{A2}=0.1/(0.1+0.4+0.5)=0.1$

$Z_{B2}=0.4/(0.1+0.4+0.5)=0.4$

$Z_{C2}=0.5/(0.1+0.4+0.5)=0.5$

$X_{A2}=10,000*0.1=1,000$

$X_{B2}=10,000*0.4=4,000$

$X_{C2}=10,000*0.5=5,000$

Thus, the John Johns "Buy" Fund should preferably invest $1,000 in the shares of company A_2, $4,000 in the shares of company B_2, and $5,000 in the shares of company C_2.

The above-described exemplary mathematical algorithm may also relate to an indicator of a performance of the investment fund as a whole, *e.g.*, an average performance indicator for all financial instruments to be obtained by the fund. This indicator may be, for example, the Sharpe's ratio of the fund.

According to an embodiment of the present invention, the mathematical algorithm for the capital allocation can be either explicitly specified/set as provided in the examples above or derived from a particular goal function that maximizes (and/or minimizes) a pre-selected indicator of the fund's performance.

The Sharpe's ratio may serve as a well-recognized, objective and verifiable measurement of the risk-adjusted return. The maximization of the risk-adjusted return is one of the financial goals of RBF. The Sharpe's ratio of RBF may be maximized by allocating the capital of RBF in accordance with the ratio of excess return ($E(R_e)$) to the variance of excess return ($Var(R_e)$) for each financial instrument

held by the respective fund. Example 4 provided below shows an exemplary mathematical algorithm that may be used to allocate the capital of a hypothetical RBF.

Example 4. Maximization of the Sharpe's ratio as the mathematical algorithm to be used to determine the allocation of capital in a Recommendation Based Fund.

In this example, a, b, c, d are $E(R_{e_A})$, $E(R_{e_B})$, $Var(R_{e_A})$, $Var(R_{e_B})$ which are defined as the excess return and variance of excess return of stocks A and B, respectively. In addition, x and y are defined as the capital allocations of the unit of money to stock A and B, respectively. The financial goal of maximizing the Sharpe's ration may be expressed as follows:

$$\begin{cases} x + y = 1 & (13) \\ \dfrac{ax + by}{\sqrt{cx^2 + dy^2}} \to \max & (14) \end{cases}$$

Thus, the task of the allocation is reduced to find a conditional maximum of the analytical function. Using conventional techniques, and noticing that gradient is:

$$\nabla\left(\frac{ax + by}{\sqrt{cx^2 + dy^2}}\right) = \frac{1}{(cx^2 + dy^2)^{3/2}}(ady^2 - bcxy, bcx^2 - adxy) \qquad (15)$$

the following equations can be generated:

$$\begin{cases} x + y = 1, \text{ and} & (16) \\ ady^2 - bcxy = bcx^2 - adxy & (17) \end{cases}$$

In turn, this leads to the following:

$$\frac{b}{d}x=\frac{a}{c}y \tag{18}$$

Thus,

$$\frac{x}{y}=\frac{E(R_{e_A})/Var(R_{e_A})}{E(R_{e_B})/Var(R_{e_B})} \tag{19}$$

In other words the capital should be allocated in proportion to $E(R_e)/Var(R_e)$ ratios of the financial instruments to be obtained by the investment fund.

After the capital of the investment fund is initially allocated, the number of events may necessitate a re-allocation of capital. Fig. 5 shows a diagram of the method for the re-allocation of the capital of the investment fund according to the present invention. In step 1000, the capital is allocated for the fund. After the fund is created and the capital of the fund is initially allocated, the capital of the fund may be re-allocated upon an occurrence of one or more predetermined triggering events (step 2000). Such exemplary events are described in further detail below.

The designated analytical source may issue a new recommendation (event 2100) for one or more financial instruments not previously held by the investment fund. For example, after the hypothetical John Smith "Buy" RBF (described in Example 1) has been created, John Smith may issue a new recommendation for the shares of the common stock of company D. Prior to the issuance of the new recommendation, the John Smith "Buy" RBF's capital is invested in the shares of companies A, B and C. After the new recommendation is issued, the capital of the John Smith "Buy" RBF should preferably be re-allocated in order to obtain the shares of the common stock of Company D.

Similarly, a change in the recommendation level (event 2200) from the designated analytical source may possibly require a re-allocation of capital. For example, if the shares of the common stock of company A held by the John Smith "Buy" RBF (described in Example 1) are downgraded by John Smith from "Buy" to "Hold", the John Smith Buy RBF should preferably re-allocate these funds to remove the shares of Company A from its holdings.

Other triggering event may also necessitate the re-allocation of the capital. For example, a withdrawal of the liquid assets by one or more investors (event 2300), or a new investment of liquid assets into the investment fund (event 2500) may require a sale or purchase of the financial instruments.

