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Datasheet for the decision
of 22 April 2015

Case Number: T 1623/10 - 3.5.06

Application Number: 03008703.5

Publication Number: 1372067

IPC: G06F9/445

Language of the proceedings: EN

Title of invention:
Image-based software installation

Applicant:
Microsoft Technology Licensing, LLC

Headword:
Software installation/MICROSOFT

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

Decisions cited:
T 0154/04

Catchword:

EPA Form 3030
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It can be changed at any time and without notice.

Case Number: **T 1623/10 - 3.5.06**

D E C I S I O N
of Technical Board of Appeal 3.5.06
of 22 April 2015

Appellant: (Applicant)	Microsoft Technology Licensing, LLC One Microsoft Way Redmond, WA 98052 (US)
Representative:	Grünecker Patent- und Rechtsanwälte PartG mbB Leopoldstraße 4 80802 München (DE)
Decision under appeal:	Decision of the Examining Division of the European Patent Office posted on 15 January 2010 refusing European patent application No. 03008703.5 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman	W. Sekretaruk
Members:	A. Teale
	S. Krischer

Summary of Facts and Submissions

I.   This is an appeal against the decision, dispatched with
      reasons on 15 January 2010, to refuse European patent
      application No. 03 008 703.5 on the basis that the
      subject-matter of independent claims 1 and 5 according
      to a main and an auxiliary request did not involve an
      inventive step, Article 56 EPC, in view of the
      following document:

      D1: US 6 298 443 B1,

      the difference features over the disclosure of D1 being
      held to be an aggregation of features constituting
      normal design options for the skilled person without
      any synergistic effect.

II.   A notice of appeal was received on 15 March 2010, and
      the appeal fee was paid on the same day. The appellant
      requested that the decision be set aside and a patent
      granted on the basis of the claims, description and
      drawings on file. The appellant also made an auxiliary
      request for oral proceedings.

III. With a statement of grounds of appeal, received on
      6 May 2010, the appellant submitted claims according to
      a main and an auxiliary request. The appellant stated
      that the "requests made in the notice of appeal are
      confirmed" and reiterated the request that the decision
      be set aside. The appellant also requested that a
      patent be granted on the basis of the claims according
      to the main and auxiliary requests and the description
      and drawings on file. Oral proceedings were requested
      if the main request was not considered allowable.

IV.   In an annex to a summons to oral proceedings the board
        expressed doubts as to *inter alia* the clarity of the
        claims, Article 84 EPC 1973, and the inventive step,
        Article 56 EPC 1973, of the claimed subject-matter.

V.   With a response, dated and received on 20 March 2015,
        the appellant filed amended claims according to a main
        and an auxiliary request and also amended description
        pages.

VI.   At the oral proceedings, held on 22 April 2015, the
        appellant requested that the decision under appeal be
        set aside and that a patent be granted on the basis of
        the main request or on the basis of the auxiliary
        request, both dated 20 March 2015. At the end of the
        oral proceedings the board announced its decision.

VII.   The application documents on file are as follows:

        Description (both requests):
        pages 2 to 5, 12, 13 and 16, as originally filed,
        pages 1, 1a and 1b, received on 28 January 2008,
        pages 6 to 11, 14, 15 and 17, received on 20 March
        2015.

        Claims (both requests received on 20 March 2015):
        Main request: 1 to 12.
        Auxiliary request: 1 to 10.

        Drawings (both requests):
        Pages 1/5 to 5/5, as originally filed.

VIII.   Claim 1 according to the main request reads as follows:

        "A method of transferring a run-time image (1) operable
        with different hardware configurations of target

computers from a source computer-readable medium (5) to one or more target computer-readable media (40) of a target computer (35) via one or more transfer computer-readable media (20), the run-time image including multiple hardware abstraction layers, said method comprising: copying (44) the run-time image onto the transfer media; and copying (46) an executable install routine (10) onto the transfer media, wherein said executable install routine comprises a list of integration tasks, wherein said executable install routine, when executed by the target computer, applies the run-time image to the target media, copies its functionality to the target media and performs each of the integration tasks in the list of integration tasks after a reboot into the applied run-time image, wherein the integration tasks comprise configuring a hardware abstraction layer."

