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Datasheet for the decision
of 6 September 2017

Case Number: T 1232/12 - 3.5.06

Application Number: 03799387.0

Publication Number: 1629340

IPC: G06F1/00

Language of the proceedings: EN

Title of invention:
METHOD AND APPARATUS FOR A FAIR EXCHANGE

Applicant:
Trading Technologies International, Inc.

Headword:
Fair exchange/Trading Technologies

Relevant legal provisions:
EPC 1973 Art. 56

Keyword:
Inventive step - (no)

Decisions cited:

EPA Form 3030

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It can be changed at any time and without notice.

Catchword:

Case Number: **T 1232/12 - 3.5.06**

D E C I S I O N
of Technical Board of Appeal 3.5.06
of 6 September 2017

Appellant: (Applicant)	Trading Technologies International, Inc. 222 S. Riverside Plaza, Suite 1100 Chicago, Illinois 60606 (US)
Representative:	McCann, Heather Alison EIP Fairfax House 15 Fulwood Place London WC1V 6HU (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 3 January 2012 refusing European patent application No. 03799387.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	W. Sekretaruk
Members:	G. Zucka
	M. Müller

Summary of Facts and Submissions

I.   The appeal is against the decision by the examining
          division, dispatched with reasons on 3 January 2012, to
          refuse European patent application 03799387.0, on the
          basis that the subject-matter of the independent claims
          1, 5 and 9 of both the main and the auxiliary request
          was not inventive, Article 56 EPC 1973, in view of the
          following document:

          D5 = US 5 953 708 A

II.   A notice of appeal was received on 31 January 2012, the
          appeal fee being paid on the same day. A statement of
          grounds of appeal was received on 30 April 2012.

III.   The appellant requested that the decision under appeal
          be set aside and a patent granted on the basis of
          claims for a main or one of two auxiliary requests, all
          filed with the grounds of appeal. The appellant
          conditionally requested that the case be remitted for
          further search and examination and conditionally
          requested oral proceedings.

IV.   The board issued a summons to oral proceedings. In an
          annex to the summons, the board set out its preliminary
          opinion on the appeal.

V.   On 2 August 2017, the appellant filed claims for
          additional auxiliary requests 3, 4 and 5.

VI.   During the oral proceedings, which took place on
          6 September 2017, the appellant filed claims for an
          additional auxiliary request 6.

VII.   The appellant requested that the decision under appeal
be set aside and that a European patent be granted on
the basis of one of the following requests:

main request, first or second auxiliary request, all
filed 30 April 2012,

third, fourth or fifth auxiliary request, all filed 2
August 2017,

sixth auxiliary request, filed 6 September 2017.

VIII.   Independent claim 1 of the main request reads as
follows:

"A method of prioritizing transaction messages received
at a host exchange, comprising the steps of:
    receiving by a host exchange (10) a first
transaction message at a first receipt time, wherein
the first transaction message is received by a first
local communication server (38) from a first client
device (52) before being received by the host
exchange(10);
    receiving by the host exchange (10) a second
transaction message at a second receipt time, wherein
the second transaction message is received at a second
local communication server (46) from a second client
device (54) before being received by the host exchange
(10);
    determining by the host exchange (10) a first time
based on a first travel time and the first receipt
time, wherein the first travel time is a time from the
first local communication server (38) to the host
exchange (10);
    determining by the host exchange (10) a second time
based on a second travel time and the second receipt

time, wherein the second travel time is a time from the
second local communication server (46) to the host
exchange (10); and
    prioritizing by the host exchange (10) the first
transaction message and the second transaction message
based on the first time and the second time."

IX.   Independent claim 1 of auxiliary request 1 reads as
       follows:

"A method of prioritizing transaction messages that are
sent to a host exchange (10) from a first client device
(52) which is one of a first plurality of client
devices (52) connected via respective local network
links to a first local communication server (38) and
from a second client device (54) which is one of a
second plurality of client devices connected via
respective local network links to a second local
communication server (46), the first local
communication server (38) being connected to the host
exchange (10) via a first server-exchange link (32) and
the second local communication server (46) being
connected to the host exchange (10) via a second
server-exchange link (34), each said transaction
message being sent via a respective local network link
to one of said first and second local communication
servers (38, 46) and via a respective server-exchange
link from one of said first and second local
communication servers (38, 46) to said host exchange
(10) in order to reach the host exchange (10), the
method comprising the steps of:
    determining by the host exchange (10) a first
travel time from the first local communication server
(38) via the first server-exchange link (32) to the
host exchange (10);

