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(54) Title: COMPUTER SYSTEM AND METHOD FOR DETERMINING A GEOGRAPHIC REGION FROM WHICH TO SOURCE A RESOURCE

(57) Abstract:

COMPUTER SYSTEM AND METHOD FOR DETERMINING A GEOGRAPHIC REGION FROM WHICH TO SOURCE A RESOURCE

The present invention relates to a computer system and method for determining a geographic region from which to source a resource. In particular, but not exclusively, the present invention relates to a computer system and method for determining a low cost geographic region from which to source one or more manufactured resources such as manufactured parts for industrial equipment and the automotive industry.

BACKGROUND

Some geographic regions, for example the United States of America and the United Kingdom, are considered to be high cost geographic regions for certain resources such as certain manufactured parts. Other geographic regions, for example China and India, are considered to be low cost geographic regions for some resources. Depending on the characteristics of a particular study, a geographic region can be a group of countries, a country or a part of a country. When a study is focussed at the country level, reference may be made to high cost countries (HCCs) and low cost countries (LCCs).

It can be desirable for an organization, such as a manufacturer for example a manufacturer of construction equipment, mining equipment or engines, to source resources such as manufactured parts for a high cost geographic region from a low cost geographic region. Some organizations recognize this and source certain resources from low cost geographic regions. There are several potential barriers to sourcing a resource from a low cost geographic region, including that low cost region sourcing may be a low priority and a typical organization is not set up to use efficiently low cost region sourcing, that people within an organization may not know who to contact, that there may be

a lack of knowledge of which regions would be low cost for a particular procurement and that there may be communication barriers, not least language barriers, between a buyer in a high cost region and a supplier in a low cost region. If low cost region sourcing is used, or at least considered, then a typical approach is to ask one or more potential suppliers in one or more low cost regions to provide a quotation, sometimes referred to as a "Request for Quotation", and to base the procurement decision on the resulting quotations.

SUMMARY OF THE INVENTION

In one embodiment of the invention, a computer system is provided for determining a geographic region from which to source a resource. The computer system has an associated database which stores region-specific cost data for each of a plurality of geographic regions. The computer system is operable to present an interface to enable a user to input resource data for a resource; to store the resource data; to calculate a potential cost of sourcing the resource from each of the plurality of geographic regions based on the region-specific cost data and the resource data; and to output the calculated potential cost of sourcing the resource from one or more of the plurality of geographic regions.

In another embodiment of the invention, a method for determining a geographic region from which to source a resource is provided on a computer system. The computer system has an associated database which stores region-specific cost data for each of a plurality of geographic regions. The method comprises presenting an interface to enable a user to input resource data for a resource; storing the resource data; calculating a potential cost of sourcing the resource from each of the plurality of geographic regions based on the region-specific cost data and the resource data; and outputting the calculated potential

cost of sourcing the resource from one or more of the plurality of geographic regions.

In another embodiment of the invention, a method for determining a geographic region from which to source a resource is provided. The method comprises determining region-specific cost data for each of a plurality of geographic regions; determining resource data for a resource; calculating a potential cost of sourcing the resource from each of the plurality of geographic regions based on the region-specific cost data and the resource data; and using the calculated potential costs to determine from which geographic region to source the resource.

Some embodiments of the invention may include or utilize computer-executable instructions for performing one or more of the disclosed methods. The computer-executable instructions may be stored on a computer-readable medium, such as a portable memory drive, CD-ROM, RAM, ROM, or any other suitable memory structure whether local to a processor(s) via a bus or remotely located such as remote memory accessible via the Internet or other network.

The region-specific cost data may comprise one or more of labor cost data, energy cost data, raw material cost data, supplier margin data, transportation cost data, inventory period data and currency exchange data. The resource data may comprise resource logistic data comprising one or more of source geographic region data, receiving facility data, transportation limit data, resource transportation data, vendor payment time data, on hand time data and weighted average cost of capital data. The potential cost may be calculated as one or more of an ex-works cost and a total landed cost.

Advantageously, a computer system and method is provided which can be used to determine a geographic region from which to source a resource. The computer system and method can be used by an organization for efficient low cost region sourcing, by efficiently identifying the best low cost region sourcing opportunities. Cost drivers may vary from region to region and from resource to resource, and the system and method may be used to identify the target low cost region for a range of resources. By calculating a potential cost of sourcing the resource from each of the plurality of geographic regions based on the region-specific cost data and the resource-specific cost data, the calculated potential cost is an indication of what the sourcing cost from each regions *should be*. Therefore, a buyer can approach potential suppliers in a region knowing this *should be* cost, rather than relying on the results of Requests for Quotations, and the buyer can use the *should be* cost to effectively negotiate with the suppliers.

Other features and advantages of embodiments of the invention will be apparent from the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

Particular embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 illustrates a computer system of an embodiment of the present invention.

Figure 2 illustrates an example of the external view of the computer system.

Figure 3 is a schematic representation of the architecture of the computer system.

Figure 4 illustrates an alternative configuration for the computer system.

Figure 5 is a flow diagram showing the functional steps performed by the computer system in an embodiment of the present invention.

Figure 6 shows a time line from shipment, through receipt to sale for an example component.

Figure 7 illustrates an interface to enable a user to input data in an embodiment of the present invention.

Figures 8 to 10 illustrate an interface to enable a user to input resource specific data in an embodiment of the present invention.

Figures 11 to 17 illustrate an interface to enable a user to input resource logistic data in an embodiment of the present invention.

Figure 18 illustrates an interface to enable a user to input as-is cost data in an embodiment of the present invention.

Figure 19 illustrates an interface to enable a user to input supplier margin data in an embodiment of the present invention.

Figure 20 shows the interface of Figure 7.

Figure 21 illustrates a message and interface presented to a user before the calculation is performed in an embodiment of the present invention.

Figure 22 illustrates an interface giving the user a set of output options and a set of example output interfaces.

Figures 23 to 25 show the example output interfaces of Figure 21 in larger scale.

Figure 26 shows the interface of Figure 7 and illustrates interfaces to check for outdated region-specific cost data.

Figures 27 to 34 illustrate different interfaces to update region-specific cost data.

DETAILED DESCRIPTION

Embodiments of the present invention relate to computer systems and methods for determining a geographic region from which to source a resource.

A computer system may include any suitable structure that processes digital information including but not limited to one or more devices that employ one or more processors or discrete logic (e.g., application specific integrated circuits or state machines) or other suitable structure whether implemented as hardware, software, firmware or any suitable combination, that carries out the operations described herein. A computer system may include a cell phone, other handheld device or any suitable device or devices.

In overview, a method for determining a geographic region from which to source a resource may be provided. The method may comprise determining region-specific cost data for each of a plurality of geographic regions; determining resource data for a resource; calculating a potential cost of sourcing the resource from each of the plurality of geographic regions based on the region-specific cost data and the resource data; and using the calculated potential costs to determine from which geographic region to source the resource. The method may also comprise sourcing the resource from one or the geographic regions.

The region-specific cost data may be stored in a database and the resource data for a resource, e.g. a manufactured part or component such as a forged part (e.g. a piston rod) or a cast component (e.g. a valve), can be entered using an interface on a computer system associated with, i.e. having access to, the database. The computer system may perform the calculation.

The method can be used by an organization for efficient low cost region sourcing, by efficiently identifying the best low cost region sourcing opportunities. By calculating a potential cost of sourcing the resource from each of the plurality of geographic regions based on the region-specific cost data and the resource-specific cost data, the calculated potential cost is an indication of what the sourcing cost from each regions *should be.* Since embodiments of the invention can determine a low cost geographic region, e.g. a low cost country, from which to source one or more manufactured resources by calculating a potential cost, or *should be* cost, of sourcing the resource from the region, the tool provided by embodiments of the invention can be referred to as the Low Cost County Should Cost Model or, in abbreviated form, the LCC Should Cost Model.

Figure 1 illustrates a computer system of an embodiment of the present invention. Computer system 10 is for determining a geographic region from which to source a resource. The computer system 10 has an associated database 12 which stores region-specific cost data for each of a plurality of geographic regions. The computer system is operable to present an interface 14 to enable a user to input resource data for a resource. The computer system 10 is operable store the resource data, optionally in database 12 or separately.

Figure 2 illustrates an example of the external view of the computer system. and Figure 3 is a schematic and simplified representation of the computer architecture..

The computer 10 comprises various data processing resources such as a processor 16 coupled to a bus structure 18. Also connected to the bus structure 18 are further data processing resources such as memory 20. A display adapter 22 connects a display 24 to the bus structure 18. A user input device adapter

26 connects a user-input device 28 to the bus structure 54. A communications adapter 30 may also be provided to communicate with other computers across a communication link such as a computer network.

In operation the processor 16 can execute instructions that may be stored in memory 20. The results of the processing performed may be output or displayed to a user via the display adapter 22 and display device 24. User inputs may be received through input device adapter 26 by a user using input device 28. The inputs can be displayed on interface 14.

Database 12 may be configured in memory 20 of computer system 10, as illustrated in Figure 3. Optionally, the database may be configured on another computer system, such as computer system 32 illustrated in Figure 4. Computer system 10 has access to database 12 across communication link 34, which may be a computer network, such as the internet, or a direct link.

It will be appreciated that the architecture of the computer system can vary considerably from those illustrated in Figures 2 to 4.

Figure 5 is a flow diagram showing the functional steps performed by the computer system in an embodiment of the present invention. The computer system 10 can be operable to perform these functional steps, for example the processor 16 of computer system 10 may be programmed with computer executable instructions to perform the steps.

Before referring to Figure 5, the functional steps performed by computer system 10 in overview are: (i) present an interface to enable a user to input resource data for a resource; (ii) store the resource data; (iii) calculate a potential cost of sourcing the resource from each of the plurality of geographic

regions based on the region-specific cost data and the resource data; and (iv) output the calculated potential cost of sourcing the resource from one or more of the plurality of geographic regions.

The resource data may comprise resource-specific data and resource logistic data, which may be input through separate interfaces. Other data may also be input or modified through other interfaces.

Referring to Figure 5, at step S2 the computer system present an interface (such as the interface of Figure 7). It will be appreciated that the various data input and displayed in embodiments of the present invention may be through any suitable arrangement of interfaces. The particular individual interfaces of particular embodiments will be described later with reference to Figure 7 onwards and it will be appreciated that the display of particular individual interfaces is not shown in Figure 5, but rather is depicted by step S2 as "present interface(s)".

At step S4, the computer system receives and stores the resource-specific data.

At step S6, the computer system receives and stores the resource logistic data.

At step S8, the computer system receives and stores the "as-is" cost data, that may be supplied by the user. The as-is data represents the current cost data for sourcing the resource and may be used for cost comparisons to show the potential saving of sourcing from a low cost region.

The computer system may receive and store supplier margin data, that may be supplied by the user at this stage.

At step S10, the computer system receives and stores updated region-specific cost data, that may be supplied by the user.

All of the data received in steps S4 to S10 may be stored in database 12, or separately. In a particular embodiment, all data is stored in database 12.

At step S12, the computer system 10 receives a user instruction to launch the calculation. At step S14 the computer system 10 calculates a potential cost of sourcing the resource from each of the plurality of geographic regions based on the region-specific cost data and the resource data.

At step S16, the computer system 10 outputs the calculated potential cost of sourcing the resource from one or more of the plurality of geographic regions.

Embodiments of the invention may be implemented using database tools such as Microsoft Access. Such a database tool can provide the database, interfaces and computer executable instructions used.

Some embodiments of the invention may be used to calculate the potential cost for a single resource. In other embodiments the potential costs may be calculated for multiple resources. In these embodiments "resource segments" may be used, each resource segment corresponding to a respective resource. The computer system may be operable to output the calculated potential cost by resource segment in such embodiments.

An embodiment using multiple resources and "resource segments" will be described with reference to Figures 7 to 34, although it will be appreciated that the described features may be implemented in other embodiments including a single resource embodiment.

In the embodiment described with reference to Figures 7 to 34, the potential cost (i.e. the purchasing cost) of a manufactured resource is defined based on a cost structure which is the combination of different cost drivers. The cost drivers include: labor cost, raw material cost, machine depreciation, tooling/mould cost, energy cost, overheads cost, packaging costs, supplier margin, and transportation costs. In other words, the potential cost for a geographic region (e.g. country) is a combination of several cost components corresponding to these costs. The cost structure changes by sourcing geographic region since the values of certain costs drivers differ between them. The costs that change by sourcing region in this embodiment are labor cost and productivity, raw materials cost, energy cost, supplier margin, and transportation cost. These are referred to as "factor costs". Cost drivers other than factor costs are not considered to change by geographic region. For example, machine depreciation, tooling and mould cost and packaging cost are considered as unchanged from high cost region to low cost region. Also, for overheads the overheads ratio (overheads / ex-works cost) are considered as remaining stable from high cost region to low cost region. The potential cost for each region is derived from the applied cost structure, based on relative comparison of quantifiable factor costs between regions. Potential low cost regions are defined at country level for all except China and India, which may be defined as a combined geographic region.

A factor cost may be broken down into multiple cost components to provide a further level of resolution. For example, raw materials may be broken down to "Carbon steel" , “Ductile iron” or “Plastic –ABS” which represent different types of raw materials used for manufacturing different segments of resources.

The approach, calculation rule and data source for each of the "factor costs" (the region-specific cost data) of the described embodiment is as follows. For some segments, certain factor costs may be resolved or consolidated into categories which have similarities in terms of procurement characteristics, for example a castings and forgings category or a non-metallic category can be used for margin data.

Labor cost and productivity: For all categories, the hourly labor cost is used. For each category, a productivity index may be used to adjust the hourly labor cost. Labor cost is calculated using the relative ratio of hourly labor cost between low cost geographic region and the initial high cost sourcing geographic region. The data source for labor cost is the International Labor Organization, Eurostat, US Bureau of Labor Statistics (see annex, item (1) for details).

Raw Materials: According to the type of raw materials used, the cost can be either global or region-specific. The cost set in the model is independent of each supplier's bargaining power. The data source is the organization's purchasing team(s).

Energy: For all categories, the energy cost depends on the electricity which represents most of each suppliers major energy consumption. The energy cost is calculated using the relative ratio of electricity cost/kwh between the low cost region and the initial high cost sourcing region. The data source is the International Energy Agency; Eurostat (see annex, item (2) for details).

Overheads: For all categories, suppliers working in the same sector are assumed to have the same overheads burden rate throughout the world. The

percentage of overheads compared to the ex-works cost remains unchanged from high cost region to low cost region. No data source is required.

Margin: For all categories, the low cost region suppliers have a higher margin ratio that high cost region suppliers. For castings and forgings category suppliers, a 7% margin ratio is used. For non-metallic category suppliers, a 9% of margin ratio is used. The data source is an average of the organizations RFI results.

Transportation: For all categories, transportation is assumed to be conducted in full loaded container (FLC) (20ft) or full loaded truck (FLT) (18T) which have similar weight and dimension limits. The transportation cost is calculated using the relative ratio of cost/FLC and FLT for each logistic flow, between low cost regions and the initial high cost sourcing region.The data sources include ML&T Europe and validation of organization's local teams' data.

Inventory carrying costs: For all categories, the financial impact of owning inventory is driven by the purchaser's weighted average cost of capital (WACC), total supply chain transit times and vendor payment terms. Variable and fixed costs of holding inventory in warehouses is assumed not to be a driver in the sourcing decision. Inventory carrying cost is calculated using the purchaser's WACC and the amount of time inventory is owned before being sold. Data sources include industry averages and global transit times.

Currency exchange data: see annex, item (3) for details.

Figure 6 shows a timeline from shipment, through receipt to sale for an example component for which an inventory carrying cost (ICC) can be calculated. The illustrated ICC variables and example values are:

WACC = Weighted Average Cost of Capital – 10% per year.

ODT = Origin to Destination Transit time [shipping to receipt] (days) – 20 days.

VPT = Vendor Payment Terms [starts on date of shipment] (days) – 45 days.

OHT = On Hand Time is the average time inventory is on hand between Receipt and Sale [inverse of turns] - 50 days.

COGS = Cost of Good Sold ($) - $1,000,000.

365 = Number of days in year

The ICC calculation is as follows:

ICC = COGS * (WACC/365) * (OHT + ODT – VPT)

ICC = $1,000,000 * 10%/365 * (50+20-45)

ICC = $6,849

The data of WACC, ODT, VPT and OHT are set for a particular organization and can be customized for other organizations depending on the organization's practices and/or other factors.

Figure 7 illustrates an interface to enable a user to input data in an embodiment of the present invention. The interface of Figure 7 is a home or root interface.

In this embodiment the data entry steps to input (i) the resource specific data (c.f. step S4 of Figure 5), (ii) the resource logistic data (c.f. step S6), (iii) the as-is cost data (c.f. step S8),) are shown as user selectable buttons 36, 38, 40. These buttons are labeled as Steps 1 to 3 respectively. In step 4 (c.f. step S16 of Figure 5): once the data entry steps have been finished, and there is no need to update the different factor costs, the user can launch the calculation and enter step 4 to view the output data.

With reference to Figure 7, the resource specific data is referred to as "Segment data", the resource logistic data is referred to as "Logistic data", the as-is cost data is referred to as "Segment Cost breakdown" .

The user can select each button 36, 38, 40 in turn to progress through the steps and enter the data which is stored by the computer system. It can be seen that the computer system is operable to enable the user to perform four general steps as follows.

In step 1, in response to a user selection of button 36 the computer system is operable to present the user with one or more interfaces to input the segment specific data by creating the segment, providing the segment spend, defining the segment currency and defining the unit of measure.

