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Datasheet for the decision
of 7 October 2015

Case Number: T 0951/12 - 3.5.06

Application Number: 06748543.3

Publication Number: 1864238

IPC: G06F21/00

Language of the proceedings: EN

Title of invention:
Persistent servicing agent

Applicant:
Absolute Software Corporation

Headword:
Persistent servicing agent II/ABSOLUTE SOFTWARE

Relevant legal provisions:
EPC 1973 Art. 56

Keyword:
Inventive step (no)

Decisions cited:

Catchword:

Beschwerdekammern
Boards of Appeal
Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: **T 0951/12 - 3.5.06**

D E C I S I O N
of Technical Board of Appeal 3.5.06
of 7 October 2015

Appellant:
(Applicant)

Absolute Software Corporation
111 Dunsmuir Street
Suite 800
Vancouver, BC V6B 6A3 (CA)

Representative:

Walker, Stephen
Lincoln IP
9 Victoria Street
Aberdeen
Aberdeenshire AB10 1XB (GB)

Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted on 8 December 2011
refusing European patent application No.
06748543.3 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman   W. Sekretaruk
Members: M. Müller
                 S. Krischer

Summary of Facts and Submissions

I.   The appeal lies against the decision of the examining
        division, with reasons dated 8 December 2011, to refuse
        European patent application No. 06748543.3 for lack of
        inventive step over document

        D1: US 5 680 547 A.

        The decision made further reference to further
        documents, including

        D4: US 5 748 084 A,

        but did not rely on any of them for its reasons.

II.   A notice of appeal was received on 8 February 2012, the
        appeal fee being paid on the same day. A statement of
        grounds of appeal was received on 10 April 2012. The
        appellant requested that the decision under appeal be
        set aside and that a patent be granted based on claims
        according to the main or first to fourth auxiliary re-
        quests filed with the grounds of appeal, the other
        application documents on file being the description and
        the drawings as originally filed.

III.   With a summons to oral proceedings, the board informed
        the appellant of its preliminary opinion that the
        claims according to all requests lacked clarity, Ar-
        ticle 84 EPC 1973, and an inventive step vis-à-vis D1.
        The board also introduced two documents from related
        appeal case T 1261/12, namely

        D6: US 6 507 914 B1 and
        D7: WO 98/43151 A1,

and raised an inventive-step objection based on D6 or
D7 in view of D1, Article 56 EPC 1973.

IV.   In response to the summons, with letter dated
       24 March 2015 the appellant filed amended claims
       according to a new sole request.

V.   Oral proceedings were held on 7 October 2015, together
       with the oral proceedings in case T 1261/12. During
       these oral proceedings, the appellant replaced its sole
       request by an amended set of claims 1-23 bearing the
       date of 6 October 2015.

VI.   Claim 1 reads as follows:

       "An electronic device comprising a persistent servicing
       agent disposed in the electronic device, the electronic
       device connected to [sic] a network to a remote server,
       the persistent servicing agent configured to provide an
       asset tracking service with respect to the electronic
       device, comprising:
           a driver agent comprising a partial driver agent
       concealed in the electronic device and a full function
       driver agent, wherein the full function driver agent is
       responsible for all communications with the remote
       server in providing the asset tracking service, and the
       partial driver agent is configured with a reduced set
       of functions compared to the full function driver
       agent, and to determine whether the full function
       driver agent is available in the electronic device;
       wherein the partial driver agent is not resident within
       the file system and is configured to reload portions of
       the full function driver agent, across the network,
       that may have been removed or are missing from the
       electronic device

a run module configured to automatically initiate operation of the driver agent without user initiation or user intervention;

wherein the full function driver agent is configured to communicate with the remote server in providing a data deletion service under control from the remote server, to perform one or more of (a) deleting all or specific files or directories based on user preference, (b) restarting the data deletion service if the device is rebooted while data deletion is in progress, (c) deleting the operating system, (d) overriding the data deletion service if the device is recovered, (e) obtaining log files from the agent after a first stage delete before deleting the operating system in a second stage delete, (f) overriding the data deletion service to stop the data deletion from running again if the device is recovered, (g) checking whether a theft report exists for the device, checking that the device is positively identified and checking that a pre-authorisation agreement is in place, (h) sending notifications to interested parties when the deletion service is launched."