The claims according to the main request also comprise an independent claim 5 to one or more computer-readable media.

IX.   Claim 1 according to the auxiliary request reads as follows:

"A method of transferring a run-time image (1) operable with different hardware configurations of target computers from a source computer-readable medium (5) to one or more target computer-readable media (40) of a target computer (35) via one or more transfer computer-readable media (20), the run-time image including multiple hardware abstraction layers, said method comprising: copying (44) the run-time image onto the transfer media; and copying (46) an executable install routine (10) onto the transfer media, the executable install routine comprising a list of integration tasks,

wherein said executable install routine, when executed
by the target computer, applies the run-time image to
the target media, copies its functionality to the
target media, determines one or more parameters
specific to the target computer and performs each of
the integration tasks in the list to integrate (52) the
determined parameters and the applied run-time image
with the target computer after a reboot into the
applied run-time image; wherein the parameters comprise
security identification data; and wherein the
integration tasks comprise configuring a hardware
abstraction layer, identifying any mass storage device
controllers on the target computer, and updating one or
more system settings for the target computer with the
security identification data to identify the target
computer."

The claims according to the auxiliary request also
comprise an independent claim 4 to one or more
computer-readable media.

Reasons for the Decision

1.   The admissibility of the appeal

       In view of the facts set out at points I to III above,
       the appeal fulfills the admissibility criteria under
       the EPC and is consequently admissible.

2.   The context of the invention

2.1   The application relates to installing an operating
       system on the storage media of a target computer, such
       as that shown in figure 5 which comprises a hard disk
       drive (154) and magnetic (156) and optical (160) drives
       for removeable media. The application acknowledges that

it is known in the prior art to install operating
systems by discovering information about the target
hardware, copying and decompressing source files,
installing the resulting files and then configuring the
installed files based on user input; see page 1, lines
11 to 20.

2.2   In order to reduce the installation time and possible
user installation errors of this known approach, the
application uses an image-based installation approach
in which a hardware-independent run-time image is
transferred, together with an executable install
routine, from a source medium via a transfer medium to
the media of the target computer, for instance its hard
disk. By a "run-time image", the application means a
ready-to-run operating system requiring little
additional setup or installation.

2.3   The target computer is then rebooted into the applied
run-time image (see page 7, lines 23 to 24), and the
target computer runs the executable install routine to
carry out a list of integration tasks to integrate the
run-time image with the target computer. As examples of
integration tasks, the application discloses hardware
detection, making system settings, such as registry
keys, installing device drivers, registering software,
security identifier determination and encryption and
pre-installing application programs; see page 4, lines
19 to 20, and page 7, lines 21 to 25.

2.4   The capabilities of different motherboards require
support from different hardware abstraction layers
(HALs) provided by the operating system. The operating
system run-time image includes multiple HALs, enabling
it to work with different motherboards with different
power management needs and numbers of processors, the

integration tasks also including configuring the HAL
and (as set out in claim 1 according to the auxiliary
request) identifying any mass storage device
controllers on the target computer; see page 8, lines 8
to 14.

2.5   Claim 1 according to the auxiliary request also sets
        out the integration task of updating one or more system
        settings for the target computer with security
        identification data to identify the target computer. As
        an example of this, the description mentions "...
        generating machine-specific settings based on the
        security information of the target computer (e.g.,
        encrypting keys) ..."; see page 5, line 30, to page 6,
        line 1. According to page 5, lines 23 to 25, "... data
        that is machine specific (e.g. registry key KeyFoo =
        machine_specific_security_ID+"applicationname") is
        recreated after the imaging process." According to page
        11, lines 19 to 21, and figure 4, one or more keys are
        encrypted with the security identification data
        obtained via the determining data field (86) contained
        in the integration task list of the executable install
        routine. The board understands this example to mean
        that one installation task is to encrypt a registry key
        on the hard disk of the target computer using data
        stored in the task list of the executable install
        routine so that the target computer can be identified
        by means of the encrypted key.