In step 2, in response to a user selection of button 38 the computer system is operable to present the user with one of more interfaces to input the segment logistic data which include current sourcing countries and receiving facilities, transportation limit by FLT/FLC by segment, and the quantity to transport within a segment.

In step 3, in response to a user selection of button 40 the computer system is operable to present one or more interfaces for the user to input the segment as-is cost breakdown.

In step 4, in response to a user selection of button 42 the computer system is operable to present one or more interfaces to enter the should cost analysis to calculate and output (a) ex-works analysis by segment, (b) total landed analysis by segment, and/or (c) a Top-5 low cost countries by segment based on total landed analysis

On the interface of Figure 7, the user has the option of updating the region-specific data, referred to as the "factor cost data" stored in the database, by selecting any of buttons in the "Update factor cost data" area 44 in response to which the computer system is operable to present a particular interface respectively.

The region-specific cost data comprises labor cost data, energy cost data, raw material cost data, supplier margin data, transportation cost data, inventory period data and currency exchange data. The buttons in area 44 labor cost button 46, energy cost button 48, raw material cost button 50, supplier margin button 52, transportation cost button 54, inventory period button 56 and currency exchange button 56. Each of these buttons can be used to update the respective data.

The interface of Figure 6 also comprises button 60 to declare the working currency for the tool based on which the should cost analysis is conducted, button 62 to launch the calculation (c.f. S12 of Figure 5), which takes account of the most recent data entries which are stored by the computer system and button 64 to check for outdated region-specific cost data (factor costs).

Figures 8 to 10 illustrate the interfaces presented to the user by the computer system in response to the user selecting button 36 of interface 14 of Figure 7. The resource specific data is input by the user using these interfaces and the computer system stores the input data in database 12 in tables corresponding to those shown in the Figures.

In Figure 8, the user can first create one or more segments. The user can add a new segment or modify the name of existing segments on the illustrated

"Segment" page. The user can define a relevant category for each segment. The user can select a predefined category or if required create a new category on the "Category" page. Optionally, the user can associate the category with a relevant sector of a set of predefined sectors or if required create a new sector on the "Sector" page.

Secondly, and now referring to Figure 9 the user can define the segment currency and spend. A user has the option to define the segment currency on the "Segment currency" page. This currency is used as reference of the segment's annual spend as well as the segment cost breakdown. The segment currency can be the user's choice and different from the working currency which can be defined through button 60 of Figure 7. The computer system can convert all data automatically to the working currency in the calculation stage.

Thirdly, and now referring to Figure 10, the user can define the segment unit of measure. A user has the option to define the unit of measure for each specific segment. The defined unit of measure is the unit of measure used in the calculation. For example, the unit of measure can be: Cost/Kg, Cost/M3, Cost/Part, etc.

As will be appreciated form Figures 8 to 10, each segment can have a segment identifier (Segment ID) and a segment name.

Figures 11 to 17 illustrate the interfaces presented to the user by the computer system in response to the user selecting button 38 of interface 14 of Figure 7. The resource logistic data is input by the user using these interfaces and the computer system stores the input data in database 12 in tables corresponding to those shown in the Figures.

In Figure 11, the user can first verify that all current sourcing countries for the segments are in the list of countries and if not by creating new lines include them on the "country" page. As can be seen, each country has an country identifier (country ID), country name, continent identifier (continent ID), currency identifier (currency ID) and high cost country (HCC) or low cost country (LCC) status.

Similarly, with reference to Figure 12, the user can verify that all receiving facilities for the segments are in the list on the "Receiving facilities" page and if not add the missing facilities. As is shown, each receiving facility has a receiving facility identifier (receiving facility ID), a receiving facility name and a county ID.

Secondly, with reference to Figure 13, the user can provide transportation limit by FLT/FLC on the "transport limit by segment" page. As is shown, each segment has a segment name, a transport means, a limit in number of measures and a measure. To be able to calculate the transportation cost, users can estimate the transportation limit by full loaded truck (18T) or full loaded container (20ft), specific to each segment. The limit is used to define the transportation limit per FLC/FLT and the measure conforms with the unit of measure defined in Step 1. For example, for the Segment A which has Cost/Kg as unit of measure, the transportation limit measure is Kg; for Segment B which has Cost/Meter as unit of measure, the transportation limit measure is Meter.

Thirdly, with reference to Figure 14, the user can provide data about the logistic flow on the "Segment transportation data" page. As can be seen each segment identified by segment name has a sourcing country, a receiving facility ID and a quantity. Users can provide data about the logistic flow for each

segment. The logistic flow consists of a certain number of quantity to transfer from the different sourcing countries to different receiving facilities. The measure of quantity is what has been defined as transportation limit. For example, for the Segment A which has Kg as transportation limit measure, the typical logistic flow can be 10000 Kg to transport from France to the Facilities 25.

Fourthly, with reference to Figure 15, the user can provide the vendor payment time in number of days for the calculation of inventory cost on the "vendor payment time" page. Users can provide for each economic country the vendor payment time (VPT) in number of days.

Fifthly, and with reference to Figure 16, the user can provide the on hand time (OHT) by economic country and by receiving facility on the "OHT" page by select the economic country and providing the on hand time period (in number of days) for each receiving facility. On Hand Time is the estimated average time inventory is on hand between Receipt and Sale.

Sixthly, and with reference to Figure 17, the user can provide the WACC (weighted average cost of capital) on the "WACC" page by providing the WACC of the company (in %). Users only need to provide one WACC.

Figures 18, illustrates the interface presented to the user by the computer system in response to the user selecting button 40 of interface 14 of Figure 7; that is, the interface presented for “step 3”. The as-is cost data is input by the user using this interfaces and the computer system stores the input data in database 12 in a table corresponding to that shown in the Figure.

In Figure 18, the user can (i) select the category, (ii) select the segment name, (iii) provide cost value by cost component for the selected segment, and (iv) click on the "Record" button to record or refresh the cost component values after modification.

As can be seen from Figure 18, a cost component type identifier (ID) is defined for each of the costs (raw material cost, machine depreciation, tooling cost, energy cost, labor cost, other overheads, and supplier margin). Each cost component type ID has a corresponding cost component identifier (ID) which can be the same as the cost component type ID (e.g. for Machine depreciation cost, tooling cost, energy cost, labor cost, other overheads, supplier margin) or at a more detailed resolution such as "Alloy Steel" for Raw materials cost.

The cost value is in the currency defined as segment currency in step 1.
The unit of measure for the cost breakdown is also the one defined in step 1.

Figures 19 illustrates the interface presented to the user by the computer system in response to the user selecting button 42 of interface 14 of Figure 7; that is, the interface presented for "step 4". The supplier margin data is input by the user using this interface and the computer system stores the input data in database 12 in a table corresponding to that shown in the Figure.

In Figure 19, the user can (i) select the segment name, and (ii) provide the supplier margin in % of ex-works cost. The LCC supplier margin is the average margin for LCC suppliers who operate within a certain segment.

After the user has entered the data by using buttons 36 to 40, (and optionally updated the factor costs using buttons 46 to 58), the computer system is

operable to present the interface 14 shown in Figure 7 and repeated in Figure 20.

In response to the user selection of the "Update queries" button 62 at the bottom of the Home page, the computer system updates the database and presents the message and interface of Figure 21 which offers the option of "do you want to launch the calculation now?". In response to the user selection of "yes" button, the computer system launches the calculation. In response to the user selection of "no" button, the computer system presents interface 14, the home page of Figure 14.

After launching the calculation, the user can use the button 42 to view the output data.

Figure 23 shows the ex-works cost output. The as-is cost structure is also displayed and comprises the following cost components:

COST/UNIT OF MEASURE = Raw materials cost + Energy cost + Labor cost + Machine depreciation + Tooling cost + Mould cost + Other overheads + Packaging cost + Supplier margin (all cost components that were initially entered by the user (c.f. Figure 18));
LABOR COST = labor cost initially entered by the user for this segment / Cost per unit of measure for the segment;
ENERGY COST = energy cost initially entered by the user for the segment / Cost per unit of measure for the segment;
RAW MATERIALS COST = raw materials costs initially entered by the user for the segment / Cost per unit of measure for the segment;
MACHINE DEPRECIATION = machine depreciation cost initially entered by the user for the segment / Cost per unit of measure for the segment;

MOULD COST = mould cost initially entered by the user for the segment / Cost per unit of measure for the segment;

TOOLING COST = tooling cost initially entered by the user for the segment / Cost per unit of measure for the segment;

OTHER OVERHEADS = other overheads initially entered by the user for the segment / Cost per unit of measure for the segment;

PACKAGING = packaging cost initially entered by the user for the segment; and

SUPPLIER MARGIN = supplier margin cost initially entered by the user for the segment.

The computer system is operable to calculate the potential cost by multiplying one or more cost components of the as-is cost structure by one or more cost conversion factors. For each LCC, the costs are calculated using the following as-is cost components and cost conversion factors:

LABOR COST = the labor cost in the as-is cost structure * the labor cost ratio of the LCC / the initial supplier country;

ENERGY COST = the energy cost in the as-is cost structure * the energy cost ratio of the LCC / the initial supplier country;

RAW MATERIALS COST = the raw materials cost in the as-is cost structure * the raw materials cost ratio of the LCC / the initial supplier country;

MACHINE DEPRECIATION = unchanged as in the as-is cost structure;

MOULD COST = unchanged as in the as-is cost structure;

TOOLING COST = unchanged as in the as-is cost structure;

OTHER OVERHEADS = the overheads ratio (overhead cost / as is total cost per unit of measure) should be unchanged.

For each LCC, the to-be ex-works cost is calculated by the sum of cost components for the LCC (which is based on the relative ratio of LCC cost and initial supplier country cost), the savings cost is calculated by the difference between the target ex-works by LCC country and the initial ex-work costs, the savings % is calculated by the difference / the initial ex-works cost, and the segment saving is calculated by the initial ex-works spend * savings %.

Figure 24 shows the total landed cost output. The as-is cost structure is also displayed. Values are determined in the same way as for Figure 23, except:

COST/UNIT OF MEASURE = ex-works cost + transportation cost / unit of measure + Inventory carrying cost / unit of measure in the initial situation (HCC supplier);
TRANSPORTATION COST = Cost per FLC or FLT (in the initial situation) / transportation limit in units of measure; and
INVENTORY CARRYING COST = COGS (equivalent of ex-works costs) * (WACC/365) * (OHT + ODT – VPT).

For each LCC the costs are calculated in the same way as Figure 23, except:

TRANSPORTATION COST = Cost per FLC or FLT from the LCC to the facilities / transportation limit in units of measure ; and
INVENTORY CARRYING COST = COGS (equivalent of ex-works costs) * (WACC/365) * (OHT + ODT – VPT) (based on the different variables' value of each specific LCC)

For each LCC, the to-be landed cost is calculated by the sum of Raw materials cost + Energy cost + Labor cost + Machine depreciation + Tooling cost + Mould cost + Other overheads + Packaging cost + Supplier margin

+Transportation cost + Inventory carrying cost of each specific LCC savings cost is calculated by the difference of LCC to-be total landed cost and as-is total landed cost, the savings % is calculated by the savings / as-is total landed cost, and the segment saving is calculated by the total landed spend * savings %.

Figure 25 shows the total landed cost for the top-5 LCC countries. The calculation is based on the to-be cost and savings tables (in Figure 24), and only the top 5 are shown for the segment.

Figure 26 shows how the outdated factor costs can be updated using user selectable button 64.

Figures 27 to 34 show how the various factor costs can be updated by using user selectable buttons 46 to 58. Figure 27 and 28 show how hourly labor cost and labor cost values can be updated using button 46. Figures 29 to 34 show how Energy cost, raw materials cost, ICC supplier margin, transportation cost, inventory period data and currency exchange data can be updated by using user selected buttons 48 to 58 respectively.

Embodiments of the present invention may be implemented using any suitable computer system, computer programming language and database. In one particular embodiment.. In one embodiment the database, computer instructions and interfaces can be implemented using Microsoft Access, specifically in one embodiment Microsoft Access 2003.

The present invention has been described with reference to particular embodiments, by way of example only. It will be apparent to those skilled in the art that a person understanding this invention may conceive of changes or

other embodiments or variations, which utilize the principles of this invention without departing from the broader spirit and scope of the invention as defined in the accompanying claims. All are considered within the sphere, spirit, and scope of the invention.

5

Annex – cost sources:

(1) Labor cost:

International Labor Organization:
http://laborsta.ilo.org/

Eurostat :
http://europa.eu.int/comm/eurostat/newcronos/reference/display.do?screen=welcomeref&open=/popul/labour/earncost/lacosts/lci&language=en&product=EU_population_social_conditions&root=EU_population_social_conditions&scrollto=undefined

US Bureau of Labor Statistic :
http://www.bls.gov/data/

(2) Energy cost:

International Energy Agency:
http://www.iea.org/

Eurostat:
http://europa.eu.int/comm/eurostat/newcronos/reference/display.do?screen=detailref&language=en&product=EU_strind&root=EU_strind/strind/ecoref/er02b1

(3) Currency exchange rate:
http://www.oanda.com/convert/classic
http://www.exchangerate.com/200plus_calculator.html

What we claim is:

1. A computer system for determining a geographic region from which to source a resource, wherein the computer system has an associated database which stores region-specific cost data for each of a plurality of geographic regions and wherein the computer system is operable to:

present an interface to enable a user to input resource data for a resource;

store the resource data;

calculate a potential cost of sourcing the resource from each of the plurality of geographic regions based on the region-specific cost data and the resource data; and

output the calculated potential cost of sourcing the resource from one or more of the plurality of geographic regions.

2. The computer system of claim 1, wherein the region-specific cost data comprises one or more of labor cost data, energy cost data, raw material cost data, supplier margin data, transportation cost data, inventory period data and currency exchange data.

3. The computer system of claim 1 or 2, wherein the resource data comprises (a) resource-specific data and (b) resource logistic data.

4. The computer system of claim 1, 2 or 3, wherein the resource-specific data comprises one or more of resource spend and unit of measure.

5. The computer system of claim 3, wherein the resource logistic data comprises one or more of source geographic region data, receiving facility

data, transportation limit data, resource transportation data, vendor payment time data, on hand time data and weighted average cost of capital data.

6. The computer system of any preceding claim, wherein the computer system is operable to:

present an interface to enable a user to input as-is cost data; and

store the as-is cost data.

7. The computer system of claim 6, wherein the region-specific cost data comprises one or more cost conversion factors and the computer system is operable to calculate the potential cost by multiplying one or more components of the as-is cost structure by one or more of the cost conversion factors.

8. The computer system of any preceding claim, wherein the computer system is operable to:

present an interface to enable a user to input supplier margin data for the resource; and

store the supplier margin data.

9. The computer system of any preceding claim, wherein the computer system is operable to:

present an interface to enable a user to update the region-specific cost data; and

store the updated region-specific cost data.

10. The computer system of any preceding claim, wherein the computer system is operable to calculate the potential cost as one or more of an ex-works cost and a total landed cost.

11. The computer system of claim 10, wherein the ex-works cost comprises one or more of a labor cost component, an energy cost component, a raw material cost component, a machine depreciation cost component, a mould cost component, a tooling cost component, an other overheads cost component, a packaging cost component and a supplier margin cost component.

12. The computer system of claim 10, wherein the total landed cost comprises one or more of a labor cost component, an energy cost component, a raw material cost component, a machine depreciation cost component, a mould cost component, a tooling cost component, an other overheads cost component, a packaging cost component, a supplier margin cost component, a transportation cost component and an inventory carrying cost component.

13. The computer system of claim 10, 11 or 12, wherein the computer system is operable to calculate and output a cost saving compared with the as-is cost.

14. The computer system of claim 10, 11, 12 or 13, wherein the computer system is operable to output one or more of the ex-works cost, the total landed cost and the total landed cost for a group of regions where the potential cost is lowest.

15. The computer system of claim 14, wherein the computer system is operable to output the potential cost showing each cost component.

16. The computer system of any preceding claim, wherein the computer system is operable to:

present an interface to enable a user to input resource data for multiple resources as resource segments, each resource segment corresponding to a respective resource;

store resource data for each of the resource segments;

calculate a potential cost for each resource segment of sourcing the respective resource from each of the plurality of geographic regions based on the region-specific cost data and the resource data for the resource segment; and

output by resource segment the calculated potential cost of sourcing the respective resource from one or more of the plurality of geographic regions.

17. The computer system of any preceding claim, wherein the geographic regions comprise one or more countries.

18. A method carried out by a computer system having an associated database which stores region-specific cost data for each of a plurality of geographic regions, the method being for determining a geographic region from which to source a resource and comprising:

presenting an interface to enable a user to input resource data for a resource;

storing the resource data;

calculating a potential cost of sourcing the resource from each of the plurality of geographic regions based on the region-specific cost data and the resource data; and

outputting the calculated potential cost of sourcing the resource from one or more of the plurality of geographic regions.

19. The method of claim 18, wherein the region-specific cost data comprises one or more of labor cost data, energy cost data, raw material cost data,

supplier margin data, transportation cost data, inventory period data and currency exchange data.

20. The method of claim 18 or 19, wherein the resource data comprises (a) resource-specific data and (b) resource logistic data.

21. The method of claim 20, wherein the resource-specific data comprises one or more of resource spend and unit of measure.

22. The method of claim 20 or 21, wherein the resource logistic data comprises one or more of source geographic region data, receiving facility data, transportation limit data, resource transportation data, vendor payment time data, on hand time data and weighted average cost of capital data.

23. The method of any of claims 18 to 22, further comprising:
presenting an interface to enable a user to input as-is cost data; and
storing the as-is cost data.

