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

(51) International Patent Classification⁷: G06F 9/445

(21) International Application Number:
PCT/EP2003/003352

(22) International Filing Date: 31 March 2003 (31.03.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
103 10 998.6   6 March 2003 (06.03.2003)   DE

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

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

Published:
— with international search report

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

(54) Title: A METHOD FOR GENERATING A COMPUTER PROGRAM AND A COMPUTER PROGRAM PRODUCT
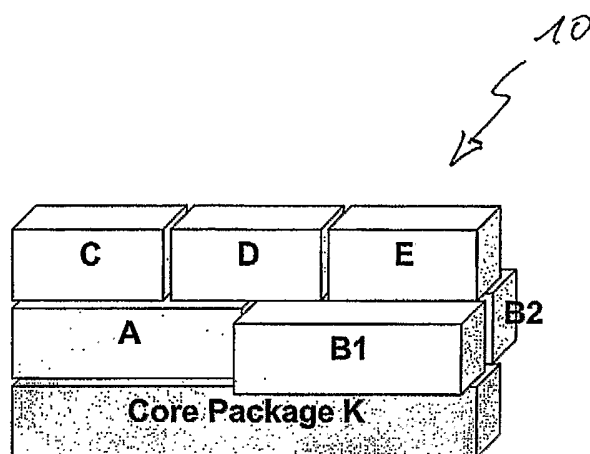
(57) Abstract: A method for generating a
computer program and a computer program setup
system, wherein the computer program is divided
into a plurality of packages in modular manner,
the packages representing in their entirety
the complete computer program and being
individually selectable by a user when installing
the computer program on a computer system in
order to create a customized computer program.

A method for generating a computer program and
5   a computer program product

Field of the invention

10   [0001] The present invention relates to the field of
generating computer programs and more particularly to a
method for generating a computer program which can be
easily customized by a user installing the computer
program. The invention further relates to a computer
15   program product with a computer-readable medium and a
computer program stored on the computer-readable medium
with program coding means which are suitable for carrying
out such a method when the computer program is run on a
computer system.
20

Description of the Related Art

        [0002] In the field of computer program technology,
25   it is known to pack large computer programs before they
are stored on a suitable carrier in case the computer
program is too large for the space available on the
computer program carrier. In the case of very large
programs it is also known to divide a program into
30   several packages of a size fitting on a given storage
carrier. When the computer program is installed, the user
loads the content of the more than one data carriers onto
his computer where the packages are put back together
when unpacked in order to generate the computer program
35   on the computer system of the user.

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[0003]   It is also known that a computer program, upon installation by a user, can be customized. For this, the installation or setup routine of the program comprises an interactive window which can be used by the

5   user to define whether he wishes standard settings or customized settings to be set up. In case he opts for customized settings, there are computer programs which ask for an extensive amount of set up details to be provided by the user in order to design the desired

10   "shape" of the computer program.

[0004]   However, this requires a profound knowledge of the design and the design possibilities of the computer program to be installed on behalf of the user.

15   Further, the customized installation of a complex computer program takes a very long time.

Summary of the Invention

20   [0005]   It is therefore an object of the invention to provide a method for generating and for installing a computer program as well as a setup system for a computer program which overcome the disadvantages known in the prior art. More particularly, it is an object of the

25   invention to provide a method for generating and for installing a computer program and a setup system for a computer program which allows a user to generate and design a customized computer program fast and easy and without being required to have profound knowledge of the

30   computer program to be installed. This object is achieved by proposing a method with the features of claim 1 and a set up system with the features of claim 10 as well as a computer program product with the features of claims 15 and 18.

35

[0006]   This method includes all possible parts of computer programs like functions, process descriptions,

table and/or object design descriptions, table data
and/or file data, configuration data, etc.

[0007]   Accordingly, the computer program is divided
into a plurality of packages in modular manner, the
packages corresponding to functional subunits of the
computer program and representing in their entirety the
complete computer program, the packages being
individually selectable by a user when installing the
computer program on a computer system in order to create
a customized computer program. This allows a user to
select whole functional subunits when setting up a
computer program instead of having to select each and
every function of the computer program to be "designed",
i.e. to be custom-installed. This enables users without
detailed knowledge of computer technology and/or a given
computer program to generate a customized computer
program as they merely have to choose from modular
packages corresponding to functional subunits of the
computer program, thus allowing for fast, easy and
reliable design setup of a customized computer program.