3.   Clarity, Article 84 EPC 1973

        The amended claims are sufficiently clear for the
        purposes of assessing inventive step, Article 56 EPC
        1973.

4.   Document D1

4.1   D1 is regarded as the closest prior art in the reasons
         for the decision. The appellant has disputed this (see
         below).

4.2   D1 relates to a "custom-programmed" (abstract, line 2)
         CD ROM containing a software image supplied with a
         built-to-order computer which can be used to restore
         only that particular computer to its original, "factory
         new" state; see abstract, last five lines. The software
         image on the CD ROM is specifically configured ("built-
         to-order"; column 2, line 48) for that computer; see
         column 1, line 60, to column 2, line 13. The CD ROM is
         accompanied by a bootable flexible diskette containing
         a CD restoration program that controls the process of
         restoring the software image from the CD ROM to the
         computer; see column 3, lines 43 to 46. The computer
         system, diskette and CD ROM contain security keys so
         that the diskette and CD ROM must be used in
         combination to load the software image onto the
         particular computer; see column 6, lines 34 to 44.

4.3   The CD ROM is created by a CD ROM burner using a
         software image created by a mass storage controller
         from software in mass storage taking into account the
         hardware and software configuration of the computer;
         see figure 1, column 5, lines 40 to 48. According to
         column 6, lines 20 to 23, "The software image 102
         formed on the custom-programmed CD ROM 106 precisely
         matches the configuration of the computer hardware to
         the detailed level of each device, bus, BIOS, device
         driver, and operating system".

4.4   The restoration method assumes that the computer system
        hardware is as originally ordered; see column 7, lines
        54 to 56. To initiate restoration, the user inserts the
        diskette and CD ROM into the computer and reboots from
        the diskette; see column 3, lines 51 to 55. The CD
        restoration program checks to see if the service tag of
        the computer hardware matches the tag ID of the CD ROM;
        see figure 2, step 220 "Check ID tags", column 8, lines
        26 to 32, and column 9, lines 1 to 6. The restoration
        program formats the computer hard drive to clear any
        information on it and downloads the software image from
        the CD ROM to the hard drive; see column 9, lines 18 to
        22. The correctness of the download process is then
        verified. After the restoration program has terminated,
        the CD ROM and diskette are removed from the computer
        and the computer is rebooted, thus leaving the computer
        system restored to its "factory new" state; see column
        9, lines 29 to 38.

4.5   In the light of the above analysis, the board
        disagrees, particularly in view of column 6, lines 20
        to 23, with the finding in the appealed decision that
        the run-time image known from D1 includes multiple
        hardware abstraction layers, the reasons for the
        decision not citing any part of D1 which discloses this
        feature. However the board agrees with the finding in
        the appealed decision (see point 2.11, page 5, last
        three lines) that the skilled person reading D1 would
        understand that the software image transferred to the
        hard drive would contain a hardware abstraction layer
        for that particular computer and that said hardware
        abstraction layer would need to be configured.

4.6   Hence, in terms of claim 1 of the main request, D1
        discloses: a method of transferring a run-time image
        (figure 1; 102) from a source computer-readable medium

(mass storage 122) to one or more target computer-
readable media (hard drive 112) of a target computer
(computer 104) via one or more transfer computer-
readable media (CD ROM 106), said method comprising:
copying the run-time image onto the transfer media (see
CD ROM burner 118); and copying an executable install
routine onto the transfer media (CD restoration program
on floppy 108), wherein said executable install
routine, when executed by the target computer, applies
the run-time image to the target media and performs
integration of the applied run-time image with the
target computer including configuring a hardware
abstraction layer.

5.   Inventive step, Article 56 EPC 1973, the main request

5.1   According to the reasons for the appealed decision, the
        subject-matter of claim 1 of the then main request
        differed from the disclosure of D1 in that:

        1.   the run-time image is operable with different
             hardware configurations of target computers,

        2.   the executable install routine copies its
             functionality to the target media and

        3.   the run-time image is integrated with the target
             computer after a re-boot into the applied run-time
             image.