24. The method of claim 23, wherein the region-specific cost data comprises one or more cost conversion factors and wherein calculating the potential cost comprises multiplying one or more components of the as-is cost structure by one or more of the cost conversion factors.

25. The method of any of claims 18 to 24, further comprising:
presenting an interface to enable a user to input supplier margin data for the resource; and
storing the supplier margin data.

26. The method of any of claims 18 to 25, further comprising:

presenting an interface to enable a user to update the region-specific cost data; and

storing the updated region-specific cost data.

27. The method of any of claims 18 to 26, comprising calculating the potential cost as one or more of an ex-works cost and a total landed cost.

28. The method of claim 27, wherein the ex-works cost comprises one or more of a labor cost component, an energy cost component, a raw material cost component, a machine depreciation cost component, a mould cost component, a tooling cost component, an other overheads cost component, a packaging cost component and a supplier margin cost component.

29. The method of claim 27, wherein the total landed cost comprises one or more of a labor cost component, an energy cost component, a raw material cost component, a machine depreciation cost component, a mould cost component, a tooling cost component, an other overheads cost component, a packaging cost component, a supplier margin cost component, a transportation cost component and an inventory carrying cost component.

30. The method of claim 27 or 28, further comprising calculating and outputting a cost saving compared with the as-is cost.

31. The method of claim 27, 28, 29 or 30, further comprising outputting one or more of the ex-works cost, the total landed cost and the total landed cost for a group of regions where the potential cost is lowest.

32. The method of claim 31, further comprising outputting the potential cost showing each cost component.

33. The method of any of claims 18 to 32, comprising:

presenting an interface to enable a user to input resource data for multiple resources as resource segments, each resource segment corresponding to a respective resource;

storing resource data for each of the resource segments;

calculating a potential cost for each resource segment of sourcing the respective resource from each of the plurality of geographic regions based on the region-specific cost data and the resource data for the resource segment; and

outputting by resource segment the calculated potential cost of sourcing the respective resource from one or more of the plurality of geographic regions.

34. The method of any of claims 18 to 33, wherein the geographic regions comprise one or more countries.

35. The method of any of claims 18 to 34, further comprising sourcing the resource from one of the plurality of geographic regions.

36. A method for determining a geographic region from which to source a resource, comprising:

determining region-specific cost data for each of a plurality of geographic regions;

determining resource data for a resource;

calculating a potential cost of sourcing the resource from each of the plurality of geographic regions based on the region-specific cost data and the resource data; and

using the calculated potential costs to determine from which geographic region to source the resource.

37. The method of claim 36, wherein the region-specific cost data comprises one or more of labor cost data, energy cost data, raw material cost data, supplier margin data, transportation cost data, inventory period data and currency exchange data.

38. The method of claim 36 or 37, wherein the resource data comprises resource logistic data comprising one or more of source geographic region data, receiving facility data, transportation limit data, resource transportation data, vendor payment time data, on hand time data and weighted average cost of capital data.

39. The method of claim 36, 37 or 38, comprising calculating the potential cost as one or more of an ex-works cost and a total landed cost.

40. The method of claim 36, 37, 38 or 39, wherein the region-specific cost data comprises one or more cost conversion factors and wherein calculating the potential cost comprises multiplying one or more components of the as-is cost structure by one or more of the cost conversion factors.

41. The method of any of claims 36 to 40, further comprising sourcing the resource from one of the plurality of geographic regions.

42. A computer readable medium containing computer-executable instructions comprising:

instruction code for presenting an interface to enable a user to input resource data for a resource;

instruction code for storing the resource data;

instruction code for calculating a potential cost of sourcing the resource from each of a plurality of geographic regions based on a region-specific cost data and the resource data; and

instruction code for outputting the calculated potential cost of sourcing the resource from one or more of the plurality of geographic regions.

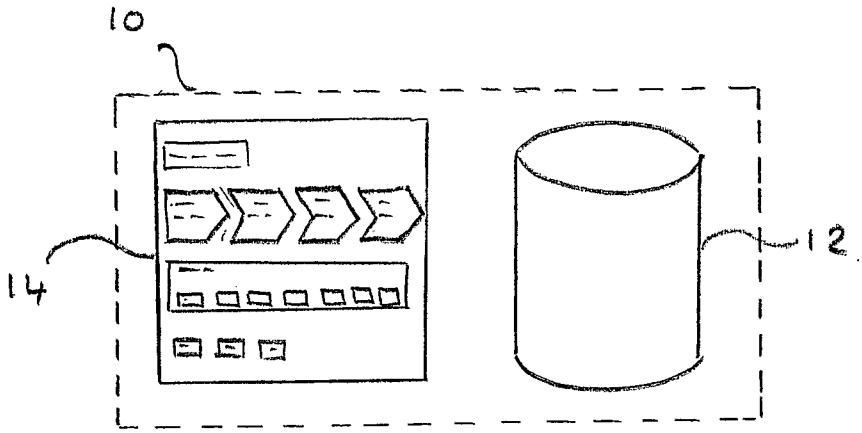


FIG 1

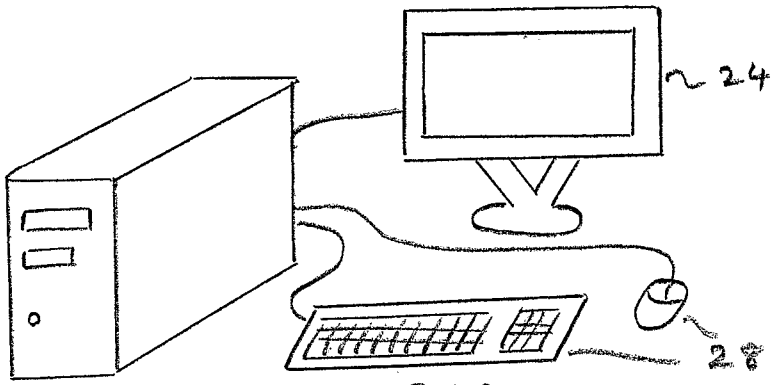


FIG 2

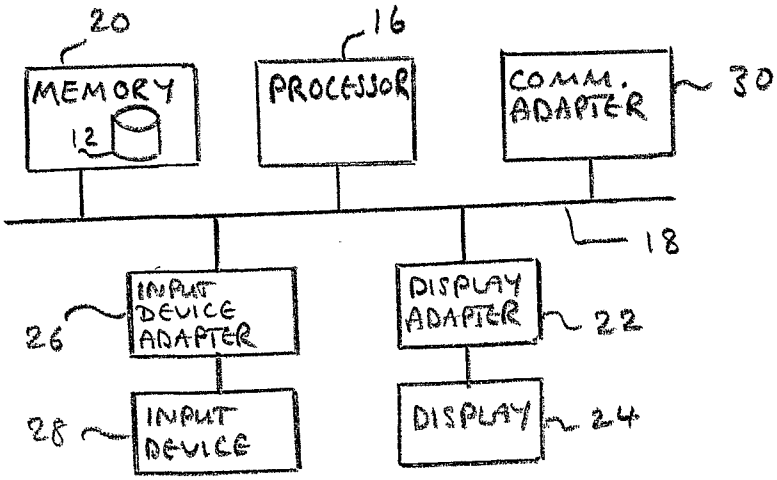


FIG 3

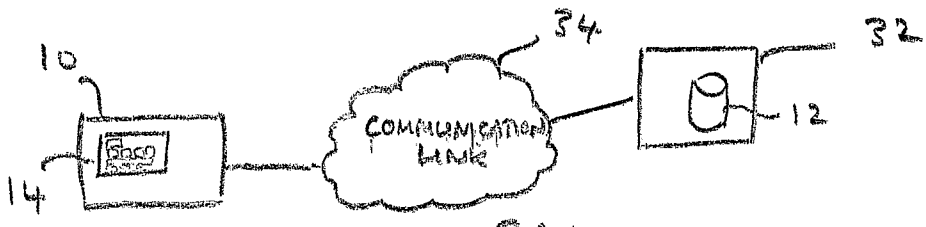


FIG 4

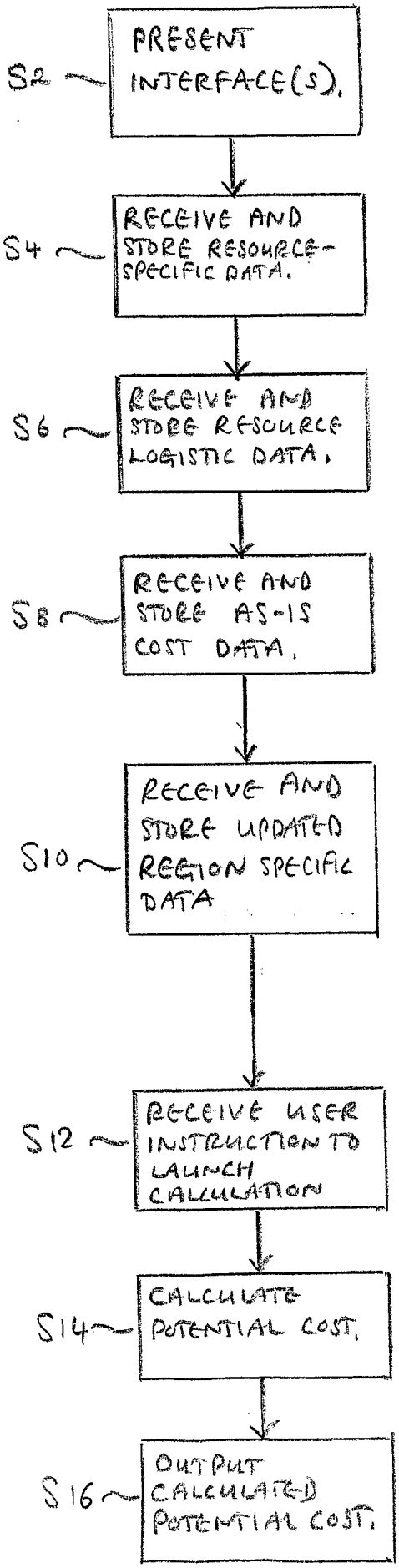

S2
PRESENT INTERFACE(S).
S4
RECEIVE AND STORE RESOURCE-SPECIFIC DATA.
S6
RECEIVE AND STORE RESOURCE LOGISTIC DATA.
S8
RECEIVE AND STORE AS-IS COST DATA.
S10
RECEIVE AND STORE UPDATED REGION SPECIFIC DATA
S12
RECEIVE USER INSTRUCTION TO LAUNCH CALCULATION
S14
CALCULATE POTENTIAL COST.
S16
OUTPUT CALCULATED POTENTIAL COST.

FIG 5

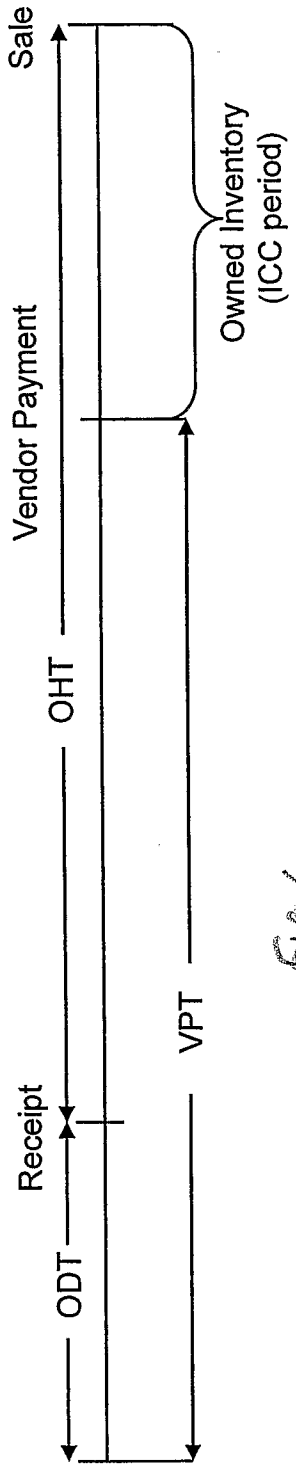

Sale
Vendor Payment
Owned Inventory
(ICC period)
OHT
Receipt
ODT
VPT

Fig 6

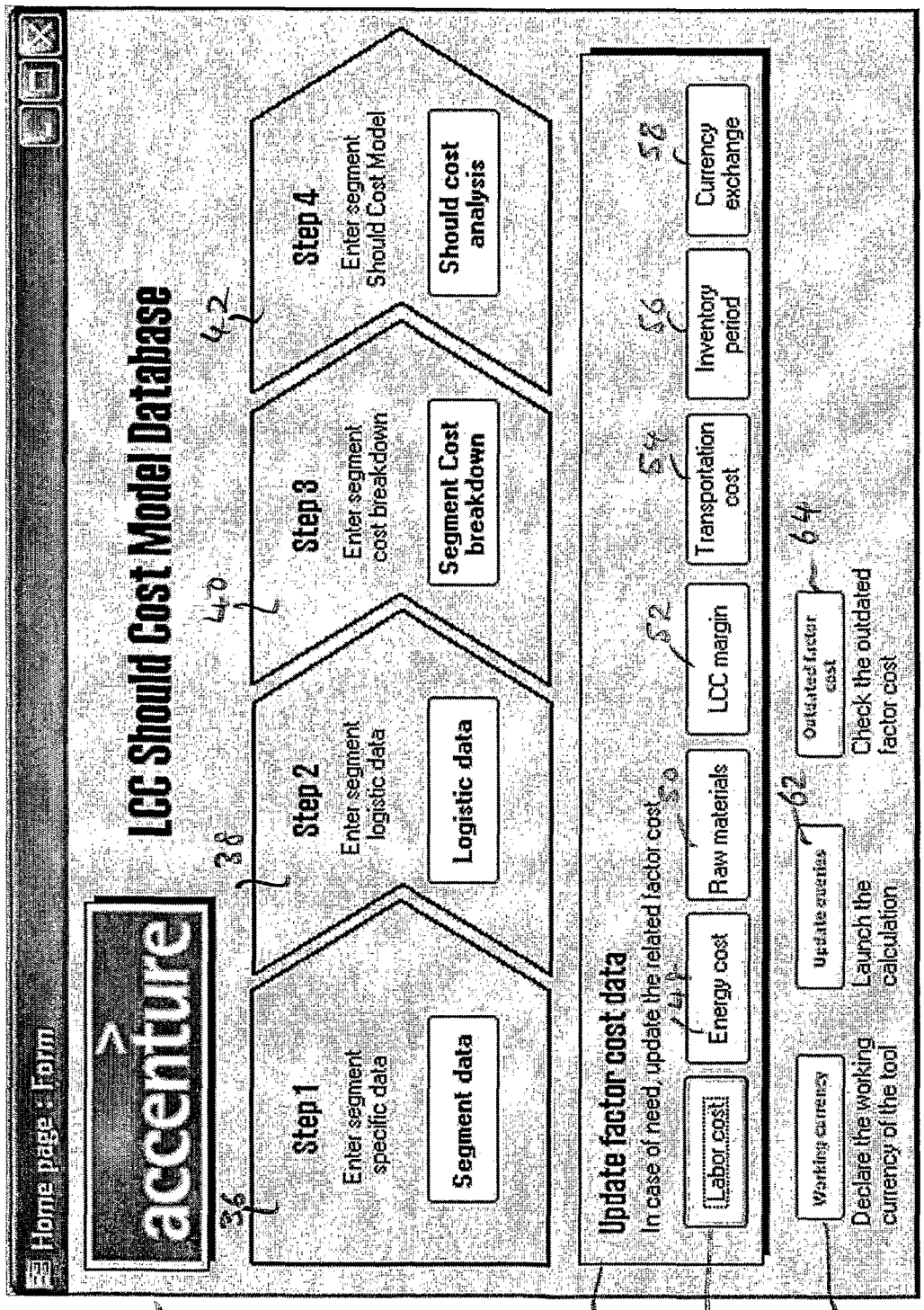

Home page : Form
accenture
LCC Should Cost Model Database
Step 1
Enter segment specific data
Segment data
Step 2
Enter segment logistic data
Logistic data
Step 3
Enter segment cost breakdown
Segment Cost breakdown
Step 4
Enter segment Should Cost Model
Should cost analysis
Update factor cost data
In case of need, update the related factor cost
Labor cost
Energy cost
Raw materials
LCC margin
Transportation cost
Inventory period
Currency exchange
Working currency
Update energies
Outdated factor cost
Declare the working currency of the tool
Launch the calculation
Check the outdated factor cost
14
36
38
40
42
44
46
48
50
52
54
56
58
60
62
64

Fig 4


Input Segment data - Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Step 1: Modify or add segment specific data
1. Create the segment
2. Declare the segment currency and spend
3. Declare the segment unit of measure
Segment
Category
Sector
Segment currency and spend
Segment unit of measure
Segment ID
Segment name
Category ID
I3 - BODY VALVE
Castings
71 I1 - AXLE HOUSING - FINISHED
Castings
73 I11 - GUARD ASSEMBLY
Castings
81 I12 - AXLE HOUSING - ROUGH
Castings
89 S1 - HOUSING AXLE ASSEMBLY
Castings
90 S2 - CAP - MEDIUM WEIGHT
Castings
93 S5 - LEVER
Castings
75 I13 - PISTON & PLATE REACTION
Castings
119 ROLLING B - R
Forgings
3 PRESS B - SF
Forgings
50 ROLLING B - SF
Forgings
44 UPSET C - SF
Forgings
42 PISTON ROD - SF
Forgings
36 PRESS D - R
Forgings
105 TP10
Non metallic components
116 TS9
Non metallic components