VII.   At the end of the oral proceedings, the chairman announced the decision of the board.

Reasons for the Decision

The invention

1.   The application relates to the provision of a tamper-resistant "agent" program for providing what is referred to as an asset tracking service on a networked client device.

1.1   An asset tracking service is meant to reduce the risk
       that networked devices (assets) are lost or stolen and,
       if they are, that confidential data is lost or the
       integrity of the enterprise network is compromised (see
       e.g. the paragraph bridging pages 1 and 2). In perfor-
       ming its services, the agent automatically and regular-
       ly contacts a monitoring centre in order to transmit
       service-relevant information, e.g. about the identity
       of the device and its location (page 4, lines 7-10).

1.2   An agent deployed on a device is protected against de-
       tection, i.e. hidden ("stealthy"; page 4, last para-
       graph), and tamper-resistant, i.e. protected against
       unauthorised modification or removal, even against
       "operating system installation, hard drive format and
       hard drive replacement" (see page 13, 2nd paragraph).
       To achieve this, the agent is disclosed as incorpora-
       ting "self-healing technology" which is meant to re-
       store the agent if removed. The "self-healing function"
       is "not resident within the file system" (*loc. cit.*).

1.3   The description explains that the agent may consist of
       three "modules", the "Computrace" Loader Module CLM,
       the Adaptive Installer Module AIM and the Communica-
       tions Driver Agent CDA (page 14, 3rd paragraph). The
       CDA contains a driver, the "mini CDA", which checks
       whether the entire CDA is present and, if not, initi-
       ates the download or update of the CDA (page 15, 2nd
       paragraph; page 18, 2nd paragraph *et seq.*; page 33,
       lines 10-12 from the bottom).

1.4   It is disclosed that the agent may also provide a data
       deletion service to cope with the possibility that phy-
       sical recovery of the tracked device may not be fea-
       sible (see pages 30 to 33; esp. section "Data Delete",
       1st paragraph). The data deletion service is disclosed

as having a number of optional functions (page 30, line
8 from the bottom to page 31, line 14), including the
function of deleting all or some local files or direc-
tories or of deleting the local operating system.

The prior art

2.   D6, also filed by the present applicant, discloses an
        asset tracking system based on the same software pro-
        duct ("Computrace"; see e.g. figure 2a). D6 also dis-
        closes an "agent" which is "concealed" and protected
        against tampering. The agent "hides within the soft-
        ware/firmware/hardware" of the protected device so as
        to "evade detection" and "resist possible attempts to
        disable it by an unauthorized user" (see e.g. column 2,
        lines 14-24; column 5, lines 32-36) and may be stored
        on the boot sector of the hard disk, i.e. outside the
        file system (column 2, lines 42-45). The agent is loa-
        ded and started during boot up without user initiation
        or intervention (see e.g. column 5, line 23 to
        column 6, line 18; esp. column 6, lines 17-18). It is
        also disclosed that the asset tracking service may
        provide an automatic call to the local authorities to
        report a stolen device (see column 8, line 65 to
        column 9, line 7). D7 also stems from the present
        applicant and is very similar to D6 (see in D7 esp.
        figure 3-1; page 4, lines 8-11 and 21-23; page 30, last
        paragraph; and page 36, lines 10-12).

3.   D1 discloses a system providing for pre-boot file and
        information transfer between networked devices (see
        abstract, lines 1-3). Whenever a client connects to a
        network, the client firmware (column 4, lines 47-50)
        executes a program which seeks a server with which to
        communicate. The server management application (SMA)
        then "performs whatever tasks it is preprogrammed to

perform", for instance "file transfers, file updates or
operating system rescue (due to malicious or accidental
damage)" (column 4, lines 43-46 and 60-63). It is also
disclosed that the SMA might check whether the client
boot sector is virus-free and, if not, remove the virus
and restore the boot sector (column 4, lines 63-67).