determining by the host exchange (10) a second
travel time from the second local communication server
(46) via the second server-exchange link (34) to the
host exchange (10);

receiving a first transaction message sent from the
first client device via the first local communication
server (38) to the host exchange (10);

upon receiving the first transaction message at the
host exchange (10), determining a first time at which
the first local communication server (38) sent the
first transaction message using the first travel time
and a time at which the first transaction message was
received at the host exchange (10);

receiving a second transaction message sent from
the second client device (54) via the second local
communication server (46) to the host exchange (10),

upon receiving the second transaction message at
the host exchange (10), determining a second time at
which the second local communication server (46) sent
the second transaction message using the second travel
time and a time at which the second transaction message
was received at the host exchange (10); and

using the first and second times to prioritize the
first and second transaction messages at the host
exchange (10)."

X.   Independent claim 1 of auxiliary request 2 reads as
      follows:

      "A method of prioritizing transaction messages that are
      sent to a host exchange (10) from a first client device
      (52) which is one of a first plurality of client
      devices (52) connected via respective local network
      links to a first local communication server (38) and
      from a second client device (54) which is one of a
      second plurality of client devices connected via

respective local network links to a second local communication server (46), the first local communication server (38) being connected to the host exchange (10) via a first server-exchange link (32) and the second local communication server (46) being connected to the host exchange (10) via a second server-exchange link (34), each said transaction message being sent via a respective local network link to one of said first and second local communication servers (38, 46) and via a respective server-exchange link from one of said first and second local communication servers (38, 46) to said host exchange (10) in order to reach the host exchange (10) comprising the steps of:

determining (136) a first travel time, wherein the first travel time is a travel time from a first local communication server (38) to the host exchange (10);

storing the first travel time in a look-up table;

determining (136) a second travel time, wherein the second travel time is a travel time from a second local communication server (38) to the host exchange (10);

storing the second travel time in the look-up table;

receiving (138) by a host exchange (10) a first transaction message, wherein the first transaction message is received by the first local communication server (38) from a first client device (52) before being received by the host exchange (10);

time-stamping (140) the received first transaction message to determine a first receipt time;

receiving (138) by the host exchange (10) a second transaction message, wherein the second transaction message is received at the second local communication server (46) from a second client device (54) before being received by the host exchange (10);

time-stamping (140) the received second transaction
message to determine a second receipt time;
    determining (142) by the host exchange (10) a first
time based on subtracting the first travel time
accessed from the look-up table from the first receipt
time;
    determining (142) by the host exchange (10) a
second time based on subtracting the second travel time
accessed from the look-up table from the second receipt
time; and
    prioritizing (144) by the host exchange (10) the
first transaction message and the second transaction
message by ordering in an arrival queue the first and
second transaction messages for processing from
earliest to latest based on the first time and the
second time."

XI.   Independent claim 1 of auxiliary request 3 reads as
        follows:

        "A method of prioritizing transaction messages received
        at an exchange host system (10), the exchange host
        system (10) comprising one or more computer devices to
        control electronic trading over a network, the method
        comprising the steps of:
            receiving by an exchange host system (10) a first
        transaction message at a first receipt time, wherein
        the first transaction message is received by a first
        local communication server (38) from a first client
        device (52) before being received by the exchange host
        system (10), the first local communication server (38)
        comprising a network device to route data from a first
        set of one or more client devices that includes the
        first client device to the exchange host system (10);
            placing by the exchange host system (10) the first
        transaction message in an arrival queue;

receiving by the exchange host system (10) a second
transaction message at a second receipt time, the
second receipt time being after the first receipt time,
wherein the second transaction message is received at a
second local communication server (46) from a second
client device (54) before being received by the
exchange host system (10), the second local
communication server (46) comprising a network device
to route data from a second set of one or more client
devices that includes the second client device to the
exchange host system (10), the second set of client
devices being different from the first set of client
devices;

placing by the exchange host system (10) the second
transaction message in the arrival queue;

determining by the exchange host system (10) a
first time based on a first travel time and the first
receipt time, wherein the first travel time is a time
from the first local communication server (38) to the
exchange host system (10), wherein the first time is
based on the first travel time subtracted from the
first receipt time;

determining by the exchange host system (10) a
second time based on a second travel time and the
second receipt time, wherein the second travel time is
a time from the second local communication server (46)
to the exchange host system (10), wherein the second
time is based on the second travel time subtracted from
the second receipt time; and

ordering by the exchange host system (10) the first
transaction message and the second transaction message
in the arrival queue based on the first time and the
second time,

wherein the transactions messages are ordered from
the earliest to the latest, and

wherein, responsive to the second time being earlier than the first time, the second transaction message is ordered before the first transaction message in the arrival queue."