As described above, the allocation of the capital of the investment fund is determined by applying a mathematical algorithm, which may be related to the indicator of the performance of one or more financial instruments, or to the indicator of the performance of the investment fund as a whole. A change in the performance indicator (event 2400), which relates to the chosen mathematical algorithm may also be selected to necessitate a re-allocation of capital.

Further, the expiration of a pre-defined time period (event 2600) may also be chosen as a triggering event for re-allocating the capital.

The triggering events leading to the re-allocation of the capital may be predetermined at the creation of the investment fund, and as such may be defined as the predetermined triggering events (general event 2000).

The new allocation of capital after the re-allocation may be determined by an application of a second mathematical algorithm (step 3000). The second mathematical algorithm may be substantially the same as, or different from the first mathematical algorithm (step 200) used in the determination of the initial allocation of the capital. After the second mathematical algorithm is applied, the new allocation of the capital (step 5000) is usually achieved by the sale and/or purchase of the financial instruments (step 4000).

The exemplary investment fund based on the predetermined triggering events is a Fixed-Horizon Recommendation Based Fund (FH-RBF). FH-RBF is an

investment fund in which the financial instruments to be obtained are held for a pre-defined time period (t_0,t_1) after the recommendation at the selected recommendation level is issued by the designated analytical source. In particular, t_0 is defined as the period of time from the issuance of the recommendation at the desired recommendation level to the time when the associated financial instruments is preferably obtained by the investment fund, and t_1 is defined as the time from the issuance of the recommendation to the time when the associated financial instrument should be sold by the investment fund. Example 5 provided below describes a creation and operation of FH-RBF. Generally, the pre-defined period (t_0,t_1) can be the same for all financial instruments held by the investment fund. However, the time period (t_0,t_1) may be different for one or more of the financial instruments.

Example 5. Creation and management of Goldman Sachs® "Buy 3-45 days" FH-RBF.

1. Goldman Sachs® is designated as the analytical source.

2. The first mathematical algorithm is chosen which includes the equal division of the capital among all financial instruments.

3. The "Buy" recommendation level is selected.

4. Goldman Sachs® "Buy 3-45 days" FH-RBF is created. The chosen exemplary second mathematical algorithm can be as follows:

Goldman Sachs® "Buy 3-45 days" FH-RBF should preferably obtain the financial instrument 3 days after the "Buy" recommendation is issued (t_0=3) and should hold them until either of the following occurs first:

a) one or more financial instruments held by the fund is downgraded to a lower recommendation level; or

b) approximately 45 days (t_1=45) after the original "Buy" recommendation has been issued.

Thus, if the Buy recommendation for the shares of a common stock of the company A_3 has been issued on 1/1/2000, the Goldman Sachs® "Buy 3-45 days" FH-RBF would buy the shares of company A_3 on 1/4/2000 (t_0=3) and sell it on 2/14/2000

(t_1=45), assuming that the shares of company A_3 have not been downgraded during this period.

It should be appreciated that those skilled in the art will be able to devise numerous embodiments of the method and system of the present invention which, although not explicitly shown or described herein, embody the principles of the invention, and are thus within the spirit and scope of the present invention.

CLAIMS

1. A method for forming or managing an investment fund, wherein a total market value of assets of the fund is a capital of the investment fund, the method comprising:

a) designating one or more analytical sources;

b) selecting at least one desired recommendation level from the designated one or more analytical sources; and

c) obtaining one or more financial instruments associated with the at least one selected recommendation level provided by the designated one or more analytical sources.

2. The method of claim 1, further comprising collecting liquid assets from one or more investment sources into the investment fund.

3. The method of claim 1, further comprising selecting a first mathematical algorithm, and allocating the capital of the investment fund in accordance with the selected first mathematical algorithm, wherein the capital of the investment fund is initially allocated.

4. The method of claim 1, wherein the obtaining step comprises purchasing the one or more financial instruments.

5. The method of claim 2, wherein the liquid assets comprise cash.

6. The method of claim 2, wherein the liquid assets comprise freely marketable securities.

7. The method of claim 2, wherein the one or more financial instruments include at least one share of a common stock.

8. The method of claim 1, wherein the designated one or more analytical sources include a specific financial institution.

9. The method of claim 1, wherein the designated one or more analytical sources include a specific financial analyst.

10. The method of claim 1, wherein the selected at least one recommendation level includes at least one of:

- a "Buy" recommendation,
- a "Strong Buy" recommendation,
- an "Accumulate" recommendation, and
- a "Hold" recommendation.

11. The method of claim 3, wherein the first mathematical algorithm represents an equal division of the capital among all financial instruments recommended by the one or more analytical sources.

12. The method of claim 3, wherein the first mathematical algorithm relates to an indicator of a performance of the one or more financial instruments.

13. The method of claim 12, wherein the one or more financial instruments includes at least one share of a common stock, and the indicator includes a ratio of an excess return to variance of the excess return.

14. The method of claim 12, wherein the one or more financial instruments includes at least one share of a common stock, and the indicator includes a price to earning per share (P/E) ratio.

