A COMPUTERISED FINANCIAL SYSTEM AND A METHOD FOR ORGANIZING A FINANCIAL SYSTEM.

TECHNICAL FIELD

The present application relates to a computerised financial system and a method for use in computerised financial systems. Financial systems are well known and could for instance be systems for trading and systems for depositing, so-called Central Securities Depository, commonly abbreviated as CSD. Other financial systems are also well known.

BACKGROUND ART

Traditionally, centralized institutions have been used mainly for storing gold, which belongs to different nations in one and the same location. When transferring assets from one nation to another, all that needs to be done is to simply transfer gold from the "pile" which belongs to the paying nation to the "pile" which belongs to the nation that is to receive the payment.

As can be realized, the use of the principles of centralized institutions greatly facilitates the processing of payments, and for this reason there has arisen an interest for using such centralized solutions for other commodities than gold, in principle for any kind of commodity or instrument that can be imagined in the financial market, e.g. bonds, shares, etc.

Thus, in such an "expanded" centralized system , there would be a plethora of instruments. The gathering of all instruments in one place (physical or virtual) facilitates for those using the system, e.g. issuers, investors, and not least, the operator of the system.

No such system exists today. Basically, contemporary financial systems are based on one of two principles, which could be referred to as a flexible principle and an administrative principle. In both of these the specific financial instrument is defined by so called attributes, which are more or less specific for each individual instrument. In systems based on the flexible principle, the instruments are not bound to each other and new instruments can easily be created. However, if a general change in an attribute is necessary, or a new attribute needs to be added, each instrument needs to be amended individually.

In systems comprising several thousands or tens of thousands of instruments this result in an extremely burdensome and costly procedure. In systems based on the administrative principle on the other hand, a high level of rigidity is imposed on the instruments, basically by establishing a fixed map over how the financial market is built up and shaping the instruments accordingly. This, however, creates problems when the market changes - e.g. new market places, new ways of dealing, etc. The rigid administrative principle can thus not easily be adapted to changes.

DISCLOSURE OF THE INVENTION

There is thus a need for a financial system and method by means of which new instruments can be added in an easy manner. The financial system and method should also facilitate making amendments to existing instruments in the system.

This need is met by the invention through a computerised financial system according to claim 1.

Advantageous developments and embodiments of the financial system are disclosed in the dependent claims to claim 1.

A hierarchic multi-level structure, based on common distribution of attributes makes it possible to create financial instruments and/or templates for financial instruments that facilitate amendments in the instruments (or templates), as well as adding new instruments (or templates).

The hierarchic structure makes it for instance possible to amend an attribute on the highest level, which amendment will the automatically implemented in all instruments and templates having that attribute on all lower levels.

A new instrument or template can easily be created by proper selection of which level in the hierarchy that includes the attributes (all or most) most suitable for the new instrument/template.

It should be noted that the financial system can comprise one physical unit (computer, server) in which the hierarchy is implemented or a number of linked physical units, each comprising one or more of the instruments/templates in one or more levels. The hierarchy could for instance comprise a generic set of templates intended to standardise all financial systems, thereby facilitating the trading or handling of any finance instrument based upon the template.

The need is similarly met through the method disclosed in claim 4.

Advantageous improvements and embodiments of the method are evident from the dependent claims to claim 4.

According to the method attributes are assigned to the instruments and/or templates. Said attributes define the instruments/templates, and according to the method the instrument/templates are organized in a hierarchic multi-level structure as follows:
an instrument/template is created on a first level in the hierarchy based on the attributes so that it is defined by at least one attribute that is also comprised in the instruments/templates on the second level.

Preferably, according to the method of the invention, each instrument/template is only linked to one other instrument/template on a level above it. Also, suitably according to the method, any amendment to an attribute in an instrument/template will cause the same amendment in the same attribute of those instruments/templates which are linked to the amended instruments/templates and which are on lower levels in the hierarchy than the amended instrument/template.

Thus, by means of the method according to invention, amendments to existing instruments/templates is greatly facilitated, since amendments need only be made on the highest level common to the instruments/templates which are to be amended, and the amendment will then "trickle down" to the instruments in question.

The invention greatly facilitates the adding of new instruments/templates to the system. When there is a need or desire to add a new instrument/template to the system, all that

needs to be done is to find an existing instrument/template which has at least some of the attributes of the instrument which is to be added (preferably most or all attributes). The new instrument/template is then placed on a level in the hierarchy of the system which is below said existing instrument/template, and a link is created between the instrument/template to be added and the existing instrument/template.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described in more detail in the following, with reference to the appended drawings, in which

Fig 1 shows one of the principles behind the invention, and

Fig 2 shows another principle of the method according to the invention, and

Fig 3 shows an example of the method according to the invention, and

Figs 4 and 5 show flowcharts of parts of the invention.