XII.   Independent claim 1 of auxiliary request 4 reads as follows:

"A method of prioritizing transaction messages received at an exchange host system (10), the exchange host system (10) comprising one or more computer devices to control electronic trading over a network, the method comprising the steps of:

receiving by an exchange host system (10) a first transaction message at a first receipt time, wherein the first transaction message is received by a first local communication server (38) from a first client device (52) before being received by the exchange host system (10), the first local communication server (38) comprising a network device to route data from a first plurality of client devices that includes the first client device to the exchange host system (10);

placing by the exchange host system (10) the first transaction message in an arrival queue;

receiving by the exchange host system (10) a second transaction message at a second receipt time, wherein the second transaction message is received at a second local communication server (46) from a second client device (54) before being received by the exchange host system (10), the second local communication server (46) comprising a network device to route data from a second plurality of client devices that includes the second client device to the exchange host system (10), the second plurality of client devices being different from the first plurality of client devices;

placing by the exchange host system (10) the second
transaction message in the arrival queue;

determining by the exchange host system (10) a
first time based on a first travel time and the first
receipt time, wherein the first travel time is a time
from the first local communication server (38) to the
exchange host system (10), wherein the first time is
the first travel time subtracted from the first receipt
time;

determining by the exchange host system (10) a
second time based on a second travel time and the
second receipt time, wherein the second travel time is
a time from the second local communication server (46)
to the exchange host system (10), wherein the second
time is the second travel time subtracted from the
second receipt time; and

ordering by the exchange host system (10) the first
transaction message and the second transaction message
in the arrival queue based on the first time and the
second time,

wherein the transactions messages are ordered from
the earliest to the latest, and

wherein, responsive to the second time being
earlier than the first time, the second transaction
message is ordered before the first transaction message
in the arrival queue,

wherein placing the first and second transaction
messages in the arrival queue comprises:

delaying the first and second transaction messages
by a time period computed using the longest of the
first and second travel times."

XIII.   Independent claim 1 of auxiliary request 5 reads as
        follows:

"A method of ordering transaction messages received at an exchange host system, the exchange host system comprising one or more computer devices to control electronic trading over a network, the method comprising the steps of:

determining (136), at the exchange host system, travel times from a plurality of network devices, each network device being communicatively coupled to at least one respective client device;

receiving (138), at the exchange host system, data from the client devices, said data comprising transaction messages and being received as packets that are sent via respective network devices;

time-stamping (140), at the exchange host system, the data from the client devices;

calculating (142), at the exchange host system, times for data received from each client device by subtracting, from a time-stamp of the data, a determined travel time for a respective network device;

delaying, at the exchange host system, the data from the client devices for a predetermined time period, the predetermined time period being calculated based at least on the longest determined travel time for the plurality of network devices; and

ordering (144), at the exchange host system, the data from the client devices in an arrival queue based on the calculated times,

wherein the arrival queue is ordered from the earliest calculated time to the latest calculated time, and

wherein data from a first client device that is received at the exchange host system before data from a second client device is ordered after the data from the second client device in the arrival queue responsive to a calculated time for the data from the second client

device being before a calculated time for the data from
the first client device."

XIV.   Independent claim 1 of auxiliary request 6 differs from
         that of auxiliary request 5 in that the first method
         step ends as follows: "...each network device being
         communicatively coupled to at least one respective
         client device *via a wide area network
         connection*;" (emphasis of additional wording added by
         the board).

XV.   At the end of the oral proceedings, the chairman
         announced the board's decision.

Reasons for the Decision

1.   *The admissibility of the appeal*

         The appeal is admissible.

2.   *Interpretation of terminology used in the claims*

2.1   *host exchange*

         The term "host exchange" is non-standard. It is broadly
         interpreted as some kind of central apparatus or
         combination of apparatuses that is connected to a
         network. Within the context of the application, the
         host exchange would typically be a computer or other
         apparatus or combination of apparatuses which controls
         a system for electronic trading over a network such as
         the Internet. The claims are however not so limited.