4.   D4 discloses an asset tracking and managing system
     based on a "beacon" device attached to the tracked com-
     puter (see esp. column 1, 1st paragraph and column 4,
     2nd paragraph to column 6, penultimate paragraph). The
     beacon contains tracking software which cannot be by-
     passed or removed without impairing the functionality
     of the computer. Normally, the function of the beacon
     is concealed (column 8, 2nd paragraph). The beacon de-
     termines whether the protected computer has been tam-
     pered with and reacts to tampering (see column 4, lines
     55-61; column 8, penultimate paragraph to column 9, 1st
     paragraph) for instance by shutting the computer down,
     transferring files to the server, deleting the local
     operating system, disabling access to the hard drive or
     prohibiting certain operations on files.

Inventive step

5.   The board considers that D6 constitutes a suitable
     starting point for the assessment of inventive step.

6.   The appellant argued that "persistent" in the context
     of the claimed invention referred to the partial driver
     agent's function of reconstituting the full servicing
     agent if it was corrupted or parts of it were removed
     or lost, and that D6 therefore did not disclose a "per-
     sistent servicing agent".

6.1   The board disagrees, noting that appellant's use of the
       term "persistent" is not established in the art. Speci-
       fically, it does not correspond to the conventional
       understanding that memory may be called "persistent" if
       its contents are not lost when the power is switched
       off and that program code may be called "persistent" if
       it is held in persistent memory.

6.2   The board also notes that the capability of the agent
       to reconstitute itself is expressly claimed, so the
       characterisation of the servicing agent as "persistent"
       - as interpreted by the appellant - does not limit the
       claim further.

6.3   The board concludes that D6 discloses a "persistent
       servicing agent" according to a conventional understan-
       ding of the term, because the servicing agent of D6 is
       held in persistent memory (see column 2, lines 38-54).

7.   Amended claim 1 contains new language according to
       which the full function driver agent is responsible for
       all communications with the remote server in providing
       its services. The board notes that the agent according
       to D6 has this feature as well (see e.g. column 6,
       line 60 - column 7, line 29).

8.   Claim 1 according to the main request differs from D6
       in that

       i)   the "persistent servicing agent disposed in the
             electronic device" comprises two parts, a "full
             function driver agent" and a "partial driver agent
             [...] with a reduced set of functions",

       ii)   wherein the partial driver agent is "configured to
             determine whether a full function driver is avai-

lable in the electronic device" and "to reload
portions of the full function driver" should that
not be the case; and

iii) wherein the full function driver agent "is confi-
gured to communicate with the server in providing
a data deletion service, to perform one or more
of" a number of alternative functions.

8.1   The board considers that differences i) and ii) solve a
problem which is different from and independent of the
problem solved by difference iii).

8.1.1   An effect of the arrangement according to features i)
and ii) is that the servicing agent can be made larger
than would fit in the concealed section of memory. The
board considers that occasions will naturally arise in
which the functionality of the servicing agent must be
extended. It may further happen that the concealed
memory location allocated for the servicing agent
becomes too small. This corresponds to a statement made
in the description itself (see page 35, section B,
lines 9-10).

8.1.2   The objective technical problem solved by the above
difference can therefore be considered as how to handle
the situation that an extended servicing agent does not
fit in the concealed memory space of D6.

8.1.3   The effect of difference iii) however is primarily the
protection of confidential data on a tracked electronic
device.

8.1.4   In the board's view, these problems are unrelated to
each other. A data deletion service can be provided by
an agent such as that according to D6, which is con-

cealed as a whole, if the concealed memory is large
enough to store the agent with the additional functio-
nality. And the claimed "reloading" functionality is
useful to address a space limitation of the concealed
memory, whatever may be the specific service the agent
provides.

8.1.5   The appellant took the position that the claimed inven-
tion had to be considered solving a single problem,
because the full function driver agent, which was sub-
ject to a potential reloading by the partial driver
agent, was "responsible for all communications with the
remote server" and thus also for the communications
needed for the data deletion service.

8.1.6   The board disagrees. The fact that the data deletion
service uses the communication means provided by a par-
ticular agent component does not establish a functional
link between the service and the way in which the
communication service is provided (beyond the fact that
it is provided at all).

8.1.7   The board thus concludes that the claimed invention
solves two separate problems over the prior art, the
inventive step of which can thus be addressed sepa-
rately.