5.2   These differences were held to be an aggregation of
        unrelated features. Difference 1 reduced the deployment
        and maintenance effort of a run-time system image in a
        heterogeneous system. It was known in the field of
        software engineering that the adaption of software to
        multiple different environments required that all

specific aspects of the target environment be included. Differences 2 and 3 were both obvious design choices for the person skilled in the art of software installation.

5.3   Claim 1 of the main request has since been amended by adding features relating to a list of integration tasks (referred to as feature "d" below), these features having been previously discussed in the context of the former auxiliary request.

5.4   In the oral proceedings the appellant argued that the skilled person starting from D1 would have addressed the problem of increasing the efficiency of software installation. The board takes the view that this problem cannot be regarded as the objective technical problem because the claimed solution does not increase the efficiency. It merely defers computational efforts by anticipating the preparation of images for several hardware variants. The skilled person would be aware that such a "one size fits all" software solution would not be more efficient than a "made to measure" tailored image for a specific hardware configuration.

5.5   The appellant also initially disputed whether D1 disclosed the configuration of a hardware abstraction layer, since D1 did not mention any integration tasks once the system image had been copied to the hard disk, but later agreed with the board that, although not explicitly mentioned in D1, such configuration steps were implicit in the method known from D1.

5.6   Thus it is common ground between the board and the appellant that the subject-matter of claim 1 differs from the disclosure of D1 in the following features:

a.   the run-time image includes multiple hardware
     abstraction layers so that it is operable with
     different hardware configurations of target
     computers,

b.   the executable install routine copies its
     functionality to the target media,

c.   the run-time image is integrated with the target
     computer after a reboot into the applied run-time
     image and

d.   said executable install routine comprising a list
     of integration tasks which are performed to carry
     out said integration.

5.7   Difference feature "a"

5.7.1   It is common ground between the board and the appellant
        that difference feature "a" addresses a different
        problem to difference features "b", "c" and "d".

5.7.2   The appellant has argued that the invention addresses
        the problem of making the installation process faster
        and less error prone by separating installation tasks
        that are machine specific from those which are common
        to different platforms. The board does not accept that
        the application discloses such a separation, since both
        the run-time image and the subsequent "integration"
        phase may relate to both generic and machine-specific
        aspects. For instance, while much of the run-time image
        relates to parts of the operating system common to all
        computers, the multiple hardware abstraction layers
        relate to machine-specific aspects such as the
        motherboard; see page 8, lines 8 to 14. Similarly the
        "integration" tasks mentioned in the description

relating to software registration, pre-installing
application programs and updating one or more system
settings with security identification data to identify
the target computer are common to all computers, while
hardware-specific tasks such as configuring the HAL and
identifying any mass storage device controllers on the
target computer are machine-specific tasks.

5.7.3   In its preliminary opinion in the summons for oral
        proceedings, the board stated that difference feature
        "a", which was also present in the previous version of
        the claims, addressed the problem of allowing the run-
        time image to be used with a greater variety of
        hardware. The skilled person starting from D1 and, in
        view of column 2, lines 29 to 33, seeking to allow
        system restoration even if the user has installed
        hardware not supplied by the factory (contrary to the
        assumption in column 7, lines 54 to 56) would have
        incorporated more hardware abstraction layers to allow
        the run-time image to be adapted to a greater variety
        of hardware as a matter of usual design. In the oral
        proceedings the appellant challenged this problem,
        arguing that it contained a pointer to the solution by
        mentioning changing the computer hardware. According to
        the appellant, it was not reasonable to formulate a
        problem in contradiction to the clear statements in D1
        that it was assumed that the computer hardware was
        unchangeable (see column 7, lines 54 to 56) and that
        the restored software image was "built to order" to
        correspond to that hardware configuration; see column
        2, lines 47 to 49. The board does not accept this
        argument because the skilled person would understand
        that D1 implies the configuration of a hardware
        abstraction layer, implying that the software, in
        particular the device drivers, can deal with some
        variations in the hardware, be it only updated versions

of the same hardware components. Moreover the skilled
person would be aware that the computer identity is
established using the service tag number of the
computer (see figure 2; step 224), rather than by
checking the identities of the individual hardware
components comprising the computer. Hence a hardware
change not affecting the service tag number would not
prevent the restoration process from being carried out.
Consequently the board takes the view that the skilled
person would recognise that D1 does not teach that no
changes in hardware configuration are possible. It
would thus be reasonable for the skilled person to
consider hardware modifications.