[0008]   Advantageously, the plurality of packages,
comprise at least one core package and at least one
additional package, a core package representing a base
computer program module forming the basis for at/on
computer program modules contained in the additional
package(s). This allows an inexperienced user to set up a
computer program correctly by selecting base modules
first and subsequently building up the customized
computer program by choosing add-on modules. Preferably,
each computer program comprises exactly one core package
which is the basic subunit of the computer program and
provides all the basic functions of the computer program,
the core package being able to be installed and run
independently from the additional packages which provide
add-on functions.

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[0009] Further features and embodiments of the invention will become apparent from the description and the accompanying drawings.

[0010] It will be understood that the features mentioned above and those described hereinafter can be used not only in the combination specified but also in other combinations or on their own, without departing from the scope of the present invention.

[0011] The invention is schematically illustrated in the drawings by means of an embodiment by way of example and is hereinafter explained in detail with reference to the drawings. It is understood that the description is in no way limiting on the scope of the present invention and is merely an illustration of a preferred embodiment of the invention.

Brief description of the Drawings

[0012] In the drawings,

Figure 1 is a schematic illustration of a computer program divided into a plurality of modular packages;

Figure 2 is a schematic illustration of a requirement profile of a user towards a computer program; and

Figure 3 is a schematic illustration of how the requirement profile of Figure 2 is met with a customized computer program generated according to invention.

Detailed Description

[0013]   Figure 1 shows in schematic representation a computer program 10 according to the invention divided into a plurality of packages in modular manner. In the embodiment shown in Figure 1, the computer program 10 consists of a core package K and additional packages A, B1, B2, C, D and E. Packages K and A to E represent in there entirety the complete and full computer program with all possible functions, each package comprising a functional subunit of the computer program. Each subunit of the computer program consists of a multitude of functions.

[0014]   Core package K represents the smallest independent functional subunit of the computer program 10, i.e. the computer program 10 could be installed by only selecting the core package K and would then constitute a customized computer program stripped down to its basic functions.

[0015]   In the additional packages A to E, all optional functions and subunits of the computer program are contained.

[0016]   Core packages do not require any other packages and constitute, as described above independent software solutions. Advantageously, a computer program according to the invention comprises exactly one core package which determines the nature of the computer program. This means that core packages cannot be combined with other (core) packages but only with additional packages. This makes the set up of a customizes computer program very easy for a user. Each of the additional packages requires at least one further package, i.e. a core package or another additional package. Selection of the additional packages determines the scope of the software solution. However, it would obviously be also possible to provide a computer program with more than one

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core package which would then allow for a user to choose between different sets of basic functions.

[0017] Packages can have various relations as to prerequisites or conditions, with a more complex logic being allowed. For example, in the embodiment of Figure 1 core package K is a prerequisite for additional package A ($A \Rightarrow K$), or in other words additional package A requires core package K. Further, additional package C requires additional package A ($C \Rightarrow A$), additional package E requires either additional package B1 or B2 ($E \Rightarrow B1 \lor B2$) and additional package D requires additional package A and either additional package B1 or additional package B2 ($D \Rightarrow A \land (B1 \lor B2)$). There is also the possibility that two packages bar each other as it is the case for additional packages B1 and B2 in the example of Figure 1 ($\neg(B1 \land B2)$ or $B1 \Rightarrow \neg B2$, $B2 \Rightarrow \neg B1$). While the bar is symmetrical, the prerequisite is anti-symmetrical, i.e. two packages may not require each other.

[0018] If an overlap results in the content of two packages, there might be a conflict when both packages are selected. There are three remedies to such a conflict which can find use alternatively or cumulatively. The first option is to prohibit concurrent selection of certain packages. Incompatible packages, like packages B1 and B2 in the example of Figure 1, may have unlimited overlap. A second option is to implement rules of dominance, e.g. for packages of different status or rank (as for example packages A and C in the example Figure 1) it applies that the higher package (here: C) dominates and may modify settings of the lower package (here: A). The third option consists in prohibiting overlaps for packages of the same status or rank (e.g. packages C and D in the example of Figure 1).