FIG 8

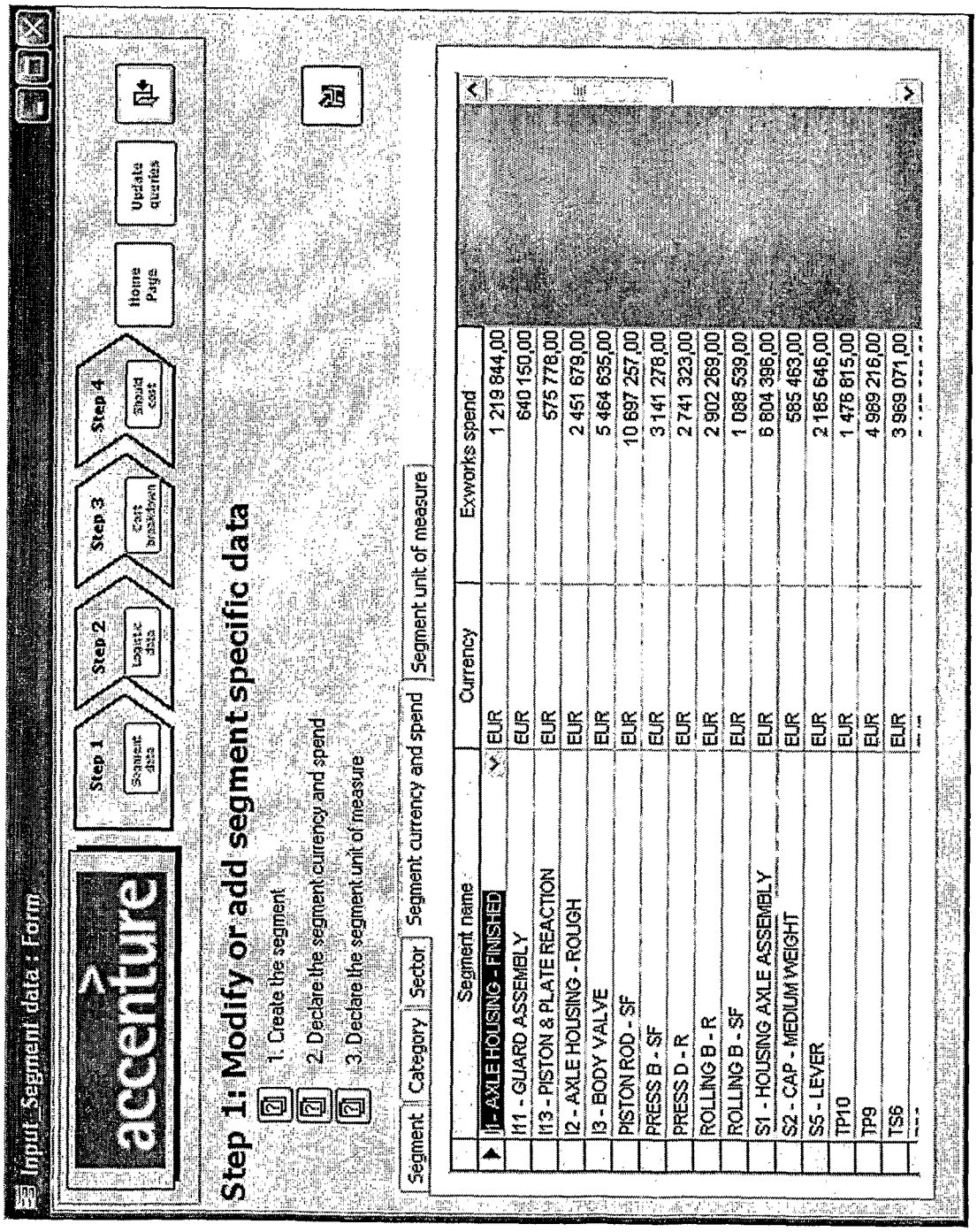

Input_Segment data : Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Step 1: Modify or add segment specific data
1. Create the segment
2. Declare the segment currency and spend
3. Declare the segment unit of measure
Segment
Category
Sector
Segment currency and spend
Segment unit of measure
Segment name
Currency
Exworks spend
I1 - AXLE HOUSING - FINISHED EUR 1 219 844,00
I11 - GUARD ASSEMBLY EUR 640 150,00
I13 - PISTON & PLATE REACTION EUR 575 778,00
I2 - AXLE HOUSING - ROUGH EUR 2 451 679,00
I3 - BODY VALVE EUR 5 464 635,00
PISTON ROD - SF EUR 10 697 257,00
PRESS B - SF EUR 3 141 276,00
PRESS D - R EUR 2 741 323,00
ROLLING B - R EUR 2 902 269,00
ROLLING B - SF EUR 1 088 539,00
S1 - HOUSING AXLE ASSEMBLY EUR 6 804 396,00
S2 - CAP - MEDIUM WEIGHT EUR 585 463,00
S5 - LEVER EUR 2 185 646,00
TP10 EUR 1 476 815,00
TP9 EUR 4 969 216,00
TS6 EUR 3 969 071,00

Fig 9

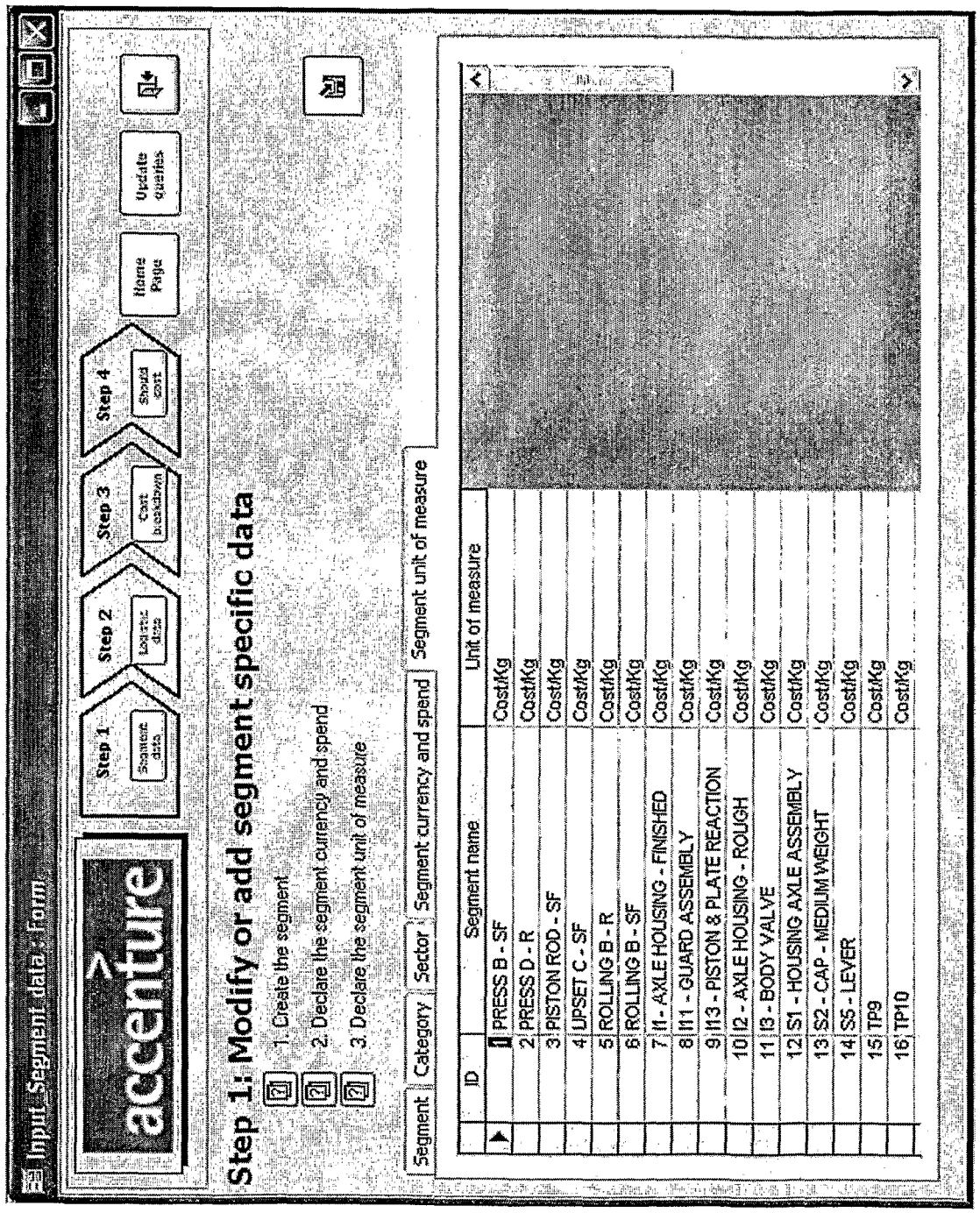

Input_Segment data - Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Step 1: Modify or add segment specific data
1. Create the segment
2. Declare the segment currency and spend
3. Declare the segment unit of measure
Segment
Category
Sector
Segment currency and spend
Segment unit of measure
ID
Segment name
Unit of measure
1 PRESS B - SF Cost/Kg
2 PRESS D - R Cost/Kg
3 PISTON ROD - SF Cost/Kg
4 UPSET C - SF Cost/Kg
5 ROLLING B - R Cost/Kg
6 ROLLING B - SF Cost/Kg
7 I1 - AXLE HOUSING - FINISHED Cost/Kg
8 I11 - GUARD ASSEMBLY Cost/Kg
9 I13 - PISTON & PLATE REACTION Cost/Kg
10 I2 - AXLE HOUSING - ROUGH Cost/Kg
11 I3 - BODY VALVE Cost/Kg
12 S1 - HOUSING AXLE ASSEMBLY Cost/Kg
13 S2 - CAP - MEDIUM WEIGHT Cost/Kg
14 S5 - LEVER Cost/Kg
15 TP9 Cost/Kg
16 TP10 Cost/Kg

Fig 10


Input_Logistic data_Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
should cost
Home Page
Update queries
Step 2: Modify or add segment logistic data
1. Verify if all current sourcing countries are included on the page "County" and all receving facilities are included on the page "Receiving facility"
2. Provide the transportation limit per Full loaded Truck / Container for each segment, declare the limit measure
3. Provide for each segment the volume of logistic flows on the page "Segment transportation data"
4. Provide the Vendor payment time in number of days for the calculation of inventory cost
5. Update the On Hand Time (Average inventory time between receipt and sales) by sourcing country and by receiving facility
6. Provide the company's WACC (weighted average cost of capital) for the calculation of inventory cost
Country
Receiving facilities
Transportation limit by segment
Segment transportation data
Vendor payment time
OHT
WACC
Country ID
Country name
Continent ID
Currency ID
Status
3 Belgium Europe EUR HCC
3 France Europe EUR HCC
4 USA North America USD HCC
6 China Asia RMB LCC
8 India Asia INR LCC
9 Brazil South America BRL LCC
10 Mexico North America MXN LCC
11 Russia Europe RUR LCC
12 Romania Europe ROL LCC
13 Poland Europe PLN LCC
14 UK Europe GBP HCC
15 Italy Europe EUR HCC
17 Spain Europe EUR HCC
18 Germany Europe EUR HCC
20 Japan Asia JPY HCC

Fig 11

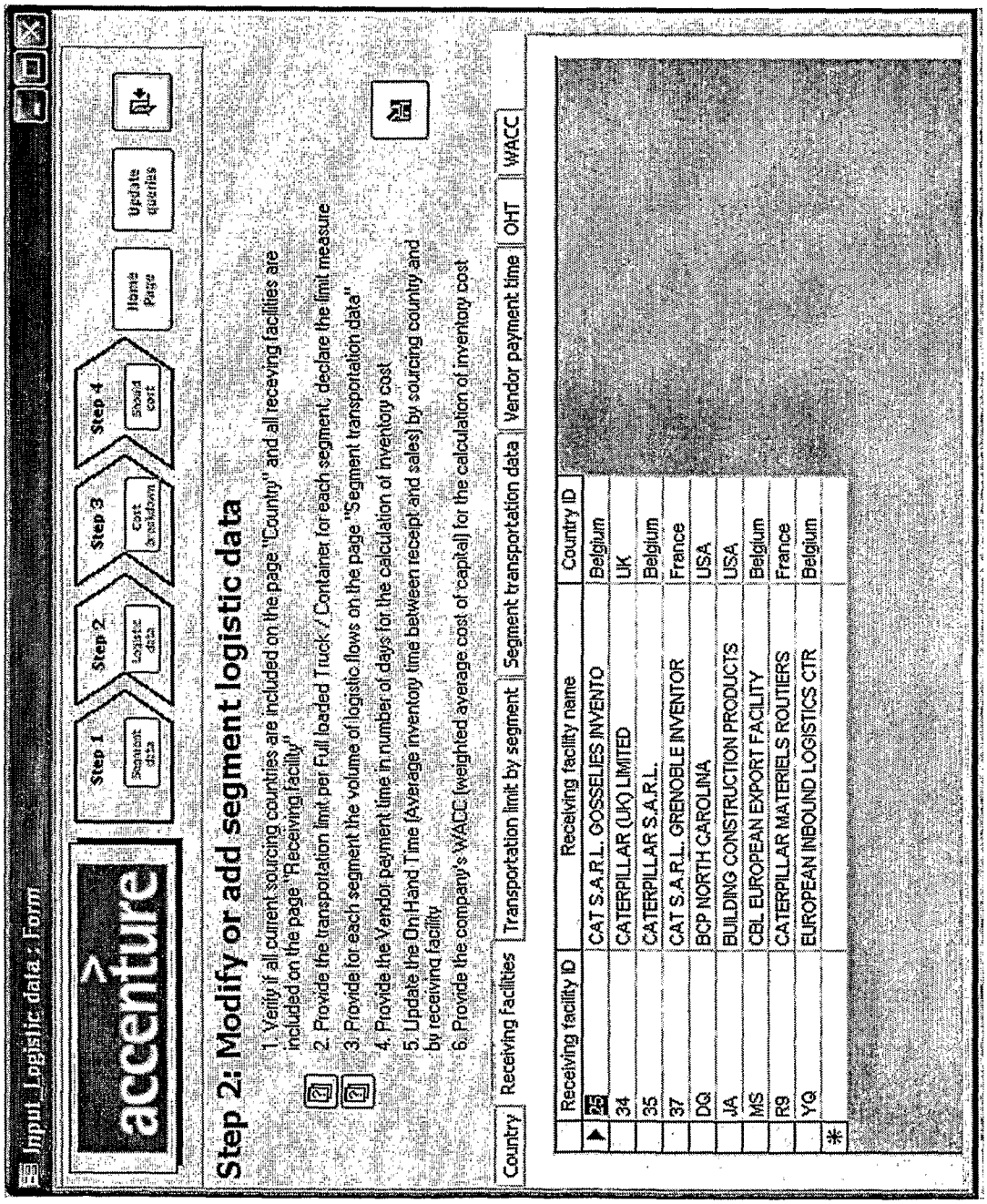

Input_Logistic data : Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Step 2: Modify or add segment logistic data
1. Verify if all current sourcing countries are included on the page "Country" and all receving facilities are included on the page "Receiving facility"
2. Provide the transportation limit per Full loaded Truck / Container for each segment, declare the limit measure
3. Provide for each segment the volume of logistic flows on the page "Segment transportation data"
4. Provide the Vendor payment time in number of days for the calculation of inventory cost
5. Update the On Hand Time (Average inventory time between receipt and sales) by sourcing country and by receiving facility
6. Provide the company's WACC (weighted average cost of capital) for the calculation of inventory cost
Country
Receiving facilities
Transportation limit by segment
Segment transportation data
Vendor payment time
OHT
WACC
Receiving facility ID
Receiving facility name
Country ID
25
CAT S.A.R.L. GOSSELIES INVENTO
Belgium
34
CATERPILLAR (UK) LIMITED
UK
35
CATERPILLAR S.A.R.L.
Belgium
37
CAT S.A.R.L. GRENOBLE INVENTOR
France
DQ
BCP NORTH CAROLINA
USA
JA
BUILDING CONSTRUCTION PRODUCTS
USA
MS
CBL EUROPEAN EXPORT FACILITY
Belgium
R9
CATERPILLAR MATERIELS ROUTIERS
France
YQ
EUROPEAN INBOUND LOGISTICS CTR
Belgium