EMBODIMENTS

As stated above, the invention intends to achieve a computerised financial system in which system various financial instruments are implemented or from which financial instruments can be implemented. As mentioned above, one such system could be CSD-system. In the following, a CSD-system is used as an example of a financial system for the invention. The instruments are defined by so called attributes. Examples of attributes could for example be the identity of the issuer of the instrument in question, the ISIN code or some other code which identifies the instrument, e.g. CUSIP, the date of issue of the security, the interest rate etc.

It has been described previously in this text which the main needs are that the invention is intended to address. However, in addition to those needs and desires, the invention should preferably also provide good solutions to the following situations relating to instruments comprised in the register of a CSD-like system:

- re-using different attributes between different instruments
- deriving one instrument from another instrument

The invention proposes the creation of a multi–level hierarchical system for organizing a register of financial instruments in a CSD-system. In the system according to the

invention, there will thus be a number of different levels, with said number preferably not being restricted by an upper limit.

With reference to Fig 1, one of the principles of a multi-level hierarchy according to the invention will now be explained: in fig 1, a group of instruments are shown, said instruments being arranged in a multi-level hierarchy, where instruments on a higher level (AB) can have links to several instruments on the lower levels (ABBB, ABCC), but each instrument can preferably only have one link to the level above its own.

The instruments (AB) at the top level of the hierarchy are suitably not instruments which can be traded with as such, but rather generic "templates" for the instruments on the lower levels (ABBB, ABCC; ABBB123, ABCC456) which instruments are "real" instruments that can be traded with, such as e.g. government bonds or mortgage backed securities and shares.

Thus, a template in a system organized according to the invention can either serve as a template for a template on the next level, or as a template for an instrument on the next level.

It should be pointed out there that although fig 1 only shows one group of instruments, the system according to the invention could comprise a virtually unlimited number of such groups.

As can be seen from the group shown in fig 1, one of the principles behind the invention is that any instrument on any level of the system "inherits" all of the attributes of the instrument to which it is linked on the level immediately above it. This principle could in fact be said to essentially be the definition of the links between the instruments.

Thus, due to this principle of linkage, when there is a need or a desire for making amendments to one or more instruments, all that needs to be done is to locate, within the hierarchy, the attribute which is to be changed. When the attribute is amended, that particular amendment will "trickle down" to the instruments involved.

When organizing the group in fig 1, the following steps could be used:

- Look at the real instruments (ABBB123, ABBB862, ABBB293; ABCC456, ABCC578, ABCC394) that are to be comprised in the register of the CSD-system.
- Find a first set of common denominators (ABBB, ABCC) between the instruments.
- Find a second set of common denominators (AB) between the first set of common denominators.
- When all (or a preset or selectable number of) common denominators have been found, create a linked multi-level hierarchy according to the principles outlined above, with the instrument (in this case the template) of the most basic common denominator at the highest level, and the real instruments at the lower levels.

The steps described above are also outlined in the accompanying flowchart in fig 4.

If, at a later stage, a new instrument needs to be added to the register, the following steps could be used:

- find an existing instrument in the CSD-system which has at least some of the attributes of the instrument which is to be added (preferably most or all of the attributes required for the instrument),
- place the instrument which is to be added on a level in the hierarchy of the system which is below said existing instrument,
- create a link between the instrument to be added and the existing instrument.

These three steps are also outlined in the accompanying flowchart in fig 5.

Fig 2 shows another feature of the invention: the inheriting of an attribute (from a higher level to a lower level in the hierarchy) is suitably made optional, mandatory or excluded, i.e. prohibited. The "setting up" of which principle of inheritance that is to be used for each instrument and attribute within the system is suitably carried out by the operator of the system, in a manner which best suits each instrument and the system as a whole.

Naturally, all attributes can be made mandatory to inherit according to the principle of linkage explained previously, but the principle of fig 2 additionally enhances the ease of

handling offered by the invention. As shown in fig 2, the template instrument at the highest level in the hierarchy comprises six attributes, three of which are optional (shown vertically striped), two of which are mandatory (shown horizontally striped) and one of which is excluded from inheritance (diagonal stripes).

Thus, the attributes, which were mandatory for inheritance to the next level, appear in the instruments on the level below the highest level, and the attribute that was excluded from being inherited is also marked as excluded in the second level.

However, the attributes which were optional from the first level to the second may have different properties of inheritance when going from the second level to the third level in the hierarchy: this is indicated in fig 2 by virtue of the fact that in one of the instruments on the second level, one of the optional attributes is now marked as being excluded (diagonal stripes) when going to the next (third) level, and in the other instrument on the second level one of the optional attributes from the first level is marked as mandatory (horizontal stripes) for inheritance to the next level and one is marked as excluded (diagonal stripes).