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[0019] Referring now to Figures 2 and 3, Figure 2
shows a schematic client profile 12 representing the
requirement of a client or user as to the desired
functions of the software to be installed and customized.
5   In the example of Figure 2, the software to be installed
is a computer program in the field of commission payments
offering basic functions as well as functions in the
fields of Liability, Finance FI and Human Resources HR.
According to the client requirement profile of Figure 2,
10   the client desires certain basic functions 12.1 and 12.2,
however with a gap 12.3 in the profile of the basic
functions which means that the client does not need the
function(s) corresponding to the gap 12.3. In the fields
of Liability and Human Resources HR, the profile is flat
15   which means that the client does not wish any function in
these fields. However, in the field of Finance FI, the
client wishes to have functions according to a profile
12.4.

20   [0020] In order to generate a computer program
corresponding as close as possible to the profile 12 of
Figure 2, the client or user selects certain packages
when installing or setting up the computer program.
First, he selects a core package of the computer program
25   which is package P1, and subsequently selects a first
additional package P2 which builds up on the core package
P1. With these two packages, the main portion of the
desired basic functions is already available. However, in
order to reproduce the fine profile 12.1 and 12.2 of the
30   basic functions, user further selects smaller additional
packages P3, P4, P5 and P6 (the packages are shown as
rectangles and squares which is for illustrated purposes
only).

35   [0021] In the fields of Liability and HR, the user
does not select any packages, but in the field of FI he
selects a first package P7 which provides for the basic

functions of the Finance module and further additional
packages P8, P9, P10 and P11 in order to reproduce as
finely as possible the profile 12.4.

5   [0022] As can easily be seen from the illustration
of Figure 3, it is barely possible to reproduce a fine
profile by means of (rectangular) packages. The result is
that in some areas there are excess functions (i.e.
functions on top of the desired profile) available as for
10   example in the gap 12.3 or in the areas depicted with
reference numerals 14, 17, 18 and 20, and in other areas
functions which were required are missing as these
functions are not covered by the selected packages, as
for example in the areas depicted with reference numerals
15   21, 24, 26 and 28.

[0023] The functions missing could be added in a
conventional manner by selecting these functions from a
menu containing all available functions one after the
20   other (assumed that the software basically provides these
functions), and the excess functions could be left or -
in case they waste valuable storage - could be
deinstalled in conventional manner by choosing the
corresponding functions from a menu of all functions one
25   after the other.

[0024] Advantageously, the process of setting up a
computer program according to the invention is designed
very user friendly by providing a list of all packages of
30   the computer program to the user who can select (via an
appropriate device like keyboard or mouse) the desired
packages, the selected packages appearing in a second
list. Once the user has begun to select packages,
indication elements appear next to the remaining packages
35   in the list of available packages, indicating whether a
package can be selected additionally to the packages
already selected, whether a package requires further

packages or whether a package is incompatible with a
package already selected.

[0025] The invention thus provides a useful tool in
generating computer programs and installing such a
computer program according to the invention in order to
create a customized computer program. Handling for users,
particularly for inexperienced users, is simplified and
setup time is minimized. Due to the modular concept of
the packages constituting the computer program in
contrast to the "atomised" design of conventional custom
setup systems. With the invention it also becomes
possible to ship parts of a computer program separately
which leads to an enhanced flexibility of a software
producer as well as the software client.

CLAIMS

1.   A method for generating a computer program,
wherein the computer program (10) is divided into a
10 plurality of packages (K, A, B1, B2, C, D, E) in modular
manner, the packages (K, A, B1, B2, C, D, E) representing
in their entirety the complete computer program (10) and
being individually selectable by a user when installing the
computer program (10) on a computer system in order to
15 create a customized computer program.

2.   A method according to claim 1, wherein the
plurality of packages (K, A, B1, B2, C, D, E) comprise at
least one core package (K) and at least one additional
20 package (A, B1, B2, C, D, E).