5.7.4   The board concludes that the objective technical
        problem starting from D1 can be formulated as allowing
        the run-time image to be used with a greater variety of
        hardware, this problem not containing an unallowable
        pointer to the solution. The skilled person solving
        this problem would have incorporated more hardware
        abstraction layers in the run-time image to make the
        run-time image operable with different hardware
        configurations of target computers, as set out in
        feature "a", and thus produced a more generic
        restoration CD ROM as a matter of usual design.

5.7.5   Hence difference feature "a" does not involve an
        inventive step.

5.8   Difference feature "b"

5.8.1   In the oral proceedings the appellant argued that
        difference features "b", "c" and "d" acted together to
        solve a second problem, namely that of integration.
        While, generally speaking, difference features "b", "c"
        and "d" do indeed relate to different aspects of

integration, there is no synergistic effect, each
difference feature having the effects that it would
have, taken alone. Hence the contributions of each
feature to inventive step must be considered
separately.

5.8.2   Difference feature "b", the executable install routine
        copying its functionality to the target media,
        addresses the problem of speeding up execution of the
        install routine. The skilled person would have been
        aware as a matter of common general knowledge that, as
        conceded by the appellant in the oral proceedings, the
        target computer can access its own media, for instance
        hard disk 112 (see figure 1), more quickly than it can
        access transferable media, for instance the flexible
        diskette ("floppy") 108 (see figure 1). Hence the
        skilled person would, as a matter of usual design, have
        added feature "b" to allow the install routine to be
        executed more quickly.

5.8.3   Hence difference feature "b" does not involve an
        inventive step.

5.9   Difference feature "c"

5.9.1   Although D1 does not explicitly disclose any
        integration processes once the software image has been
        transferred to the hard disk of the computer, the
        skilled person would have been aware, as a matter of
        common technical knowledge, that integration processes
        of some sort would typically follow the removal of the
        bootable flexible disk and the rebooting operation
        disclosed in D1; see column 9, lines 29 to 33. In the
        absence of the bootable flexible diskette, the reboot
        would inevitably occur into the applied run-time image.
        Hence difference feature "c", the run-time image being

integrated with the target computer after a reboot into
the applied run-time image, relates to a matter of
usual design. This has not been disputed by the
appellant.

5.9.2 Hence difference feature "c" does not involve an
       inventive step.

5.10   Difference feature "d"

5.10.1 This difference feature, said executable install
       routine comprising a list of integration tasks which
       are performed to carry out said integration, is a
       clarified version of a feature commented on by the
       board in its summons, albeit in the context of the
       previous version of the auxiliary request. The board
       took the view that the organisation of integration
       tasks as a list seemed to be a matter of routine for
       the skilled person. The appellant has not challenged
       this view.

5.10.2 Hence difference feature "d" does not involve an
       inventive step.

5.11   Conclusion on the main request

       Since none of the difference features between the
       subject-matter of claim 1 and the disclosure of D1
       involves an inventive step in view of D1, the board
       finds that the subject-matter of claim 1 according to
       the main request does not involve an inventive step,
       Article 56 EPC 1973.

6.   Inventive step, Article 56 EPC 1973, the auxiliary
        request

6.1   According to the reasons for the appealed decision, the
        subject-matter of claim 1 according to the then
        auxiliary request had been restricted with respect to
        that of the main request by adding the following
        feature: the integration tasks comprise updating one or
        more system settings for the target computer with the
        security identification data. It was known to the
        skilled person, in an installation process, to
        configure a system by updating system settings
        referring to security data.