The appellant has not disputed this interpretation.

2.2   *local communication server*

The term "local communication server" is non-standard.
Within the context of the application it is interpreted
as some kind of network device (*e.g.* a router or a
server computer with router functionality) that
provides some communication services to "client
devices" in some kind of network which is "local" at
least compared to the network which connects the local
communication server and the host exchange.

The board agrees with the appellant (reply to the
summons, page 2, paragraphs 1 to 4) that said network
should not necessarily be a "LAN". This however does
not affect the inventive step analysis given below.

2.3   *server-exchange link*

In the light of the description, page 9, lines 8 to 21,
this is interpreted as any kind of connection, *e.g.* a
direct connection or a connection through a network,
between the local communication server and the host
exchange.

The appellant has not disputed this interpretation.

2.4   *wide area network*

From a technical point of view, the term "wide area
network" (or "WAN") imposes no precise restrictions on
a network as regards its size or the type of
infrastructure which is used. The board interprets the
term very broadly as a network used to transmit data

between "local" networks such as LANs. On one end of the scale, even a network which connects several LANs within an area so small as a single building would be considered to be a "WAN" by the LANs' routers.

3.   *Main request*

3.1   The board holds that a good starting point for an inventive step analysis is the general prior art acknowledged in the description of the application on page 1, line 8 to page 3, line 13, which documents D1 to D6 also at least implicitly recognise as general prior art. The board accordingly holds that the closest prior art is an electronic trading method using a network (which could consist in a combination of several smaller networks), an electronic exchange, and the traders' client devices.

        The appellant has agreed (appellant's reply, page 2, seventh paragraph) that said general prior art is a suitable starting point for the assessment of inventive step.

3.2   To be more specific, the board considers that the closest prior art is given by an electronic trading system comprising a host exchange which communicates with the client devices over the Internet (description, page 2, lines 8 and 9).

3.3   The board further considers it well known that in an Internet-based system each of the client devices would as a rule be part of a local network, *e.g.* a company network, comprising a plurality of client devices and a local communication server in the form of a router, this router being the device through which the client devices connect to the host exchange via the Internet.

3.4   This general prior art contains no provisions for
        prioritising messages received at a host exchange,
        which is the key difference with the subject-matter of
        claim 1.

3.5   Such prioritisation serves the purpose of avoiding to
        provide an advantage to traders with a faster
        connection. To this end, a "fair" trading environment
        should deal with transaction messages following the
        order in which they have actually been sent by the
        client computer.

        The appellant submitted in his reply to the summons
        (page 2, penultimate paragraph) that specifying how a
        fair trading environment may be achieved using
        technical means is a technical problem. During the oral
        proceedings, he stated more precisely that the problem
        is how to deal with unpredictable latencies when the
        trading system uses heterogeneous different
        communication channels. The obvious solution would then
        be to use direct links instead of an Internet
        connection.

        The board however holds that said technical problem
        follows directly from the requirement stated in the
        description, page 3, line 14 to page 5 line 11, *i.e.* to
        provide a fair trading environment in an Internet-based
        system, where traders who can send their transaction
        messages faster to the host have no advantage over
        traders with a slower connection. The decision to
        provide a fair trading environment in an Internet-based
        system is a business decision, which is considered non-
        technical. Instead, it is considered to be a given,
        i.e. it is part of the requirement specification for

the skilled person who has the task of implementing the
electronic trading method.

3.6   The skilled person will see that D5 discloses a way to
       deal with disadvantages between traders due to
       differences in connection speeds, *viz.* by taking into
       account the measured transmission time between the host
       exchange (center computer) and the client computers
       (terminal devices) (see D5, abstract). He or she will
       therefore consider applying this idea to the prior art
       method.

3.7   Internet transmission times are most commonly measured
       using the "ping" networking utility, which measures the
       round-trip time for messages sent from a source to a
       destination device that are echoed back to the source.
       For all practical purposes, the use of the "ping"
       utility in the setting mentioned under 3.2 above would
       only provide the transmission time from the host
       exchange to the local communication server (*i.e.* the
       router).

3.8   As a rule, the times of sending (which correspond to
       the "first time" and the "second time" in claim 1)
       would be calculated by subtracting the travel time from
       the receipt time, *i.e.* they would be "based on" the
       travel time and the receipt time. Dealing first with a
       transaction message that was sent earlier means that
       this transaction message is prioritised.