In fig 3, an example of the invention applied to real instruments is shown:

A group of instruments organized according to the invention comprises three levels: at the top level, there is an instrument template known as "Government bonds". The exact attributes of that template will not be enumerated here, as they should be well known to those working in the field. However, one attribute, which Government Bonds have, is that they generate an interest. In this particular case, interest can be generated in two ways, fixed or floating. Thus, at the top level, the template is provided with two attributes, one for fixed interest and one for floating interest.

On the next level, there are two templates, one for each of the more specific cases of bonds, which have fixed interest rates, and bonds with floating interest rates. One of these templates will inherit the attribute "fixed interest" and the other template will inherit the attribute "floating rate". This is done by means of both of the interest attributes (fixed and floating) at the top level being designated as optional for the next level, i.e. the second level.

Then, on the second level, in the template for fixed interest bonds the attribute for "floating interest" will be designated as excluded from the following levels, and in a corresponding manner the template for floating rate bonds will exclude the attribute "fixed interest" from the following levels.

Finally, one more feature of the invention should be pointed out. This additional feature is due to the fact that an attribute can not only have a characteristic property, for example, fixed or floating interest, but an attribute can also have a value. By way of example, in the case of the attribute being "interest" the value would be the interest rate.

In order to make a system according to the invention even more flexible and easy to organize, the inheriting of the value of an attribute from a higher level to a lower level can also be made mandatory or optional regardless of whether or not the attribute as such was optional or mandatory to inherit. How a value is to be inherited would be set by, for example, the operator of the system.

The meaning of a value of an attribute being mandatory to inherit should be obvious, and will thus not be elaborated upon further here. In the case with optional inheritance of values, the function would be in the following manner:

If the inheritance of the attribute is mandatory and the inheritance of the value is optional, the instrument would then inherit a value as an example for the attribute (e.g. interest). A value needs to be set for the attribute in question since the attribute, i.e. the interest rate, is mandatory. The value could be either the inherited ("example") value, or a new defined value. Naturally, other means of setting a value should not be excluded; for example some kind of automated information retrieval system could be used.

Likewise, if the inheritance of the interest attribute was optional, and that option was chosen, the interest would need to be set, which can suitably be done in the manner just described.

CLAIMS

1. A computerized financial system comprising a plurality of financial instruments and/or templates for financial instruments, each of which being defined by attributes, said financial instruments and/or templates for financial instruments being configured together in a hierarchic multi-level structure based on the attributes so that a financial instrument or a template for a financial instrument on a first level in the hierarchy is defined by at least one of the attributes which are common for financial instruments and/or templates for financial instruments on a second level, and
wherein each financial instrument and/or template for financial instrument is only linked to one financial instrument and/or template for financial instrument on a level above it.

2. The system of claim 1, in which each financial instrument and/or template for a financial instrument is only allowed to be linked to one financial instrument or template for a financial instrument on a level above it.

3. The system of claim 1 or 2, wherein an amendment to an attribute in a financial instrument or template for a financial instrument will cause the same amendment in the same attribute of those financial instruments and/or templates for a financial instrument which are linked to the amended financial instrument or template for a financial instrument on lower levels in the hierarchy.

4. A method for organizing financial instruments and/or templates for financial instruments in a computerised system, according to which method attributes are assigned to the financial instruments and/or templates for financial instruments, said attributes defining the financial instruments and/or templates for financial instruments, and according to which method the financial instruments and/or templates for financial instruments are organized in a hierarchic multi-level structure as follows:
a first financial instrument or a first template for a financial instrument is organised on a first level in the hierarchy, said first financial instrument or first template for a financial

instrument being defined by least one attribute that is common for all financial instruments and/or templates for financial instruments organised on a second level in the hierarchy, and

wherein each financial instrument and/or template for financial instrument is only linked to one financial instrument and/or template for financial instrument on a level above it.

5. The method of claim 4, wherein any amendment to an attribute in a financial instrument and/or template for financial instrument will cause the same amendment in the same attribute of those financial instruments and/or templates for financial instruments which are linked to the amended financial instrument and/or template for financial instrument on lower levels in the hierarchy.

6. The method of any of claims 4-5, wherein a financial instrument is added to the computerised system using the steps of :

- finding an existing financial instrument or template for financial instrument in the computerised system which has at least some of the attributes of the financial instrument which is to be added
- placing the financial instrument which is to be added on a level in the hierarchy of the system which is below said existing financial instrument or template for financial instrument,
- creating a link between the financial instrument to be added and the existing financial instrument or template for financial instrument.