FIG 12

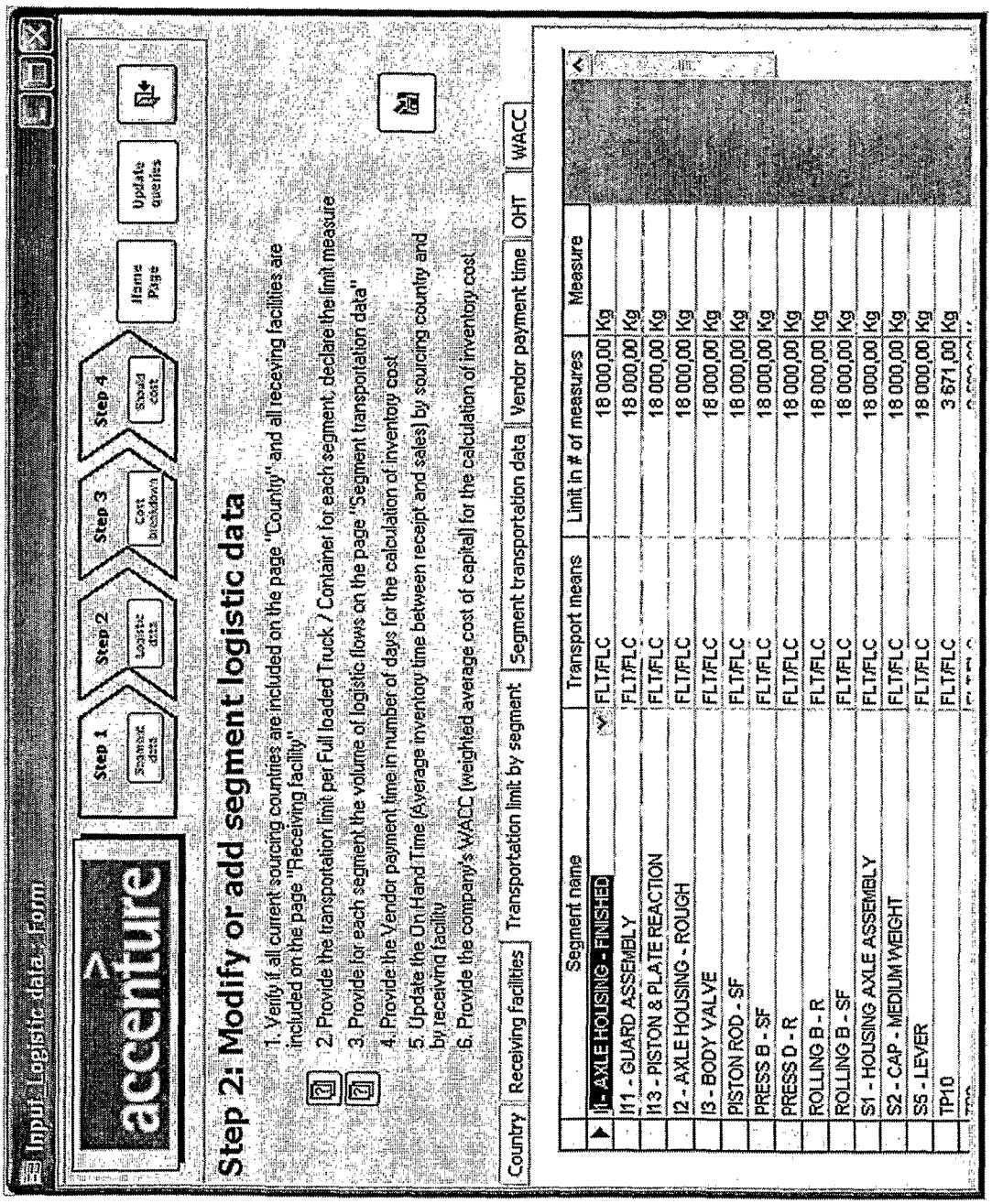

Input Logistic data - Form
accenture
Step 1
Scenario data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Step 2: Modify or add segment logistic data
1. Verify if all current sourcing countries are included on the page "County" and all receiving facilities are included on the page "Receiving facility"
2. Provide the transportation limit per Full loaded Truck / Container for each segment, declare the limit measure
3. Provide for each segment the volume of logistic flows on the page "Segment transportation data"
4. Provide the Vendor payment time in number of days for the calculation of inventory cost
5. Update the On Hand Time (Average inventory time between receipt and sales) by sourcing country and by receiving facility
6. Provide the company's WACC (weighted average cost of capital) for the calculation of inventory cost
Country
Receiving facilities
Transportation limit by segment
Segment transportation data
Vendor payment time
OHT
WACC
Segment name
Transport means
Limit in # of measures
Measure
I1 - AXLE HOUSING - FINISHED
FLT/FLC
18 000,00
Kg
I11 - GUARD ASSEMBLY
FLT/FLC
18 000,00
Kg
I13 - PISTON & PLATE REACTION
FLT/FLC
18 000,00
Kg
I2 - AXLE HOUSING - ROUGH
FLT/FLC
18 000,00
Kg
I3 - BODY VALVE
FLT/FLC
18 000,00
Kg
PISTON ROD - SF
FLT/FLC
18 000,00
Kg
PRESS B - SF
FLT/FLC
18 000,00
Kg
PRESS D - R
FLT/FLC
18 000,00
Kg
ROLLING B - R
FLT/FLC
18 000,00
Kg
ROLLING B - SF
FLT/FLC
18 000,00
Kg
S1 - HOUSING AXLE ASSEMBLY
FLT/FLC
18 000,00
Kg
S2 - CAP - MEDIUM WEIGHT
FLT/FLC
18 000,00
Kg
S5 - LEVER
FLT/FLC
18 000,00
Kg
TP10
FLT/FLC
3 671,00
Kg

Fig 13

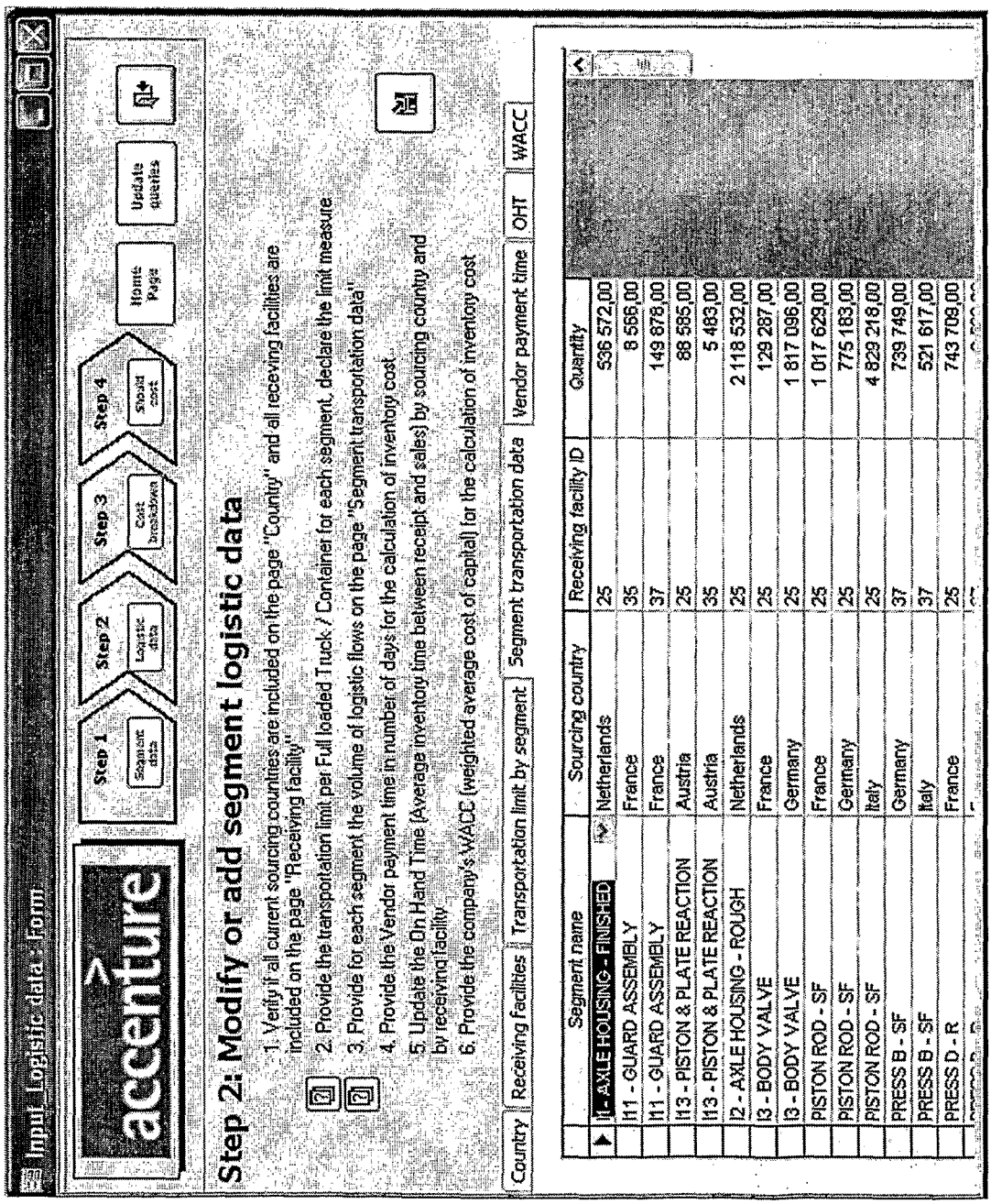

Input_Logistic data - Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Step 2: Modify or add segment logistic data
1. Verify if all current sourcing countries are included on the page "Country" and all receiving facilities are included on the page "Receiving facility"
2. Provide the transportation limit per Full loaded Truck / Container for each segment, declare the limit measure
3. Provide for each segment the volume of logistic flows on the page "Segment transportation data"
4. Provide the Vendor payment time in number of days for the calculation of inventory cost
5. Update the On Hand Time (Average inventory time between receipt and sales) by sourcing country and by receiving facility
6. Provide the company's WACC (weighted average cost of capital) for the calculation of inventory cost
Country
Receiving facilities
Transportation limit by segment
Segment transportation data
Vendor payment time
OHT
WACC
Segment name
Sourcing country
Receiving facility ID
Quantity
I1 - AXLE HOUSING - FINISHED
Netherlands
25
536 572,00
I11 - GUARD ASSEMBLY
France
35
8 566,00
I11 - GUARD ASSEMBLY
France
37
149 878,00
I13 - PISTON & PLATE REACTION
Austria
25
88 585,00
I13 - PISTON & PLATE REACTION
Austria
35
5 483,00
I2 - AXLE HOUSING - ROUGH
Netherlands
25
2 118 532,00
I3 - BODY VALVE
France
25
129 287,00
I3 - BODY VALVE
Germany
25
1 817 096,00
PISTON ROD - SF
France
25
1 017 629,00
PISTON ROD - SF
Germany
25
775 183,00
PISTON ROD - SF
Italy
25
4 829 218,00
PRESS B - SF
Germany
37
739 749,00
PRESS B - SF
Italy
37
521 617,00
PRESS D - R
France
25
743 709,00

Fig 14

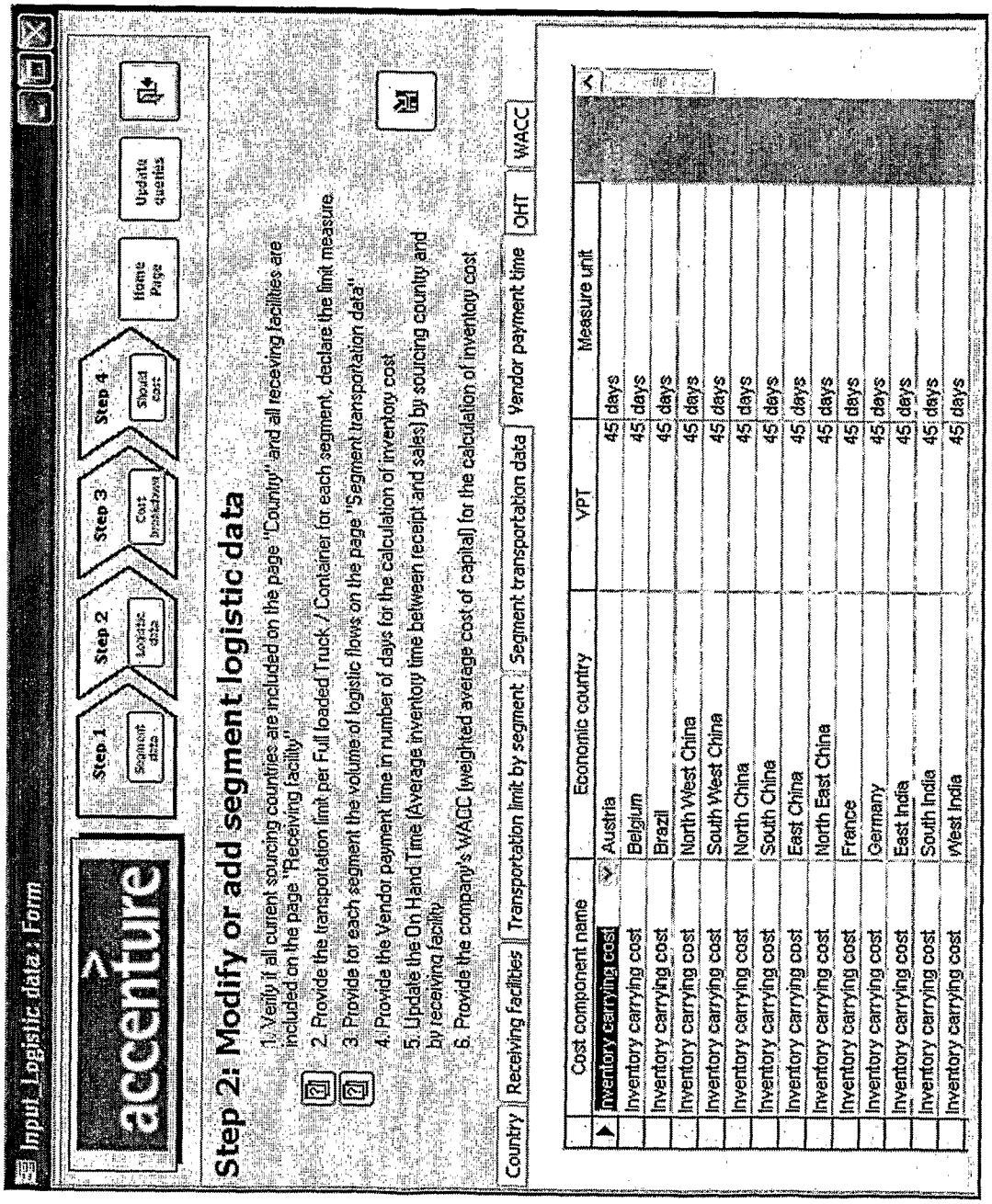

Input_Logistic data : Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Step 2: Modify or add segment logistic data
1. Verify if all current sourcing countries are included on the page "Country" and all receiving facilities are included on the page "Receiving facility"
2. Provide the transportation limit per Full loaded Truck / Container for each segment, declare the limit measure
3. Provide for each segment the volume of logistic flows on the page "Segment transportation data"
4. Provide the Vendor payment time in number of days for the calculation of inventory cost
5. Update the On Hand Time (Average inventory time between receipt and sales) by sourcing country and by receiving facility
6. Provide the company's WACC (weighted average cost of capital) for the calculation of inventory cost
Country
Receiving facilities
Transportation limit by segment
Segment transportation data
Vendor payment time
OHT
WACC
Cost component name
Economic country
VPT
Measure unit
Inventory carrying cost
Austria
45
days
Inventory carrying cost
Belgium
45
days
Inventory carrying cost
Brazil
45
days
Inventory carrying cost
North West China
45
days
Inventory carrying cost
South West China
45
days
Inventory carrying cost
North China
45
days
Inventory carrying cost
South China
45
days
Inventory carrying cost
East China
45
days
Inventory carrying cost
North East China
45
days
Inventory carrying cost
France
45
days
Inventory carrying cost
Germany
45
days
Inventory carrying cost
East India
45
days
Inventory carrying cost
South India
45
days
Inventory carrying cost
West India
45
days

Fig 15

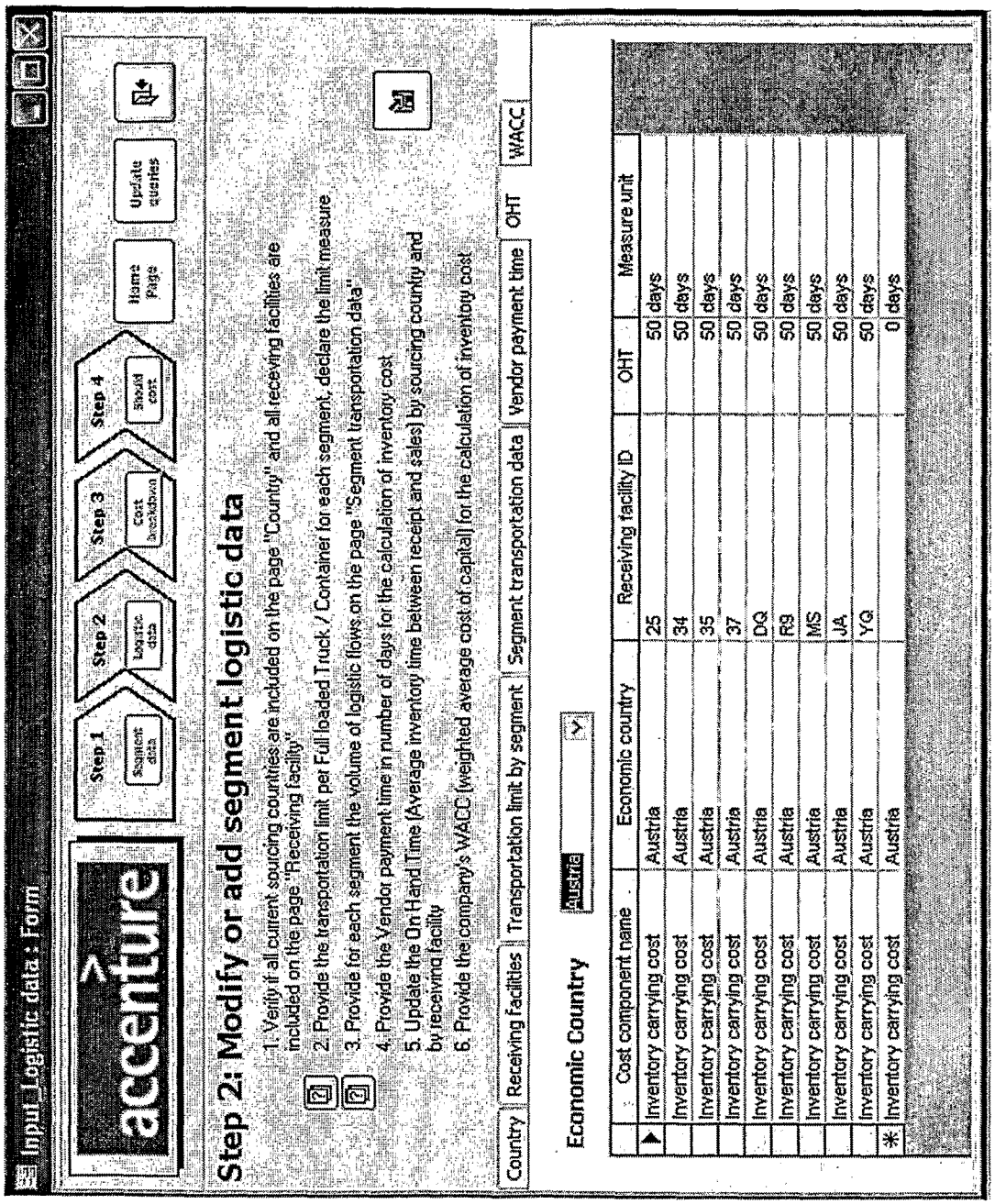

Input_Logistic data : Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Step 2: Modify or add segment logistic data
1. Verify if all current sourcing countries are included on the page "Country" and all receiving facilities are included on the page "Receiving facility"
2. Provide the transportation limit per Full loaded Truck / Container for each segment, declare the limit measure
3. Provide for each segment the volume of logistic flows on the page "Segment transportation data"
4. Provide the Vendor payment time in number of days for the calculation of inventory cost
5. Update the On Hand Time (Average inventory time between receipt and sales) by sourcing country and by receiving facility
6. Provide the company's WACC (weighted average cost of capital) for the calculation of inventory cost
Country
Receiving facilities
Transportation limit by segment
Segment transportation data
Vendor payment time
OHT
WACC
Economic Country
Austria
Cost component name
Economic country
Receiving facility ID
OHT
Measure unit
Inventory carrying cost
Austria
25
50 days
Inventory carrying cost
Austria
34
50 days
Inventory carrying cost
Austria
35
50 days
Inventory carrying cost
Austria
37
50 days
Inventory carrying cost
Austria
DQ
50 days
Inventory carrying cost
Austria
R9
50 days
Inventory carrying cost
Austria
MS
50 days
Inventory carrying cost
Austria
UA
50 days
Inventory carrying cost
Austria
YQ
50 days
Inventory carrying cost
Austria
0 days