3.   A method according to claim 1, wherein the
plurality of packages (K, A, B1, B2, C, D, E) comprise one
core package (K) and at least one additional package (A,
25 B1, B2, C, D, E).

4.   A method according to any one of claims 1 to 3,
wherein the plurality of computer program packages (K, A,
B1, B2, C, D, E) is packed.

30

5.   A method according to any one of claims 1 to 4,
wherein each of the plurality of packages (K, A, B1, B2, C,
D, E) represents a functional subunit of the computer
program.

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6.   A method according to any one of claims 1 to 5, wherein the packages (K, A, B1, B2, C, D, E) are sorted hierarchically, with packages ranking higher in the hierarchy dominating packages ranking lower in the hierarchy.

7.   A method of installing a computer program (10) divided into a plurality of packages (K, A, B1, B2, C, D, E) in modular manner, the packages representing in their entirety the complete computer program (10) and being individually selectable by a user when installing the computer program (10) on a computer system in order to create a customized computer program, the method comprising
        defining a profile (12) of functions required to be performed by the computer program to be installed;
        selecting a first package (P1) of the plurality of packages containing basic functions of the computer program to be installed;
        on the basis of the first package, subsequently selecting a further package (P2 to P11) which provides computer program functions building up on the previously selected package while observing combination restrictions;
        repeating the latter step until the functions of the selected packages meet the previously defined profile (12) of functions.

8.   A method according to claim 7, wherein the first package (P1) selected is a core package (K) of the computer program (10) to be installed.

9.   A method according to claim 7 or 8, wherein the further package (P2 to P11) selected is one of a variety of additional packages of the computer program to be installed.

10.   A   computer   program   setup   system   comprising   a
computer program (10) divided into a plurality of packages
(K, A, B1, B2, C, D, E) in modular manner, the packages (K,
A, B1, B2, C, D, E) representing in their entirety the
5   complete computer program (10), and further comprising
interactive means providing a user with setup information
about the computer program packages (K, A, B1, B2, C, D, E)
and allowing for the user to select among the packages
individually in order to create a customized computer
10 program.

11.   A   computer   program   setup   system   according   to
claim 10, wherein the user can select from at least one
core package (K) and at least one additional package (A,
15 B1, B2, C, D, E).

12.   A   computer   program   setup   system   according   to
claim 10, wherein the user first selects a core package (K)
and subsequently can select from at least one additional
20 package(A, B1, B2, C, D, E).

13.   A computer program setup system according to any
one of claims 10 to 12, wherein the interactive means
provides the user with information on possible combinations
25 of packages (K, A, B1, B2, C, D, E).

14.   A   computer   program   setup   system   according   to
claim 12 or 13, wherein the interactive means provides the
user   with   information   on   possible   combinations   of
30 additional packages (A, B1, B2, C, D, E).

15.   A   computer   program   product   with   a   computer-
readable medium and a computer program stored on the
computer-readable medium with program coding means which
35 are suitable for carrying out a method according to any one

of claims 1 to 9 when the computer program is run on a computer.

16. A computer program with program coding means which are suitable for carrying out a method according to any one of claims 1 to 9 when the computer program is run on a computer.

17. A computer-readable medium with a computer program stored thereon, the computer program comprising program coding means which are suitable for carrying out a method according to any one of claims 1 to 9 when the computer program is run on a computer.