       The appellant submitted during the oral proceedings
       that such way of proceeding is not necessary. One
       alternative would for instance consist in the use of
       synchronised clocks. The board admits that this would
       indeed also be a possibility, but it would be less

obvious in view of the notorious difficulty to maintain
a collection of synchronised clocks.

3.9   Hence, the skilled person would arrive at the subject-
       matter of claim 1 of the main request without
       demonstrating any inventive activity. The board
       therefore considers that the subject-matter of claim 1
       of the main request is not inventive; Article 56
       EPC 1973.

4.   *Auxiliary request 1*

4.1   The board considers that the features which distinguish
       claim 1 of auxiliary request 1 from that of the main
       request do not render the claimed subject-matter
       inventive, for the following reasons:

4.1.1 The fact that the first/second client device would be
       one of a plurality of client devices connected via
       respective local network links to a first/second local
       communication server was already stated under 3.3
       above.

4.1.2 The fact that the first/second local communication
       server would be connected to the host exchange via a
       first/second server-exchange link follows from the
       argument given under 3.3 above in combination with the
       interpretation of the term "server-exchange link" given
       under 2.3 above.

4.1.3 Regarding the step of "determining by the host exchange
       (10) a first[/second] travel time from the first[/
       second] local communication server (38[/46]) via the
       first[/second] server-exchange link (32[/34]) to the
       host exchange", the board observes that it corresponds

to the use of the "ping" utility mentioned under 3.7 above.

4.2   The board therefore holds that the subject-matter of claim 1 of auxiliary request 1 is also not inventive; Article 56 EPC 1973.

5.   *Auxiliary request 2*

5.1   The board considers that the features which distinguish claim 1 of auxiliary request 2 from that of the main request do not render the claimed subject-matter inventive, for the following reasons:

5.1.1   The use of look-up tables to store data for later retrieval is considered a standard measure.

5.1.2   Regarding the feature of "time-stamping" the received transaction messages, the board observes that the reception time necessarily somehow needs to be stored, even if only temporarily, in order for it to be used in the calculation of the "first[/second] time" referred to later in the claim.

5.1.3   Processing the first and second transaction messages from earliest to latest is obvious, following the reasoning given under 3.8 above.

5.2   The board therefore holds that the subject-matter of claim 1 of auxiliary request 2 is also not inventive; Article 56 EPC 1973.

6.   *Auxiliary request 3*

6.1   The board considers that the additional features of claim 1 of auxiliary request 3 do not render the

claimed subject-matter inventive, for the following
reasons:

6.1.1   The feature according to which the first/second time is
         based on the first/second travel time subtracted from
         the first/second receipt time was already mentioned
         under 3.8 above.

6.1.2   In order to satisfy the fairness requirement, a message
         which is received can in general not be processed
         immediately by the host exchange. Instead, it will be
         necessary to wait until all messages that were
         potentially sent earlier have arrived. After that, the
         messages should be processed in the order of their
         calculated sending time. An obvious way to achieve this
         would be by holding them in some kind of arrival queue,
         ordered from the earliest to the latest, before they
         can be processed.

6.2   The board therefore considers that the subject-matter
         of claim 1 of auxiliary request 3 is also not
         inventive; Article 56 EPC 1973.

7.   *Auxiliary request 4*

         The reasoning given for the higher ranking requests
         also applies to auxiliary request 4. The board
         therefore considers that the subject-matter of claim 1
         of auxiliary request 4 is also not inventive;
         Article 56 EPC 1973.

8.   *Auxiliary request 5*

         The reasoning given for the higher ranking requests
         also applies to auxiliary request 5. The board
         therefore considers that the subject-matter of claim 1

of auxiliary request 5 is also not inventive;
Article 56 EPC 1973.

9.   *Auxiliary request 6*

Given the interpretation given under 2.4 above to the
expression "wide area network", the board considers
that the reasoning which was given above in relation to
a local area network also applies to a "wide area
network", provided its scale is sufficiently small.
Also in such a case, the "ping" utility would
essentially measure the travel time between the host
exchange and a network device which is coupled to one
or more client devices via a WAN, said client devices
being *e.g.* individual computers or LAN routers and
being connected to the Internet through said network
device. The board therefore considers that the subject-
matter of claim 1 of auxiliary request 6 is also not
inventive; Article 56 EPC 1973.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

B. Atienza Vivancos   W. Sekretaruk

Decision electronically authenticated