6.2   The appellant has argued that the difference features
        are more than an aggregation of unrelated features and
        that they further separate machine-specific from common
        tasks. Contrary to the method of D1, the claimed
        method, before applying the image, determined
        parameters of the target computer (see figure 2, step
        52 and page 5 of the description) and, after having
        applied the image, updated the system settings with
        said parameters. The service tag known from D1 was only
        used to determine whether the image should be installed
        on the computer and did not play a part in the
        subsequent installation steps. Hence the service tag
        could not be considered as the claimed security
        identification data. Moreover the method of D1 sought
        to restore the computer to its original factory new
        state in spite of any data on the target computer. In
        contrast, according to the invention, the data
        structures from the applied image are merged into the
        computer's existing data structure; see page 5, lines
        18 to 19. Parameters comprising security identification
        data, determined from the target computer, were
        integrated with the applied run-time image after a

reboot into the image. It was not obvious to update system settings for the target computer with the security identification data.

6.3   Claim 1 of the auxiliary request has been restricted with respect to claim 1 of the main request by adding two features relating to the executable install routine, namely that it:

e.   determines one or more parameters specific to the target computer comprising security identification data, the integration tasks comprising integrating the determined parameters and the applied run-time image with the target computer and updating one or more system settings for the target computer with the security identification data to identify the target computer, and

f.   identifies any mass storage device controllers on the target computer.

6.4   Difference features "e" and "f" lack any synergistic effect in combination with differences "a" to "d", discussed above, and between themselves so that their contributions to inventive step must be considered separately.

6.5   Difference feature "e"

6.5.1 This feature is a clarified form of that commented on by the board in its summons, albeit in the context of the previous auxiliary request. The board stated that it accepted the appellant's argument that the service tag of the computer in D1 (as opposed to the tag ID of the CD ROM) (see column 9, lines 50 to 52) could not be considered as the claimed security identification data,

since the service tag was not used to update one or
more system settings, as set out in the claims, but
rather to decide whether or not to initiate the
restoration process. Hence the board took the view that
feature "e" was a further difference feature over D1.
The board however doubted whether feature "e"
necessarily solved a technical problem and thus could
contribute to inventive step, since it seemed to merely
set out the reading of parameters and the updating of
settings, the claims not being limited to the use of
the data for security purposes.

6.5.2   Although feature "e" now sets out the the security
identification data being used to identify the target
computer, which covers the use of the service tag to
identify the computer known from D1, the board is
satisfied that feature "e", as a whole, is not known
from D1, since D1 does not disclose the updating of one
or more system settings for the target computer with
said determined parameters, including the security
identification data to identify the target computer.

6.5.3   In the oral proceedings the appellant did not expand
its arguments as to the inventive step of this feature.

6.5.4   The board finds that, although feature "e" mentions
"updating one or more system settings for the target
computer with the security identification data to
identify the target computer", the application does not
disclose the target computer being identified using the
updated settings based on the security identification
data. The board understands the expression in feature
"e" "to identify the target computer" as setting out
the potential in the target computer to be recognised,
rather than requiring that recognition of the target
computer actually occur. The board concludes that

feature "e" sets out the reading of parameters and the
updating of settings but does not solve a technical
problem and thus cannot contribute to inventive step;
see T 0154/04 ("Estimating sales activity/DUNS
LICENSING ASSOCIATES", OJ EPO 2008, 046, reasons 5(F)).

6.6   Difference feature "f"

6.6.1   As the appellant explained in the oral proceedings,
        feature "f", identifying any mass storage device
        controllers on the target computer, is based on page 8,
        lines 12 to 14, of the description. The appellant also
        argued that while it was known for operating systems to
        identify mass storage controllers, it was not obvious
        for an executable install routine to do so.

6.6.2   Since, as the appellant conceded in the oral
        proceedings, the application does not disclose what is
        done with the information if any mass storage device
        controllers on the target computer are identified by
        the executable install routine, the board finds that
        feature "f" does not solve a technical problem and thus
        cannot contribute to inventive step; again, see
        T 0154/04 (cited above).

6.7   Conclusion on the auxiliary request

        Since none of the difference features between the
        subject-matter of claim 1 and the disclosure of D1
        involves an inventive step in view of D1, the board
        finds that the subject-matter of claim 1 according to
        the auxiliary request does not involve an inventive
        step, 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