18. A computer-readable medium with a computer program (10) stored thereon, the computer program (10) being divided into a plurality of packages (K, A, B1, B2, C, D, E) in modular manner, the packages (K, A, B1, B2, C, D, E) representing in their entirety the complete computer program and comprising a setup routine allowing for individual selection of packages by a user when installing the computer program (10) on a computer system in order to create a customized computer program.
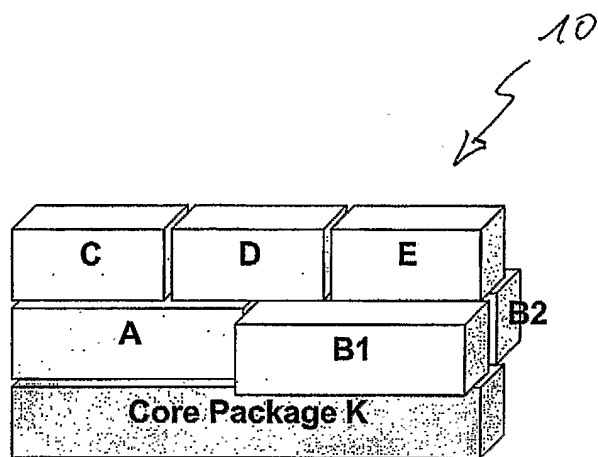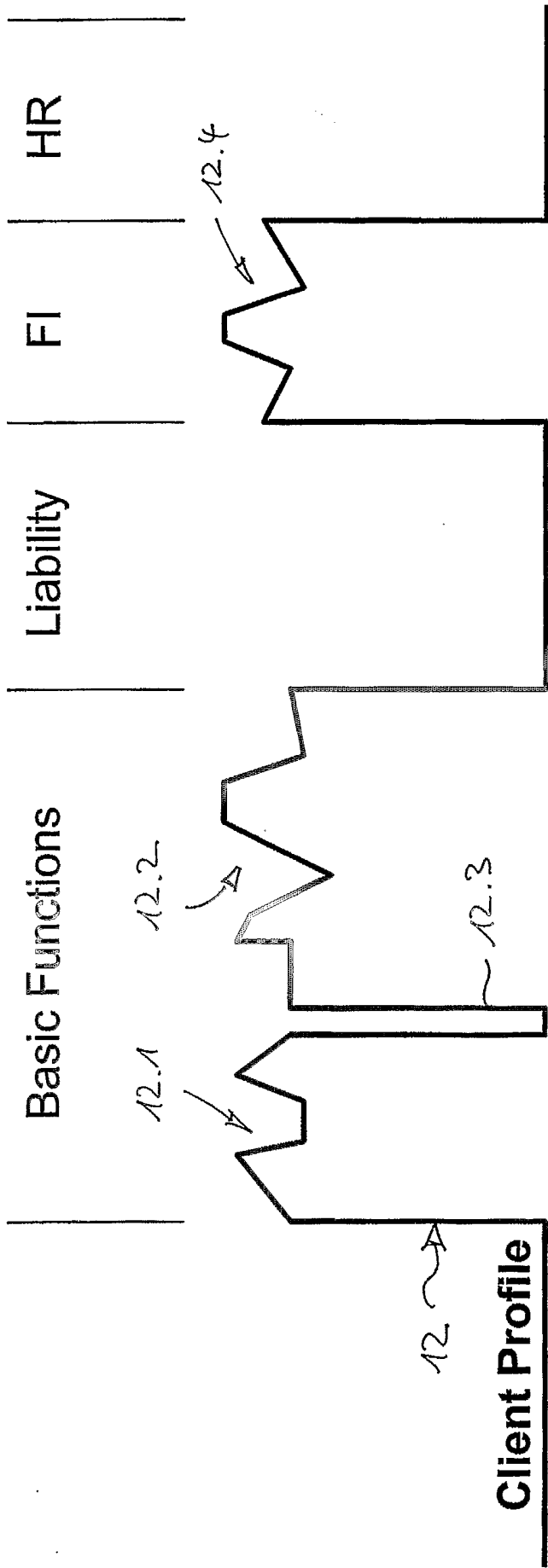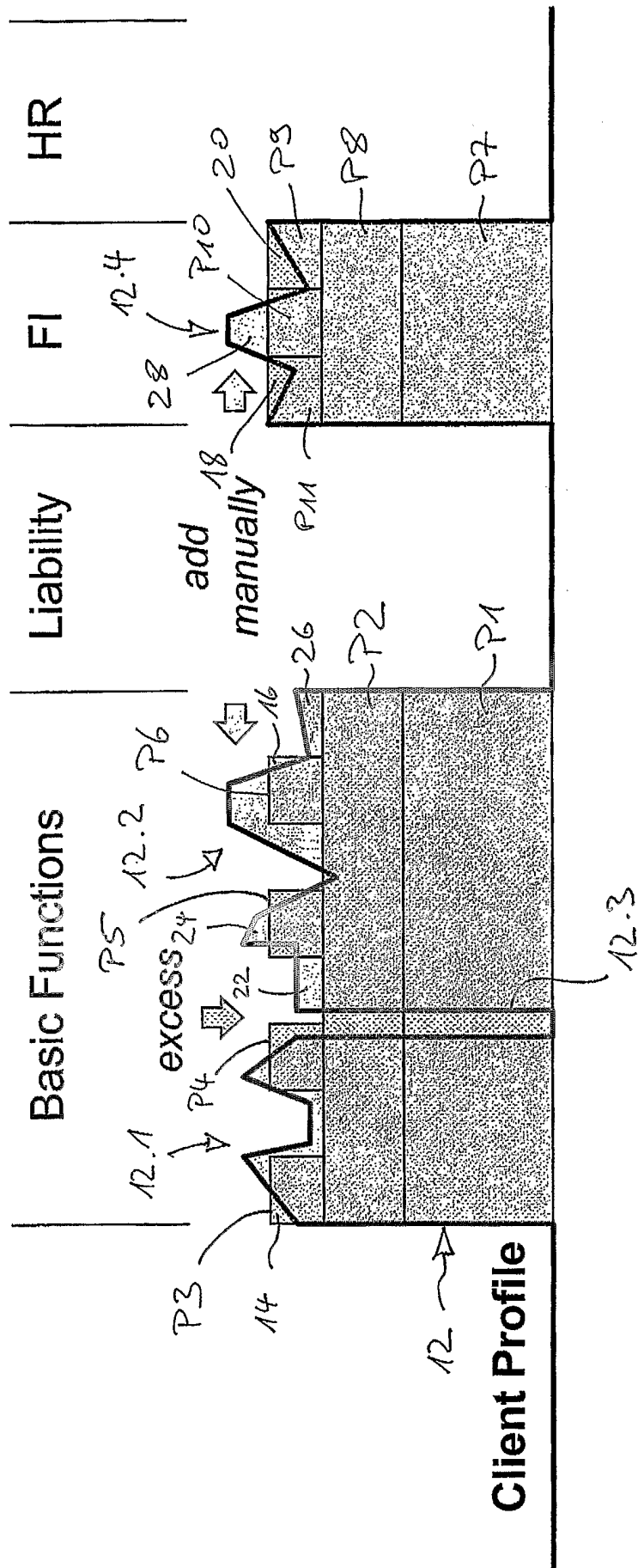
Fig. 1