FIG 16

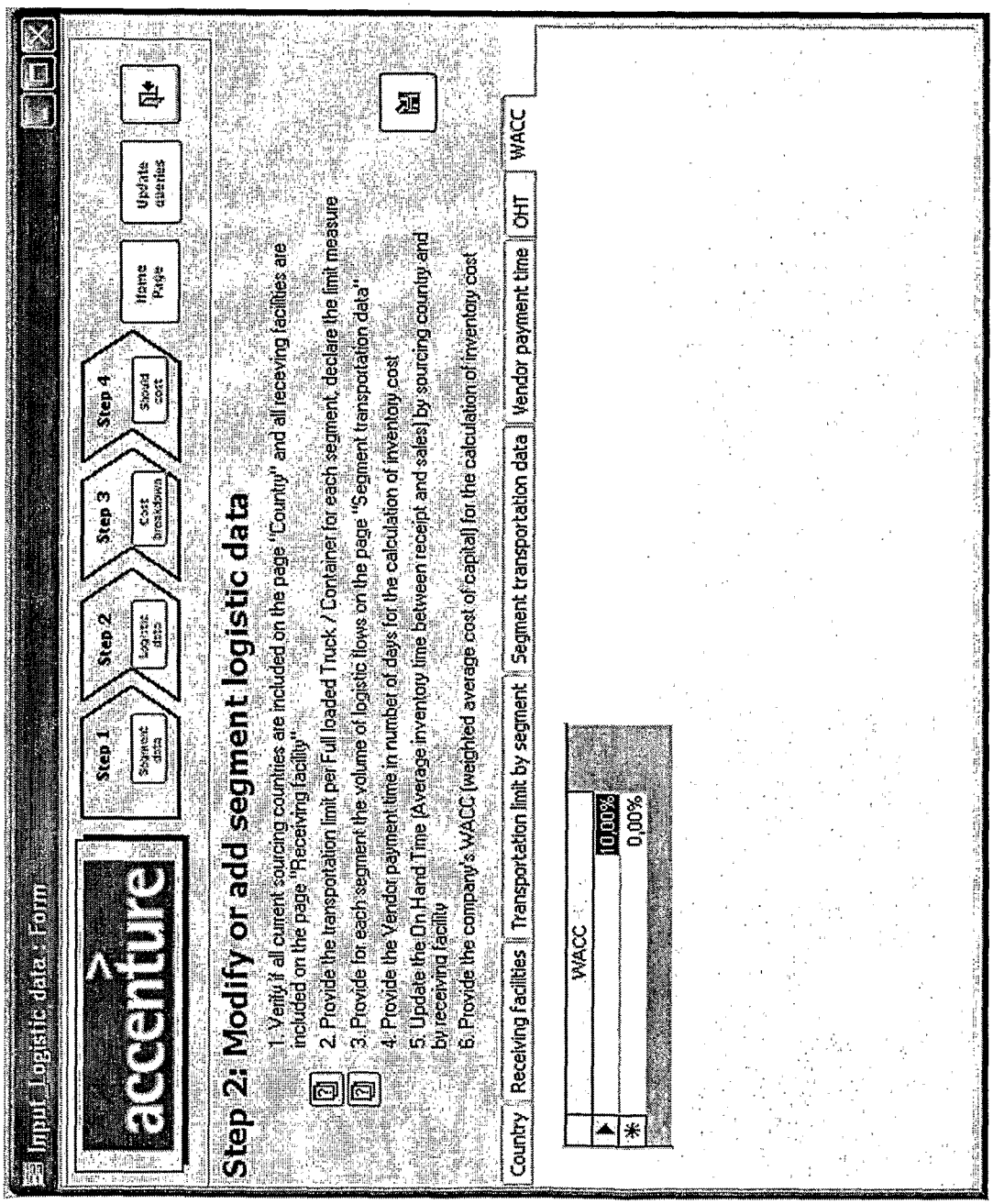

Input Logistic data - Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Step 2: Modify or add segment logistic data
1. Verify if all current sourcing countries are included on the page "Country" and all receiving facilities are included on the page "Receiving facility"
2. Provide the transportation limit per Full loaded Truck / Container for each segment, declare the limit measure
3. Provide for each segment the volume of logistic flows on the page "Segment transportation data"
4. Provide the Vendor payment time in number of days for the calculation of inventory cost
5. Update the On Hand Time (Average inventory time between receipt and sales) by sourcing country and by receiving facility
6. Provide the company's WACC (weighted average cost of capital) for the calculation of inventory cost
Country
Receiving facilities
Transportation limit by segment
Segment transportation data
Vendor payment time
OHT
WACC
WACC
10,00%
0,00%

Fig 17

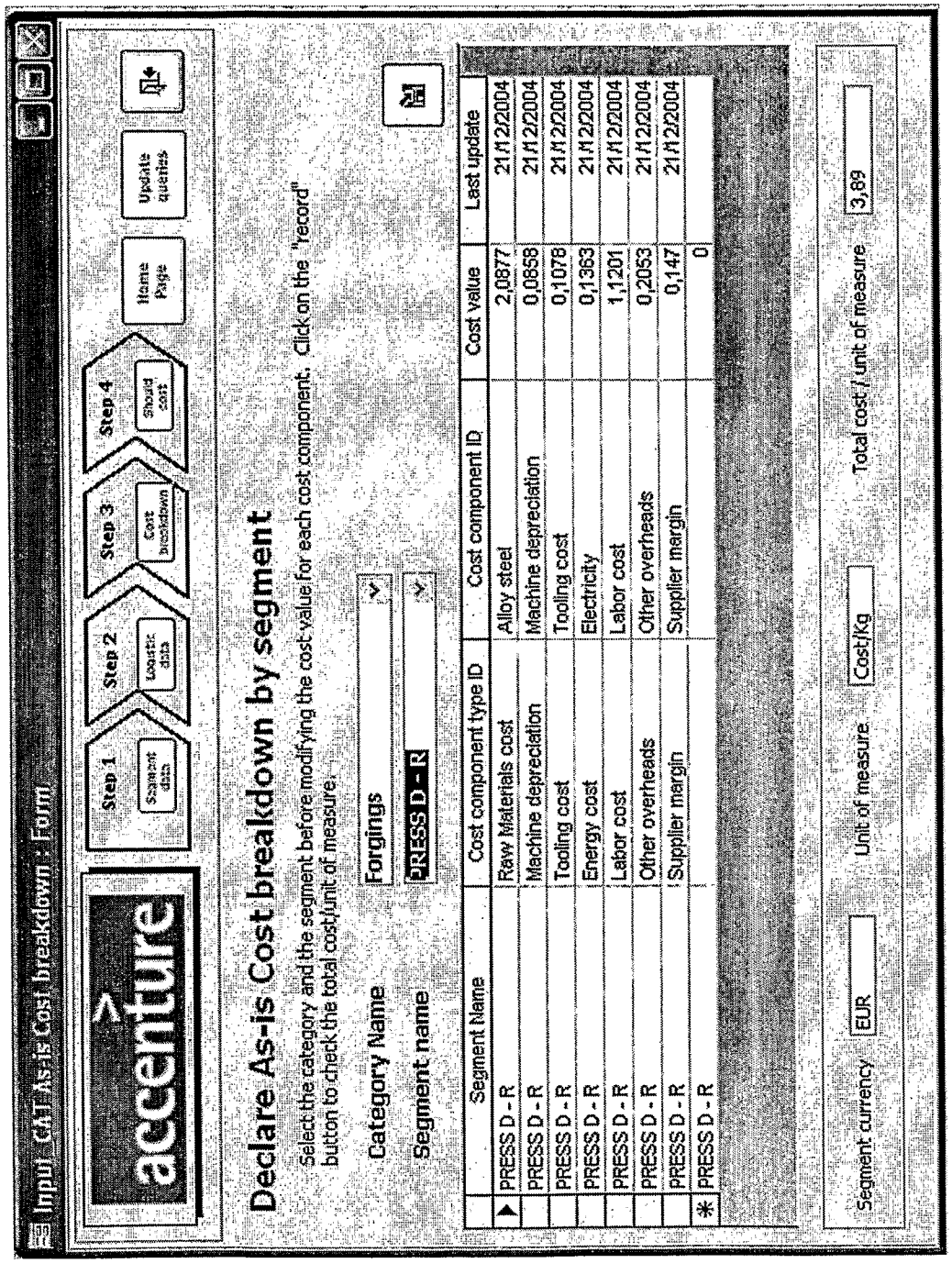

Input CAT As-is Cost breakdown : Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Declare As-is Cost breakdown by segment
Select the category and the segment before modifying the cost value for each cost component. Click on the "record" button to check the total cost/unit of measure.
Category Name
Forgings
Segment name
PRESS D - R
Segment Name
Cost component type ID
Cost component ID
Cost value
Last update
PRESS D - R
Raw Materials cost
Alloy steel
2,0877
21/12/2004
PRESS D - R
Machine depreciation
Machine depreciation
0,0858
21/12/2004
PRESS D - R
Tooling cost
Tooling cost
0,1078
21/12/2004
PRESS D - R
Energy cost
Electricity
0,1363
21/12/2004
PRESS D - R
Labor cost
Labor cost
1,1201
21/12/2004
PRESS D - R
Other overheads
Other overheads
0,2053
21/12/2004
PRESS D - R
Supplier margin
Supplier margin
0,147
21/12/2004
PRESS D - R
0
Segment currency
EUR
Unit of measure
Cost/Kg
Total cost / unit of measure
3,89

FIG 18

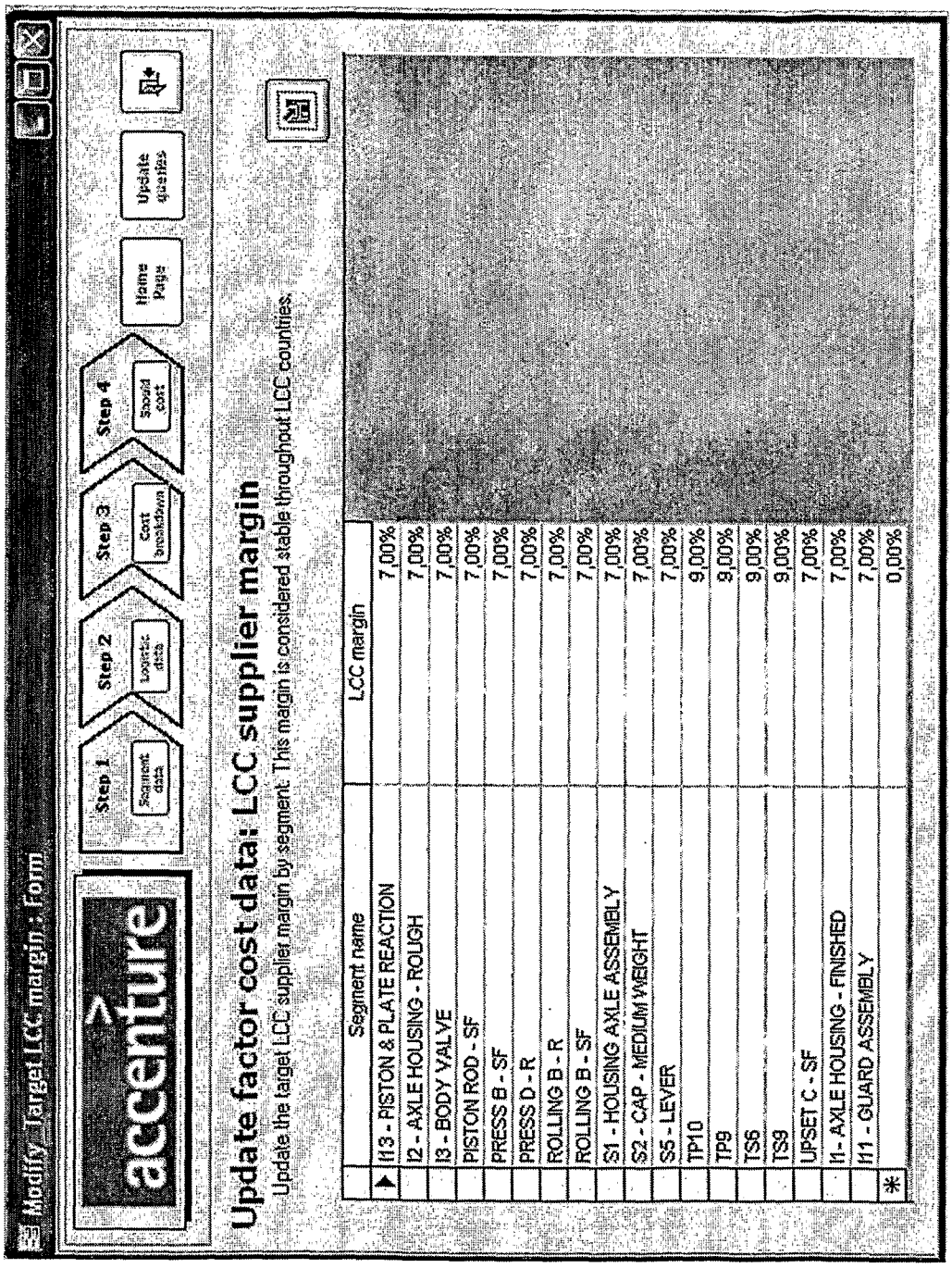
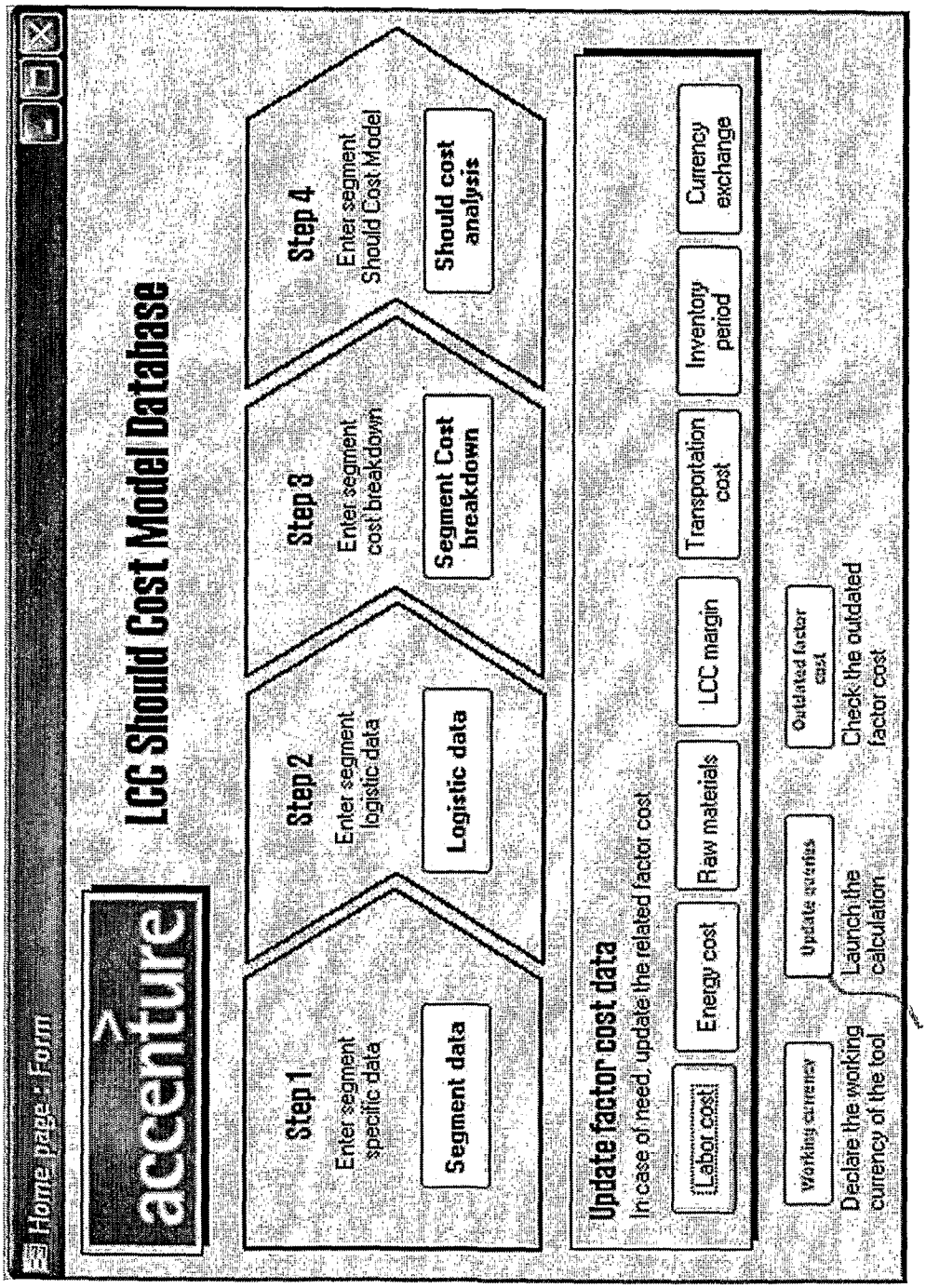