15. The method of claim 12, wherein the one or more financial instruments includes at least one share of a common stock, and the indicator includes a standard deviation of return.

16. The method of claim 3, wherein the first mathematical algorithm at least one of:

relates to an indicator of a performance of the investment fund, and

derived from a goal to maximize or minimize an indicator of the performance or a combination of indicators of the performance.

17. The method of claim 16, wherein the indicator is a Sharpe's ratio.

18. The method of claim 1, further comprising re-allocating the capital of the investment fund upon an occurrence of a predetermined triggering event.

19. The method of claim 18, wherein the predetermined triggering event includes a new recommendation from at least one of the designated one or more analytical sources.

20. The method of claim 18, wherein the predetermined event includes a change in performance of the one or more financial instruments held by the investment fund.

21. The method of claim 18, wherein the predetermined event includes a change in the selected at least one recommendation level from the designated one or

more analytical sources.

22. The method of claim 21, wherein the change in the at least one recommendation level includes a removal of at least one of the one or more financial instruments held by the investment fund from the selected recommendation level.

23. The method of claim 18, wherein the predetermined event includes a withdrawal of liquid assets from the investment fund.

24. The method of claim 18, wherein the predetermined event includes a new investment of liquid assets into the investment fund.

25. The method of claim 18, wherein the predetermined event includes an expiration of a pre-defined time period.

26. The method of claim 15, wherein the re-allocation step comprises applying a second mathematical algorithm to determine a new allocation of the capital of the investment fund.

27. The method of claim 26, wherein the second mathematical algorithm relates to an indicator of a performance of the one or more financial instruments.

28. The method of claim 27, wherein the one or more financial instruments includes at least one share of a common stock, and the indicator includes a ratio of an excess return to a variance of the excess return.

29. The method of claim 27, wherein the financial instruments includes at least one share of a common stock, and the indicator includes a price to earning per

share (P/E) ratio.

30. The method of claim 27, wherein the financial instruments includes at least one share of a common stock, and the indicator includes a standard deviation of return.

31. The method of claim 26, wherein the second mathematical algorithm at least one of:

relates to an indicator of a performance of the investment fund, and

derived from a goal to maximize or minimize an indicator of the performance or a combination of indicators of the performance.

32. The method of claim 31, wherein the indicator is a Sharpe's ratio.

33. The method of claim 26, wherein the first mathematical algorithm and the second mathematical algorithm are substantially the same.

34. The method of claim 15, wherein the re-allocation step includes one of selling and purchasing the one or more financial instruments to re-allocate the capital of the investment fund.

35. A method for forming or managing an investment fund, comprising:

a) selecting at least one recommendation from a set of recommendations provided by an analytical source; and

b) obtaining at least one financial instrument that is associated with the at least one selected recommendation to form or manage the investment fund.

36. The method of claim 35, wherein the at least one financial instrument includes at least one share of a common stock.

37. The method of claim 35, wherein the selecting step includes selecting at least one specific recommendation level.

38. The method of claim 37, wherein the at least one specific recommendation level includes one of:

- a "Buy" recommendation,
- a "Strong Buy" recommendation,
- an "Accumulate" recommendation, and
- a "Hold" recommendation.

39. The method of claim 35, wherein the analytical source includes at least one of a specific financial institution, a group of financial analysts, a sub-group of analysts and a single financial analyst.

40. The method of claim 35, wherein the obtaining step comprises purchasing the at least one financial instrument.

41. The method of claim 37, wherein the obtaining step comprises purchasing the at least one financial instrument which has associated therewith the at least one specific recommendation level of the at least one recommendation provided by the selected analytical source.

42. The method of claim 35, further comprising obtaining assets for the investment fund, wherein a total market value of the assets of the investment fund is a capital of the investment fund.

43. The method of claim 42, wherein the obtaining step comprises allocating the capital of the investment fund in accordance with a predetermined mathematical algorithm.

44. The method of claim 43, wherein the mathematical algorithm at least one of:

relates to an indicator of a performance of the investment fund, and

derived from a goal to maximize or minimize an indicator of the performance or a combination of indicators of the performance.

45. The method of Claim 44, wherein the at least one financial instrument includes at least one share of a common stock, and the indicator includes a ratio of an excess return to a variance of an excess return.

46. The method of claim 44, wherein the at least one financial instrument includes at least one share of a common stock, and the indicator includes a price to earning per share (P/E) ratio.

47. The method of claim 44, wherein the at least one financial instrument includes at least one share of a common stock, and the indicator includes a standard deviation of return.

48. The method of claim 43, wherein the predetermined mathematical algorithm at least one of:

relates to an indicator of a performance of the investment fund, and

derived from a goal to maximize or minimize an indicator of the performance or a combination of indicators of the performance.

49. The method of claim 48, wherein the indicator is a Sharpe's ratio.

50. The method of claim 35, further comprising re-allocating the capital of the investment fund upon an occurrence of a predetermined triggering event.