Fig. 2

Fig. 3

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7   G06F9/445

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7   G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 802 480 A (SUN MICROSYSTEMS INC) 22 October 1997 (1997-10-22) abstract page 2, column 2, line 7 - line 19 page 2, column 2, line 25 - line 32 page 2, column 2, line 39 - line 56 --- -/--	1-9, 15-17

[X] Further documents are listed in the continuation of box C.   [X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 October 2003	11/11/2003

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	del Chiaro, S

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/133814 A1 (ZIMNIEWICZ JEFF A ET AL) 19 September 2002 (2002-09-19) figure 4 figure 5 page 1, right-hand column, line 36 - line 39 page 1, right-hand column, line 27 - line 33 page 4, right-hand column, line 31 - line 36	10-14,18
Y	page 3, left-hand column, line 56 - line 60 ---	1-4,6-9, 15-17
Y	"TABLE-DRIVEN SELECTIVE SOFTWARE DOWNLOAD" IBM TECHNICAL DISCLOSURE BULLETIN, IBM CORP. NEW YORK, US, vol. 32, no. 9B, 1 February 1990 (1990-02-01), pages 40-41, XP000082223 ISSN: 0018-8689 page 40, line 8 - line 20 ---	5
A	US 2002/191014 A1 (ATIR JOSHUA ET AL) 19 December 2002 (2002-12-19) page 6, right-hand column, line 67 -page 7, line 3 figures 9D-9K figure 11B ---	1-18
A	US 6 282 711 B1 (MARTZ DAVID A ET AL) 28 August 2001 (2001-08-28) column 2, line 65 -column 3, line 7 column 3, line 62 - line 66 column 5, line 12 - line 18 -----	1-18

INTERNATIONAL SEARCH REPORT
Information on patent family members

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US 6282711	B1	28-08-2001	NONE		