Inventive step of differences i) and ii)

9.   If the functionality of the servicing agent is extended
in such a way that the concealed memory space becomes
too small, the board considers it obvious for the
skilled person to store parts of the servicing agent
elsewhere. The skilled person may also be forced to
store the additional functionality in a place in which
it is less "concealed" and thus can be removed or

corrupted. D3 teaches the skilled person to protect the servicing agent against tampering. The skilled person would therefore be led to search for known ways of protecting the non-concealed parts of the servicing agent.

10.   In the board's view, D1 provides such a teaching.

10.1   D1 discloses that the client workstation, in a pre-boot process, initiates communication with a server running "server management application" SMA, which then performs "whatever tasks it is preprogrammed to perform", such as "file transfers" and "file updates" (column 4, lines 42-50 and 56-57). As an example, D1 discloses that the SMA may remove a virus from the boot sector and restore the boot sector (column, lines 63-67). The board considers that detecting that a piece of software is virus-infected falls within the claimed determination of whether the software is "available" or "missing". The board therefore finds that D1 discloses the reloading of software which may be missing from or not available at the electronic device.

10.2   The appellant argued that D1 did not disclose a "servicing agent" within the meaning of the claim because it was confined to pre-boot activities. The term "servicing agent" and "service" clearly related to an "operating system service", whereas D1 taught terminating the SMA's interaction with the client before running the operating system. As a consequence, it was argued, the skilled person would not turn to D1 in trying to solve a problem with D6.

10.3   The board notes that the claims do not explicitly specify when the agent programs are to run, i.e. before or after the boot phase, and disputes that the term "service" alone must be construed, as the appellant

suggests, to imply that they are run after booting. The
board therefore takes the position that whatever the
SMA according to D1 performs can validly be called a
service, notwithstanding the fact that it runs before
booting. Moreover, the board considers that the skilled
person, starting from D6, would be taught by D1 that -
and how - missing or corrupted software can be recon-
stituted in the pre-boot phase and would not hesitate
to apply this teaching to D6.

10.4   The appellant further argued that D1 did not disclose a
program arranged in such a way that a part of it was
set up to reload other parts of itself. D1 disclosed
that the operating system could be the subject of the
pre-boot service, and that the latter had a "functional
subset of the operation system" at its disposal
(column 5, lines 1-15) but that the missing portions
were reloaded not by the partial operating system
itself but by a separate device.

10.5   The board also rejects this argument. The claimed in-
vention does not specify in detail the asset tracking
service the agent is meant to provide. Therefore, what
does or does not belong to this service is, in the
board's view, an exclusively conceptual definition.
Accordingly, it is justified to consider the reloading
function of the SMA according to D1 (see point 10.1
above) to constitute a part of the provided service
which, hence, is equipped to reload "itself".

11.   In view of the above, the board considers that the
skilled person would, without exercising any inventive
skill, apply the cited teaching of D1 to D6 and arrive
at the claimed invention - except for the fact that the
"reloading" service of D1 is carried out under the con-
trol of software (the SMA) running at the server,

whereas the claimed driver agent controls the reloading itself.

11.1   In this regard, the board considers it obvious for the skilled person to transfer some functions from the server to the client and to run some of the pre-boot activities locally rather than on the server, for instance if the number of clients communicating with the same server made better load-balancing desirable.

11.2   In summary, the board concludes that differences i) and ii) do not establish an inventive step of claim 1 over D6 in view of D1.

Inventive step of difference iii)

12.   Document D4 discloses an asset tracking service to perform a number of security processes on a tracked client device that has been reported stolen (see col. 5, line 59 - col. 6, line 2). In particular, it is disclosed that this may include erasure of the hard drive or the removal of the operating system or of other files (col. 6, lines 2-5 and 39-45). In the board's view, D4 thus discloses a data deletion service implementing at least the claimed features (a) and (c).

12.1   Noting that the functions (a) to (h) of the data deletion service are claimed as alternatives, this is sufficient to conclude that D4 discloses the data deletion service as claimed.

12.2   The board therefore finds that the skilled person trying to protect confidential data in the context of an asset tracking service would be instructed by D4 to provide a data deletion service as claimed.

12.3   Hence, difference iii) does not establish inventive
        step over D6 either, in particular not in view of D4.

Summary

13.   The board finds that claim 1 of the main request lacks
        inventive step over D6 in view of D1 and D4, 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