51. A system for forming or managing an investment fund, wherein a total market value of assets of the fund is a capital of the investment fund, system comprising:

a processing device which:

- designates one or more analytical sources,
- selects at least one desired recommendation level from the designated one or more analytical sources, and
- obtains one or more financial instruments associated with the at least one selected recommendation level provided by the designated one or more analytical sources.

52. A system for forming or managing an investment fund, comprising:

a processing device which:

- selects at least one recommendation from a set of recommendations provided by an analytical source, and
- obtains at least one financial instrument that is associated with the at least one selected recommendation to form or manage the investment fund.

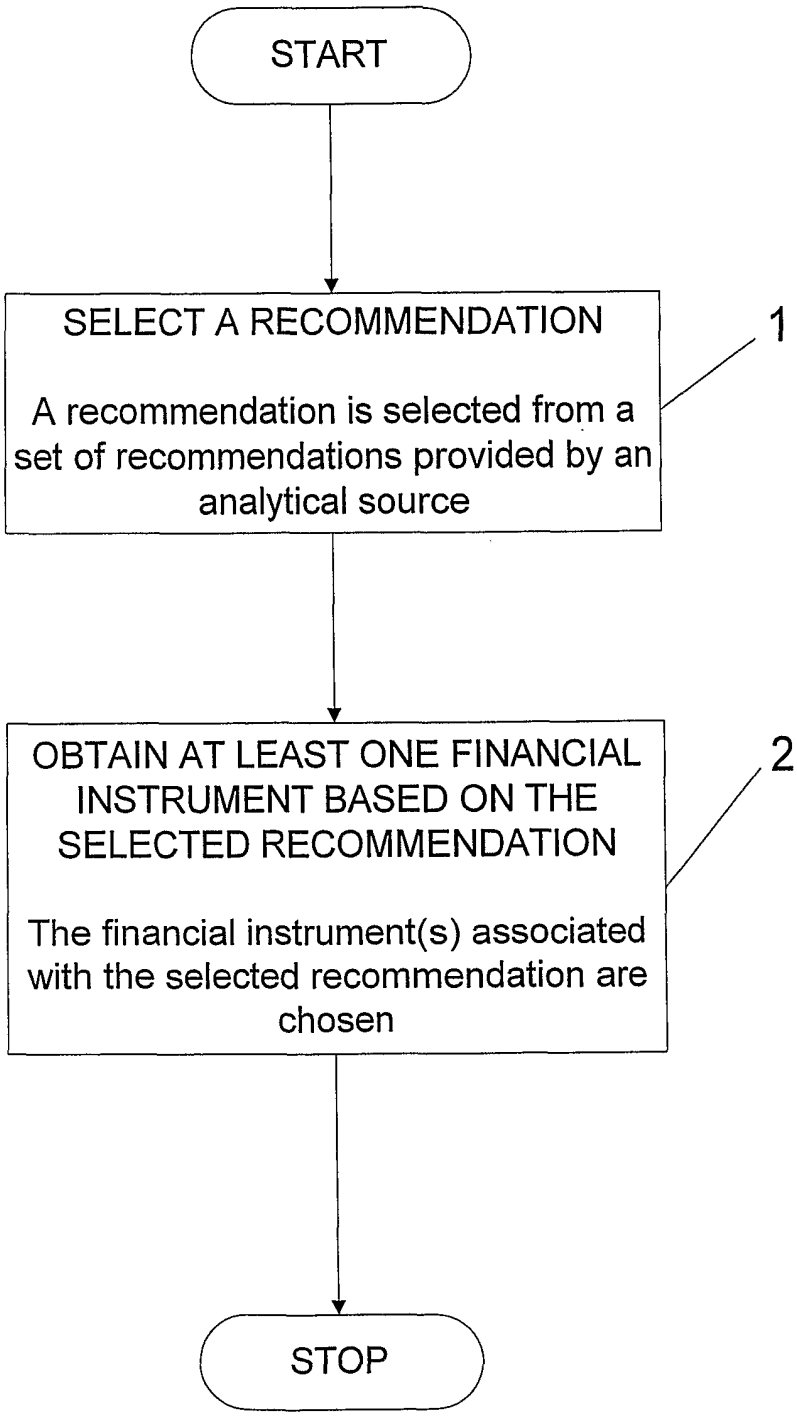
START
SELECT A RECOMMENDATION
A recommendation is selected from a set of recommendations provided by an analytical source
1
OBTAIN AT LEAST ONE FINANCIAL INSTRUMENT BASED ON THE SELECTED RECOMMENDATION
The financial instrument(s) associated with the selected recommendation are chosen
2
STOP