Modify Target LCC margin : Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Update factor cost data: LCC supplier margin
Update the target LCC supplier margin by segment. This margin is considered stable throughout LCC countries.
Segment name
LCC margin
I13 - PISTON & PLATE REACTION 7,00%
I2 - AXLE HOUSING - ROUGH 7,00%
I3 - BODY VALVE 7,00%
PISTON ROD - SF 7,00%
PRESS B - SF 7,00%
PRESS D - R 7,00%
ROLLING B - R 7,00%
ROLLING B - SF 7,00%
S1 - HOUSING AXLE ASSEMBLY 7,00%
S2 - CAP - MEDIUM WEIGHT 7,00%
S5 - LEVER 7,00%
TP10 9,00%
TP9 9,00%
TS6 9,00%
TS9 9,00%
UPSET C - SF 7,00%
I1- AXLE HOUSING - FINISHED 7,00%
I11 - GUARD ASSEMBLY 7,00%
0,00%

FIG 19


Home page - Form
accenture
LCC Should Cost Model Database
Step 1
Enter segment specific data
Segment data
Step 2
Enter segment logistic data
Logistic data
Step 3
Enter segment cost breakdown
Segment Cost breakdown
Step 4
Enter segment Should Cost Model
Should cost analysis
Update factor cost data
In case of need, update the related factor cost
Labor cost
Energy cost
Raw materials
LCC margin
Transportation cost
Inventory period
Currency exchange
Working currency
Update symbols
Outdated factor cost
Declare the working currency of the tool
Launch the calculation
Check the outdated factor cost

62

FIG 2D

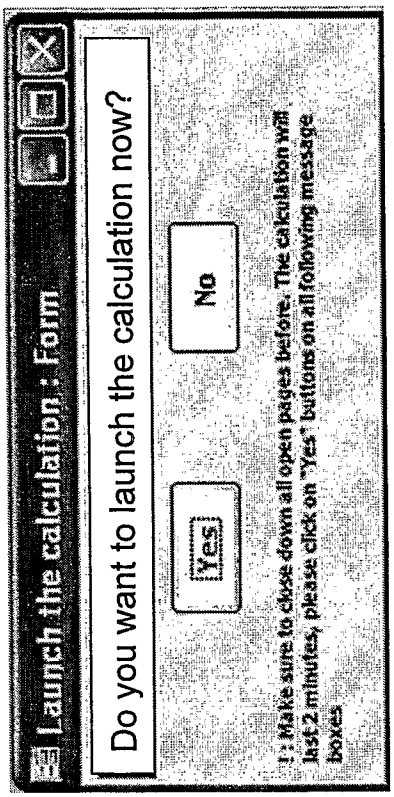

Launch the calculation : Form
Do you want to launch the calculation now?
Yes
No
! : Make sure to close down all open pages before. The calculation will last 2 minutes, please click on "Yes" buttons on all following message boxes

Fig 21

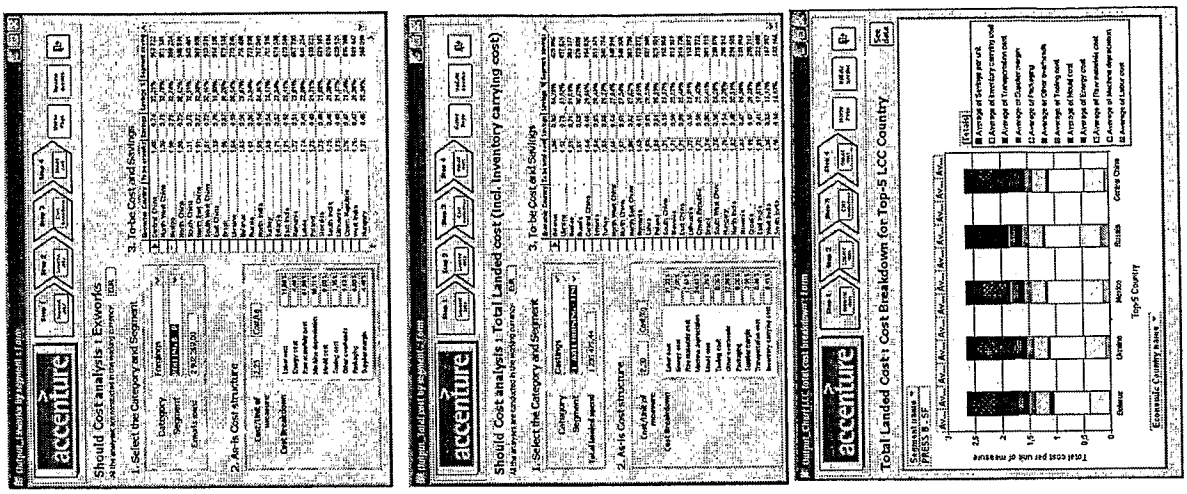

accenture
Should Cost analysis : Total Landed cost (Incl. Inventory carrying cost)
Total Landed Cost : Cost Breakdown for Top-5 LCC Country
Output_Should ...
Should Cost Analysis by segment
Keywords - Should cost analysis
Total Landed cost - Should cost analysis
Total Landed cost - Cost breakdown for Top-5 LCC

FIG 22

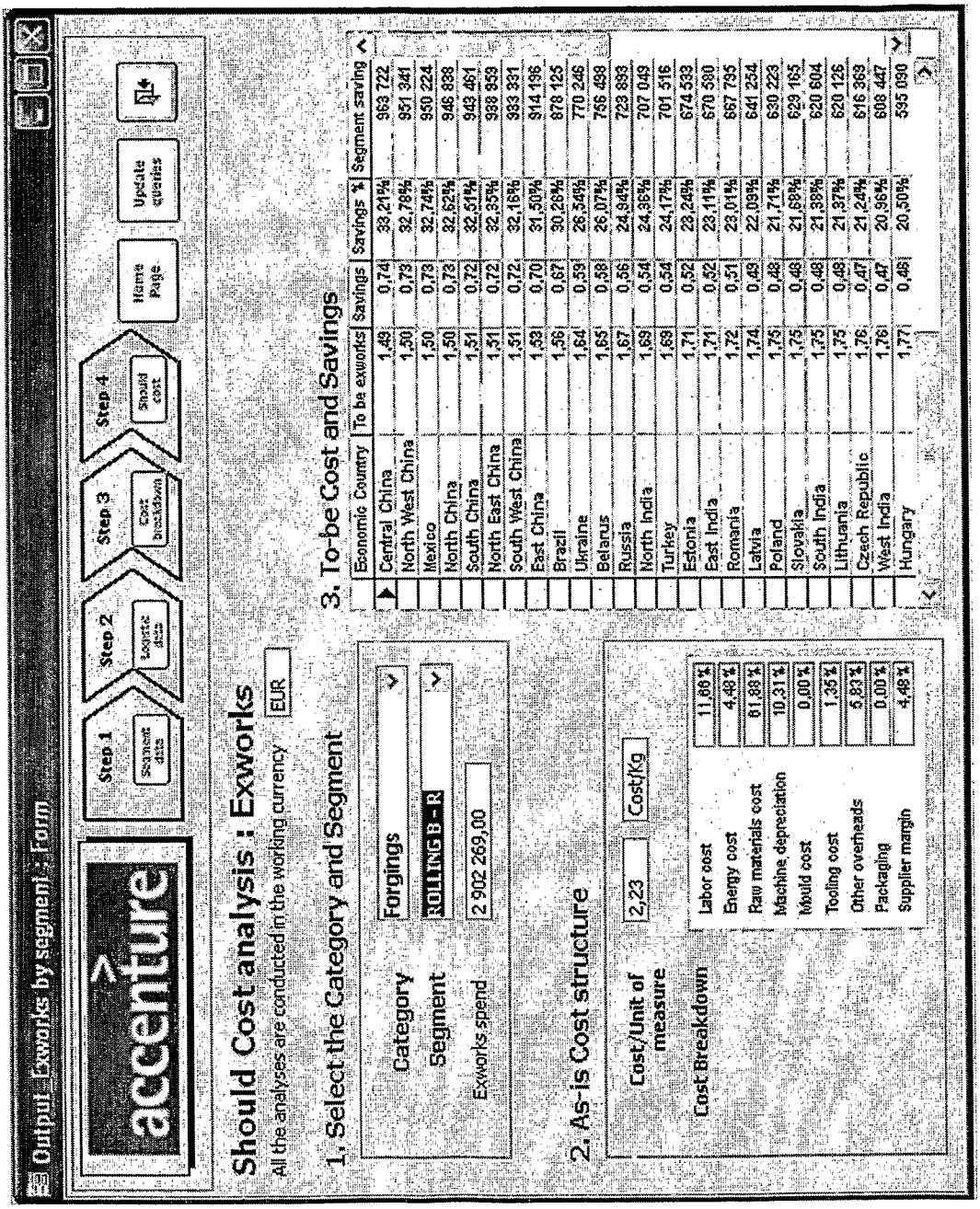

Output_Exworks by segment - Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Should Cost analysis : Exworks
All the analyses are conducted in the working currency
EUR
1, Select the Category and Segment
Category
Forgings
Segment
ROLLING B - R
Exworks spend
2 902 269,00
2, As-is Cost structure
Cost/Unit of measure
2,23
Cost/Kg
Cost Breakdown
Labor cost 11,86 %
Energy cost 4,48 %
Raw materials cost 61,88 %
Machine depreciation 10,31 %
Mould cost 0,00 %
Tooling cost 1,35 %
Other overheads 6,83 %
Packaging 0,00 %
Supplier margin 4,48 %
3, To-be Cost and Savings
Economic Country | To be exworks | Savings | Savings % | Segment saving
Central China 1,49 0,74 33,21% 963 722
North West China 1,50 0,73 32,78% 951 341
Mexico 1,50 0,73 32,74% 950 224
North China 1,50 0,73 32,62% 946 838
South China 1,51 0,72 32,51% 943 461
North East China 1,51 0,72 32,35% 938 859
South West China 1,51 0,72 32,16% 933 231
East China 1,53 0,70 31,50% 914 196
Brazil 1,56 0,67 30,28% 878 125
Ukraine 1,64 0,59 26,54% 770 246
Belarus 1,65 0,58 26,07% 756 498
Russia 1,67 0,56 24,94% 723 893
North India 1,69 0,54 24,36% 707 049
Turkey 1,69 0,54 24,17% 701 516
Estonia 1,71 0,52 23,24% 674 533
East India 1,71 0,52 23,11% 670 580
Romania 1,72 0,51 23,01% 667 795
Latvia 1,74 0,49 22,09% 641 254
Poland 1,75 0,48 21,71% 630 223
Slovakia 1,75 0,48 21,69% 629 165
South India 1,75 0,48 21,38% 620 604
Lithuania 1,75 0,48 21,37% 620 126
Czech Republic 1,76 0,47 21,24% 616 363
West India 1,76 0,47 20,96% 608 447
Hungary 1,77 0,46 20,50% 595 090

FIG 23

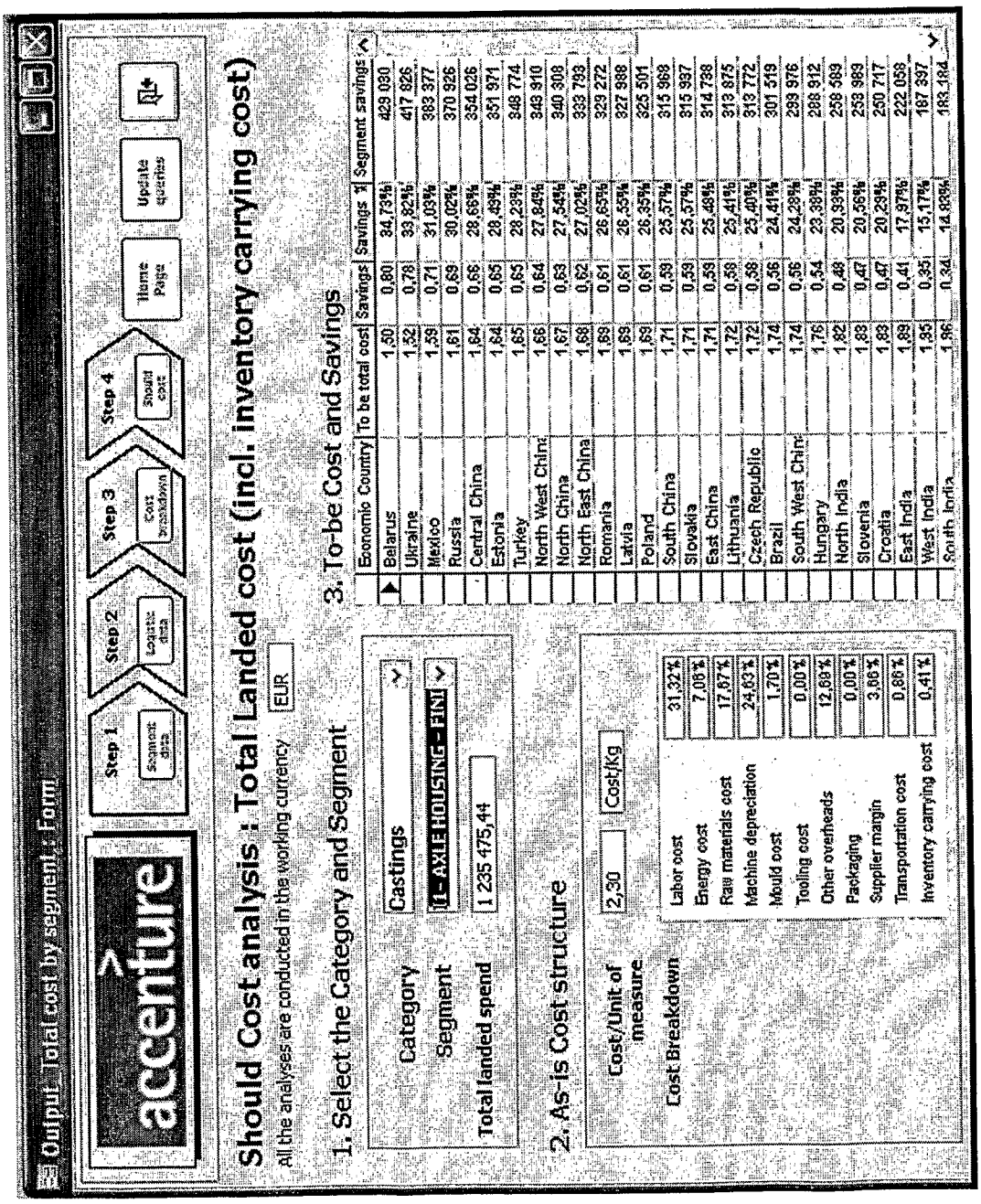

Output : Total cost by segment : Form
accenture
Step 1
Segment data
Step 2
Logistic data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Should Cost analysis : Total Landed cost (incl. inventory carrying cost)
All the analyses are conducted in the working currency
EUR
1. Select the Category and Segment
Category
Castings
Segment
1- AXLE HOUSING - FINI
Total landed spend
1 235 475,44
2. As-is Cost structure
Cost/Unit of measure
2,30
Cost/Kg
Cost Breakdown
Labor cost 31,32%
Energy cost 7,06%
Raw materials cost 17,67%
Machine depreciation 24,63%
Mould cost 1,70%
Tooling cost 0,00%
Other overheads 12,68%
Packaging 0,00%
Supplier margin 3,86%
Transportation cost 0,68%
Inventory carrying cost 0,41%
3. To-be Cost and Savings
Economic Country
To be total cost
Savings
Savings %
Segment savings
Belarus 1,50 0,80 34,73% 429 030
Ukraine 1,52 0,78 33,82% 417 826
Mexico 1,59 0,71 31,03% 383 377
Russia 1,61 0,69 30,02% 370 926
Central China 1,64 0,66 28,68% 354 026
Estonia 1,64 0,65 28,49% 351 971
Turkey 1,65 0,65 28,23% 348 774
North West China 1,66 0,64 27,84% 343 910
North China 1,67 0,63 27,54% 340 308
North East China 1,68 0,62 27,02% 333 793
Romania 1,69 0,61 26,63% 329 272
Latvia 1,69 0,61 26,53% 327 988
Poland 1,69 0,61 26,35% 325 501
South China 1,71 0,59 25,57% 315 968
Slovakia 1,71 0,59 25,57% 315 937
East China 1,71 0,58 25,48% 314 738
Lithuania 1,72 0,58 25,41% 313 875
Czech Republic 1,72 0,58 25,40% 313 772
Brazil 1,74 0,56 24,41% 301 519
South West China 1,74 0,55 24,28% 299 976
Hungary 1,76 0,54 23,98% 296 912
North India 1,82 0,48 20,93% 258 589
Slovenia 1,83 0,47 20,56% 253 989
Croatia 1,83 0,47 20,29% 250 717
East India 1,89 0,41 17,97% 222 058
West India 1,95 0,35 15,17% 187 397
South India 1,96 0,34 14,83% 183 384