Fig. 1

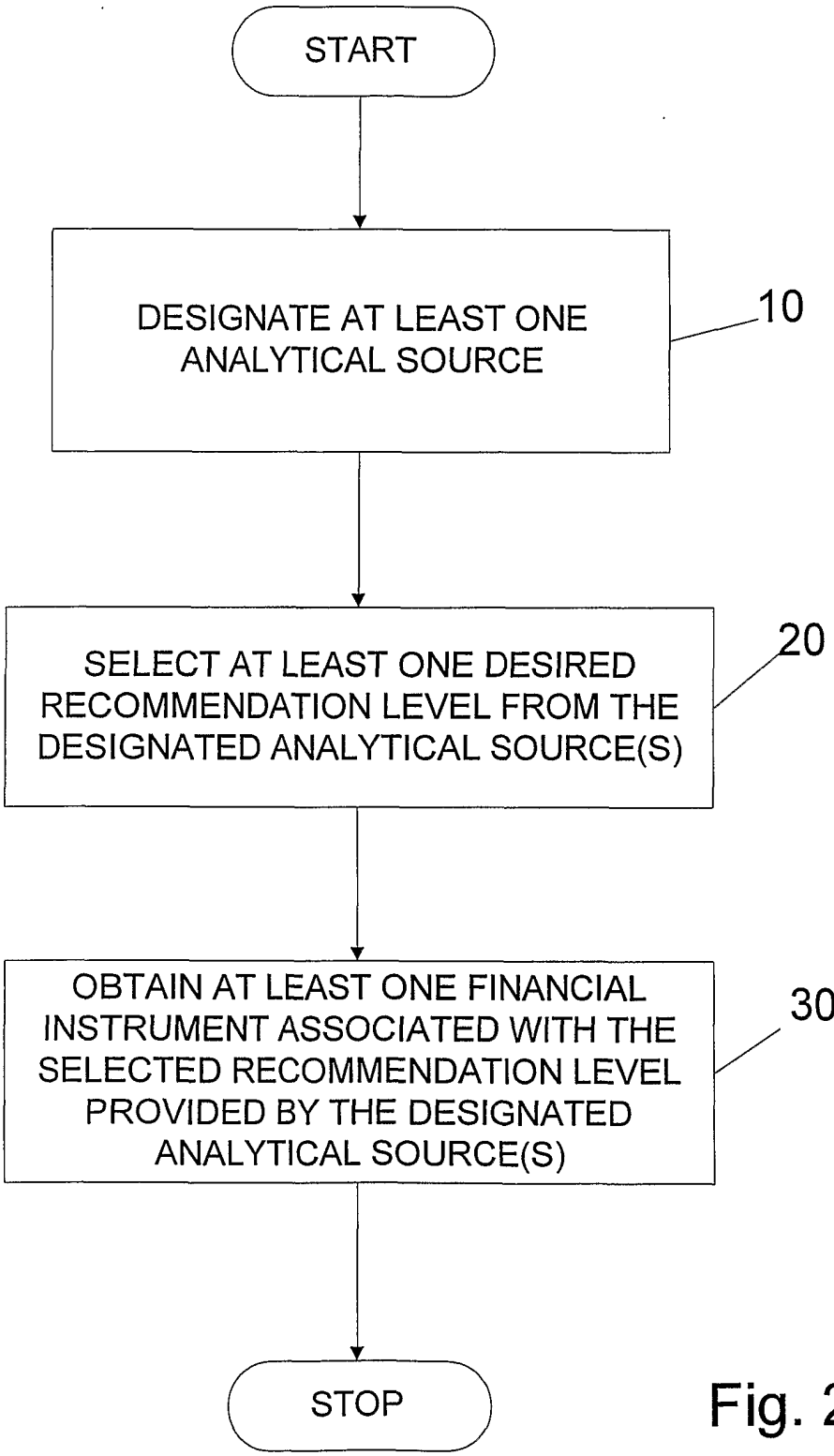
START
DESIGNATE AT LEAST ONE ANALYTICAL SOURCE
10
SELECT AT LEAST ONE DESIRED RECOMMENDATION LEVEL FROM THE DESIGNATED ANALYTICAL SOURCE(S)
20
OBTAIN AT LEAST ONE FINANCIAL INSTRUMENT ASSOCIATED WITH THE SELECTED RECOMMENDATION LEVEL PROVIDED BY THE DESIGNATED ANALYTICAL SOURCE(S)
30
STOP

Fig. 2

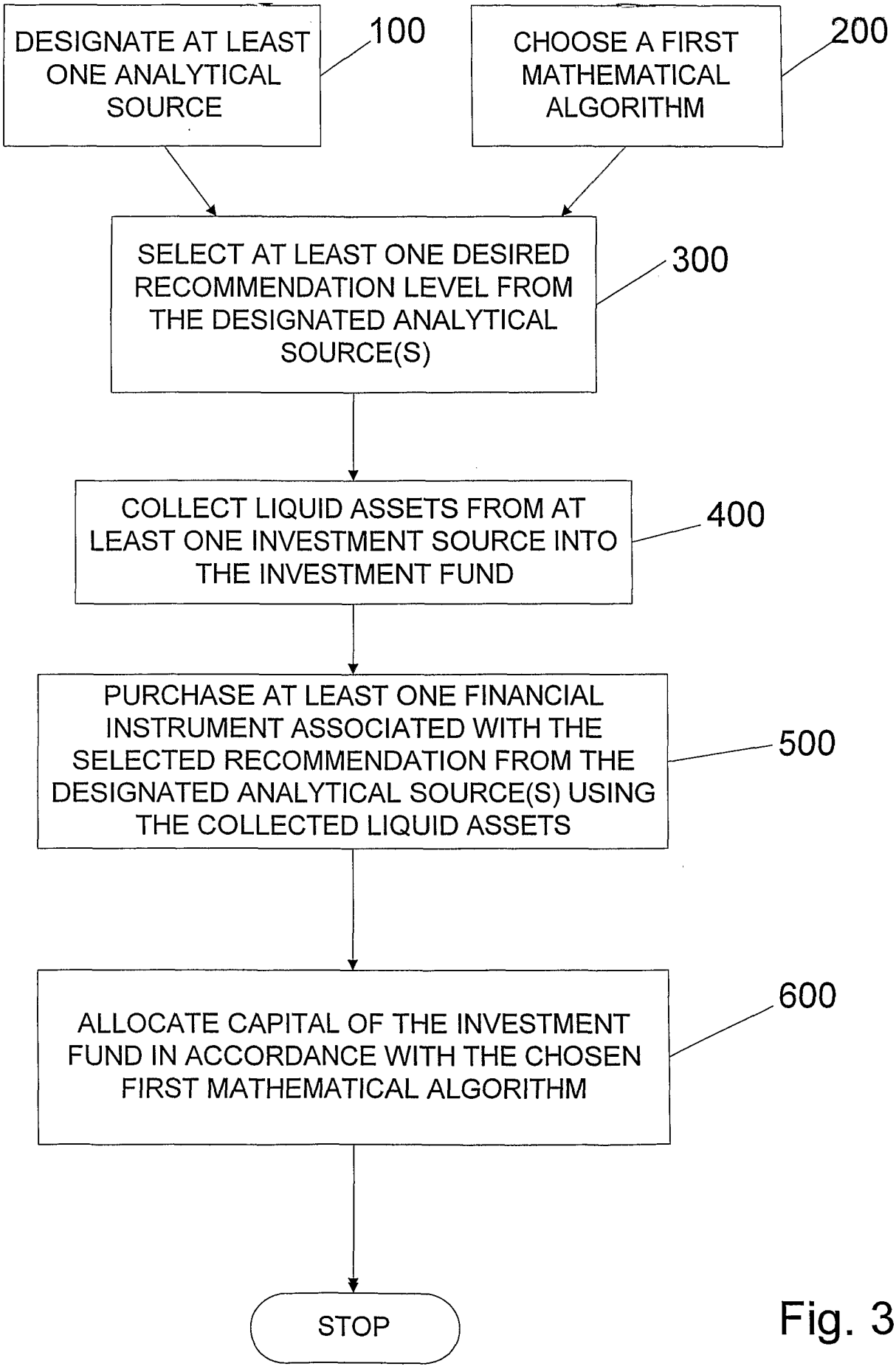
DESIGNATE AT LEAST ONE ANALYTICAL SOURCE
100
CHOOSE A FIRST MATHEMATICAL ALGORITHM
200
SELECT AT LEAST ONE DESIRED RECOMMENDATION LEVEL FROM THE DESIGNATED ANALYTICAL SOURCE(S)
300
COLLECT LIQUID ASSETS FROM AT LEAST ONE INVESTMENT SOURCE INTO THE INVESTMENT FUND
400
PURCHASE AT LEAST ONE FINANCIAL INSTRUMENT ASSOCIATED WITH THE SELECTED RECOMMENDATION FROM THE DESIGNATED ANALYTICAL SOURCE(S) USING THE COLLECTED LIQUID ASSETS
500
ALLOCATE CAPITAL OF THE INVESTMENT FUND IN ACCORDANCE WITH THE CHOSEN FIRST MATHEMATICAL ALGORITHM
600
STOP

Fig. 3

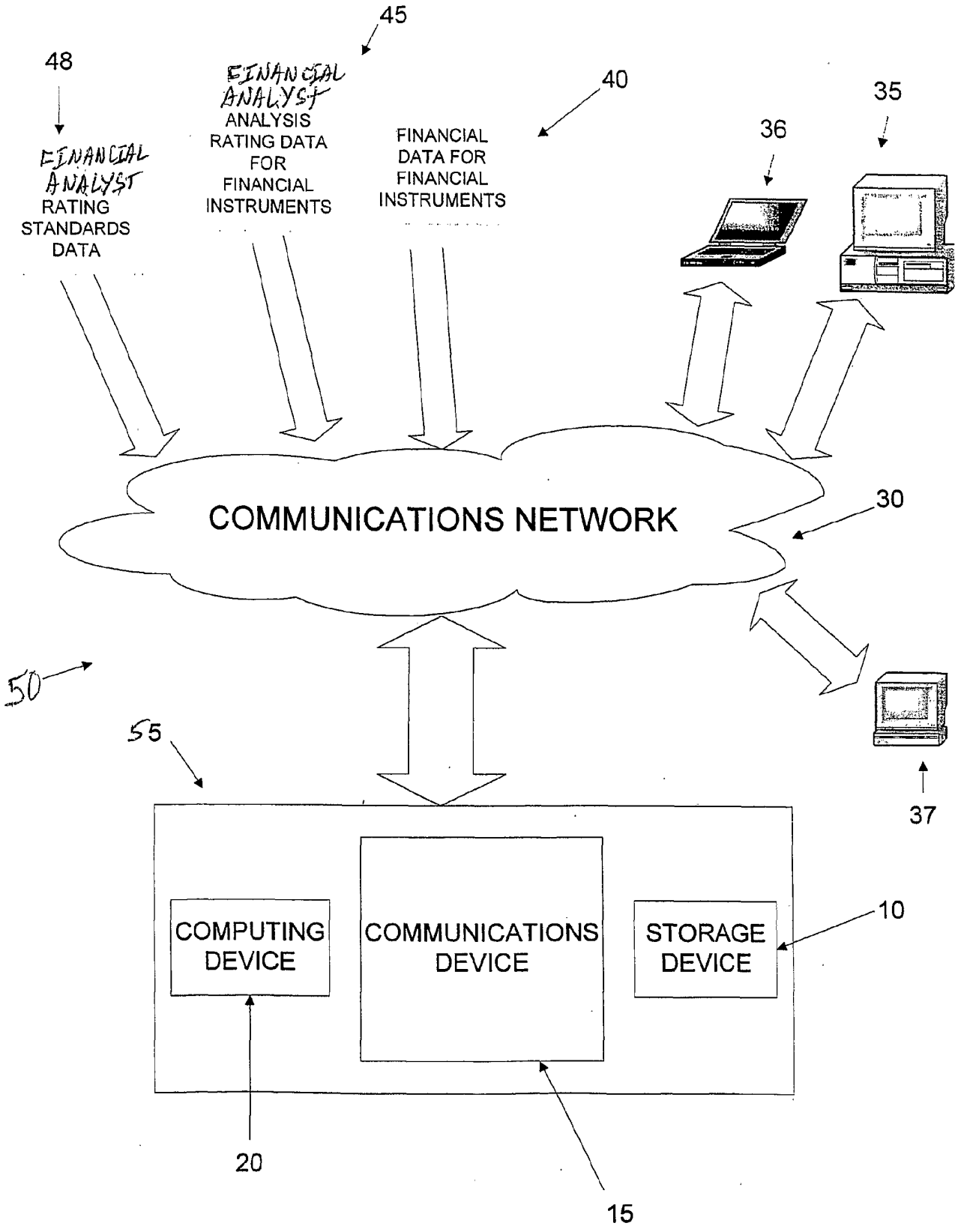
45
48
FINANCIAL ANALYST RATING STANDARDS DATA
FINANCIAL ANALYST ANALYSIS RATING DATA FOR FINANCIAL INSTRUMENTS
40
FINANCIAL DATA FOR FINANCIAL INSTRUMENTS
35
36
COMMUNICATIONS NETWORK
30
50
55
37
COMPUTING DEVICE
COMMUNICATIONS DEVICE
STORAGE DEVICE
10
20
15

FIG. 4

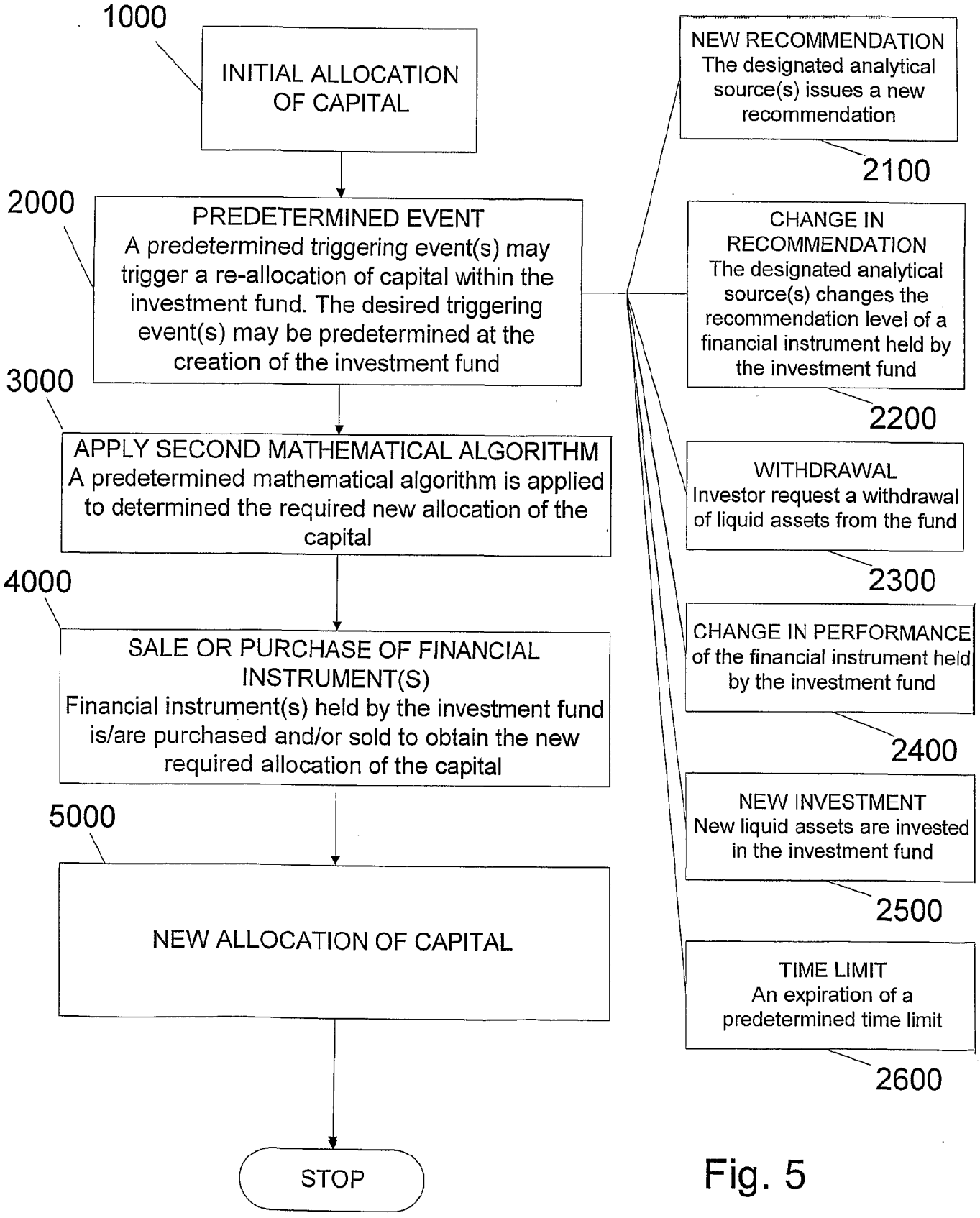
1000
INITIAL ALLOCATION OF CAPITAL
2000
PREDETERMINED EVENT
A predetermined triggering event(s) may trigger a re-allocation of capital within the investment fund. The desired triggering event(s) may be predetermined at the creation of the investment fund
3000
APPLY SECOND MATHEMATICAL ALGORITHM
A predetermined mathematical algorithm is applied to determined the required new allocation of the capital
4000
SALE OR PURCHASE OF FINANCIAL INSTRUMENT(S)
Financial instrument(s) held by the investment fund is/are purchased and/or sold to obtain the new required allocation of the capital
5000
NEW ALLOCATION OF CAPITAL
STOP
NEW RECOMMENDATION
The designated analytical source(s) issues a new recommendation
2100
CHANGE IN RECOMMENDATION
The designated analytical source(s) changes the recommendation level of a financial instrument held by the investment fund
2200
WITHDRAWAL
Investor request a withdrawal of liquid assets from the fund
2300
CHANGE IN PERFORMANCE
of the financial instrument held by the investment fund
2400
NEW INVESTMENT
New liquid assets are invested in the investment fund
2500
TIME LIMIT
An expiration of a predetermined time limit
2600

Fig. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/41878

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F17/60
US CL : 705/1

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)
U.S. : 705/1; 705/26; 705/36

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)
DIALOG

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,812,987 A (LUSKIN et al.) 22 September 1998 (22.09.1998) See abstract and specification.	1-52
X	US 5,893,079 A (CWENAR), 06 April 1999 (06.04.1999), See specification and abstract.	1-52
Y	US 6,064,985 A (ANDERSON) 16 May 2000 (16.05.2000), See abstract and specification.	1-52
Y	US 5,729,700 A (MELNIKOFF) 17 March 1998 (17.03.1998), See abstract and specification.	1-52
A	US 5,704,045 A (KING et al.) 30 December 1997 (30.12.1997) See abstract and specification.	1-52
A	US 6,092,056 A (TULL, JR. et al.) 18 July 2000 (18.07.2000) See abstract and specification.	1-52
A	US 6,003,018 A (MICHAUD et al.) 14 December 1999 (14.12.1999) See abstract and specification.	1-52
A	US 5,193,056 A (BOES) 09 March 1993 (09.03.1993) See abstract and specification.	1-52

☐ Further documents are listed in the continuation of Box C. ☐ 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 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	Date of mailing of the international search report
30 November 2001 (30.11.2001)	16 JAN 2002
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Mark A Fadok Telephone No. (703) 305-3900

Form PCT/ISA/210 (second sheet) (July 1998)