Fig 24

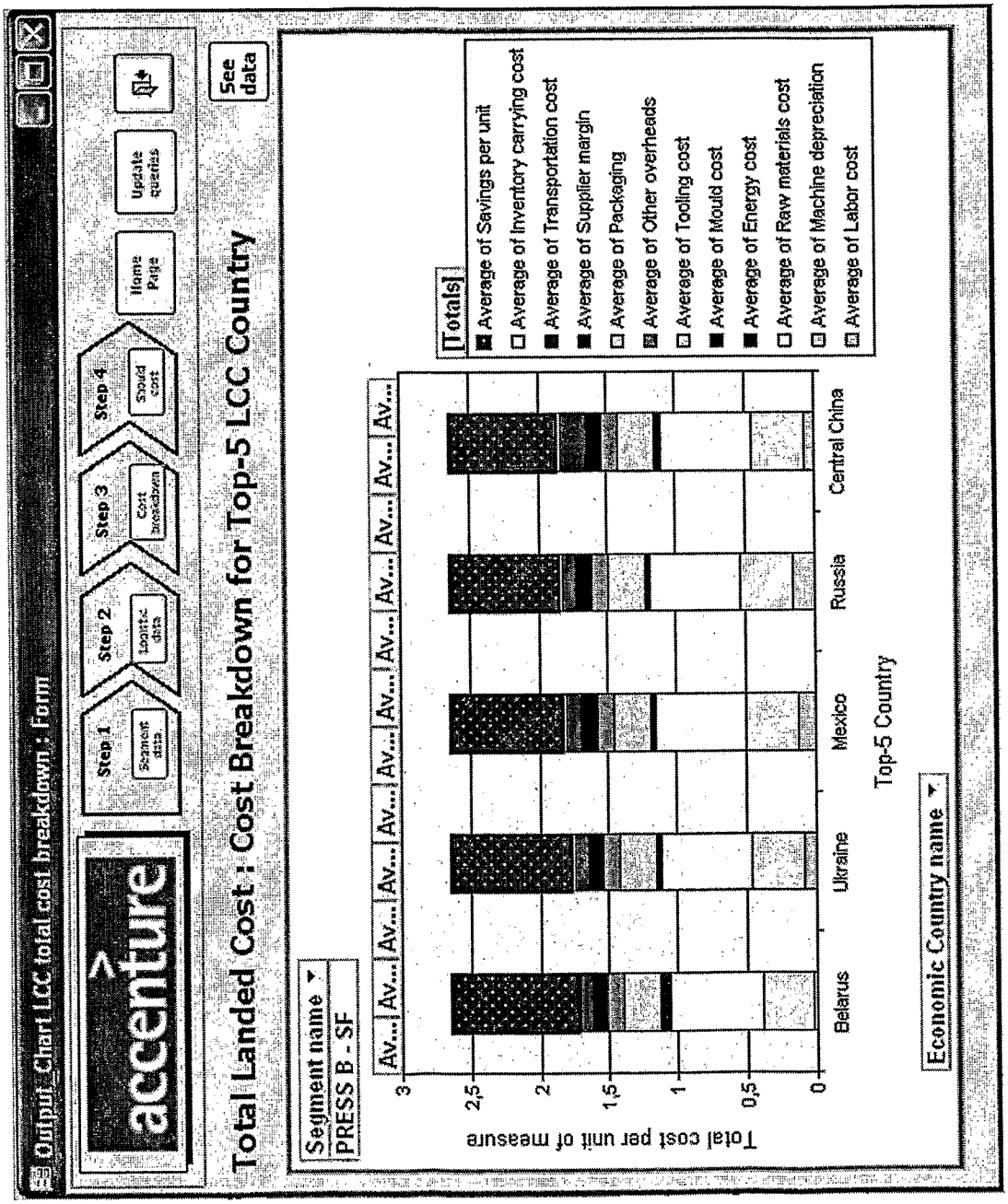

Output_Chart LCC total cost breakdown : Form
accenture
Step 1
Segment data
Step 2
Country data
Step 3
Cost breakdown
Step 4
Should cost
Home Page
Update queries
Total Lamded Cost : Cost Breakdown for Top-5 LCC Country
See data
Segment name
PRESS B - SF
Av...
[Totals]
Average of Savings per unit
Average of Inventory carrying cost
Average of Transportation cost
Average of Supplier margin
Average of Packaging
Average of Other overheads
Average of Tooling cost
Average of Mould cost
Average of Energy cost
Average of Raw materials cost
Average of Machine depreciation
Average of Labor cost
Total cost per unit of measure
3
2,5
2
1,5
1
0,5
0
Belarus
Ukraine
Mexico
Russia
Central China
Top-5 Country
Economic Country name

FIG 25

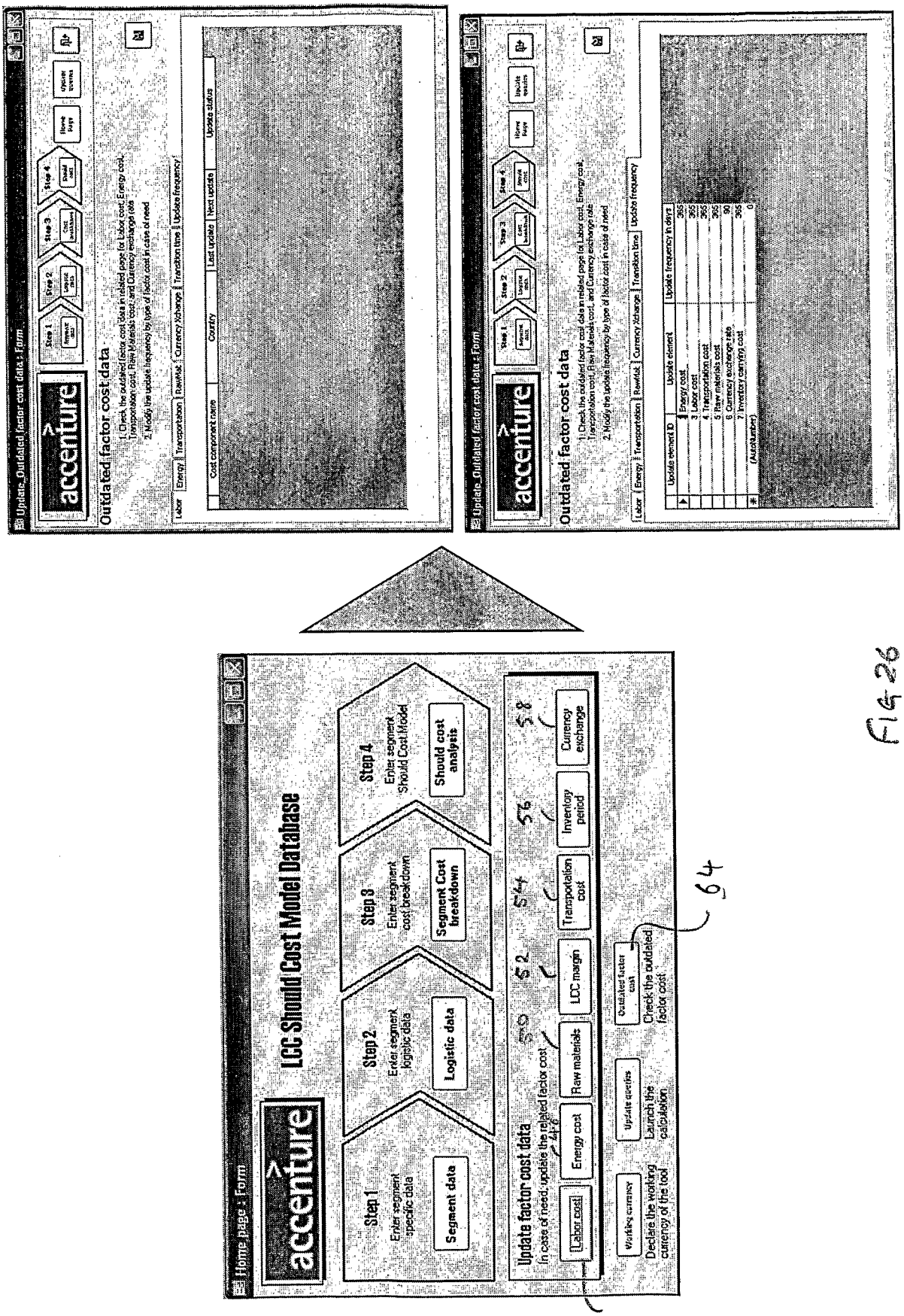
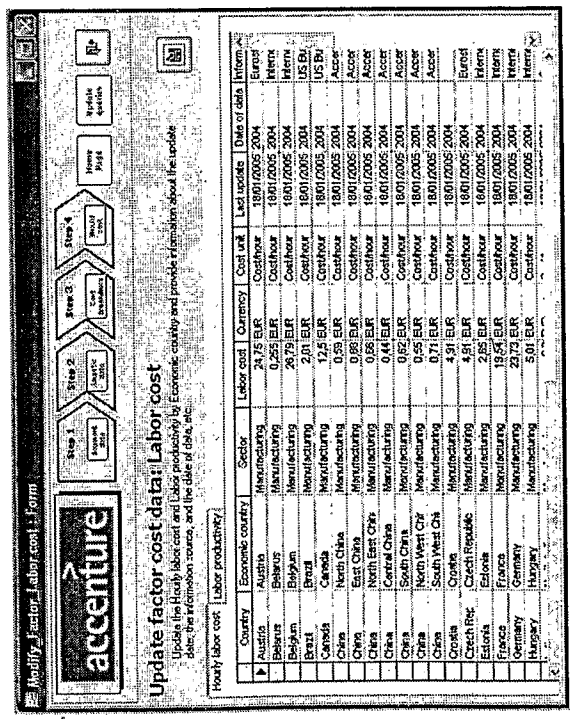
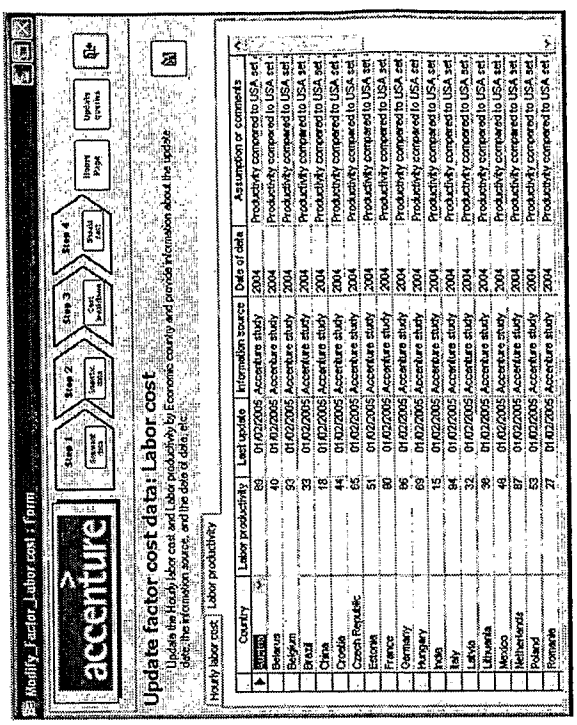

Home page : Form
accenture
LCC Should Cost Model Database
Step 1
Enter segment specific data
Segment data
Step 2
Enter segment logistic data
Logistic data
Step 3
Enter segment cost breakdown
Segment Cost breakdown
Step 4
Enter segment Should Cost Model
Should cost analysis
Update factor cost data
In case of need, update the related factor cost
Labor cost
Energy cost
Raw materials
LCC margin
Transportation cost
Inventory period
Currency exchange
Working currency
Declare the working currency of the tool
Update queries
Launch the calculation
Outdated factor cost
Check the outdated factor cost
S1
S2
S3
S4
S5
S6
S8
44
46
64
Update_Outdated factor cost data : Form
Outdated factor cost data
1. Check the outdated factor cost data in related page (ie Labor cost, Energy cost, Transportation cost, Raw Materials cost, and Currency exchange rate
2. Modify the update frequency by type of factor cost in case of need
Labor
Energy
Transportation
RawMat.
Currency Xchange
Transition time
Update frequency
Cost component name
Country
Last update
Next update
Update status
Update_Outdated factor cost data : Form
Outdated factor cost data
1. Check the outdated factor cost data in related page (ie Labor cost, Energy cost, Transportation cost, Raw Materials cost, and Currency exchange rate
2. Modify the update frequency by type of factor cost in case of need
Update element ID
Update element
Update frequency in days
1 Energy cost 365
2 Labor cost 365
3 Transportation cost 365
4 Raw materials cost 365
5 Currency exchange rate 90
6 Inventory currency cost 365
7 (AutoNumber) 0

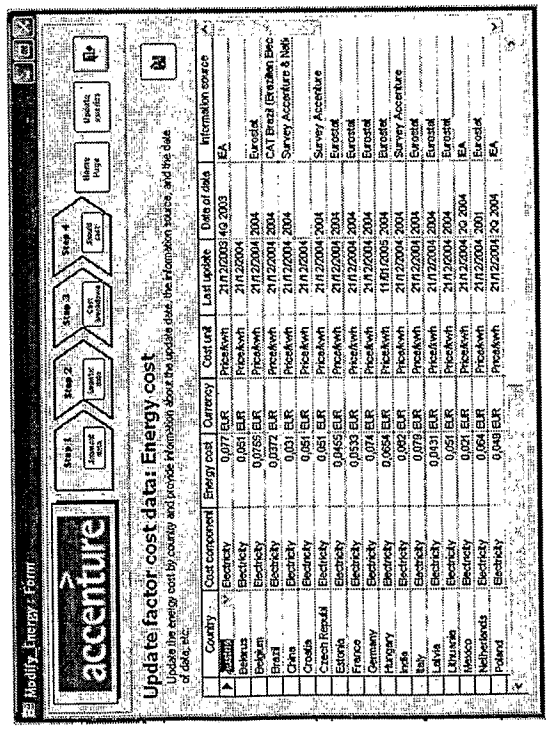
Fig 26



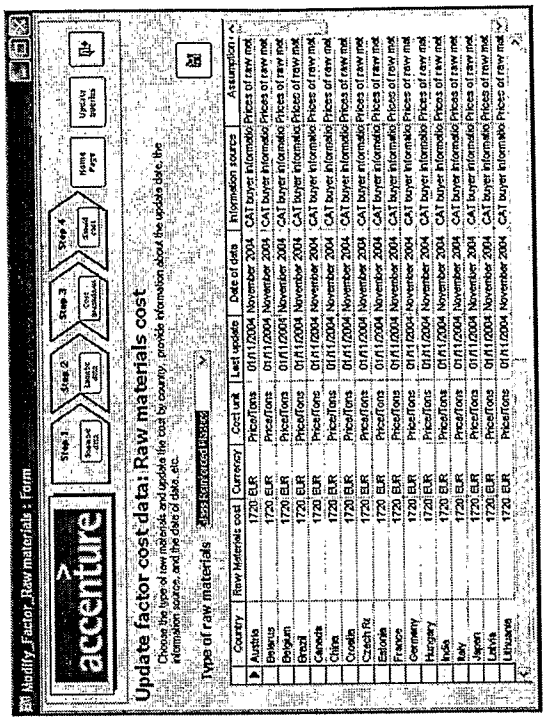
Hourly labor cost



Labor productivity



Energy cost



Raw materials cost

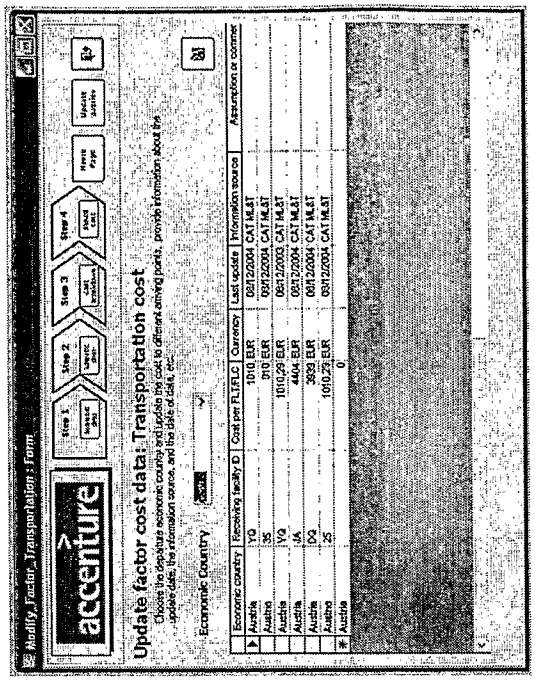


Fig 32

Transportation cost

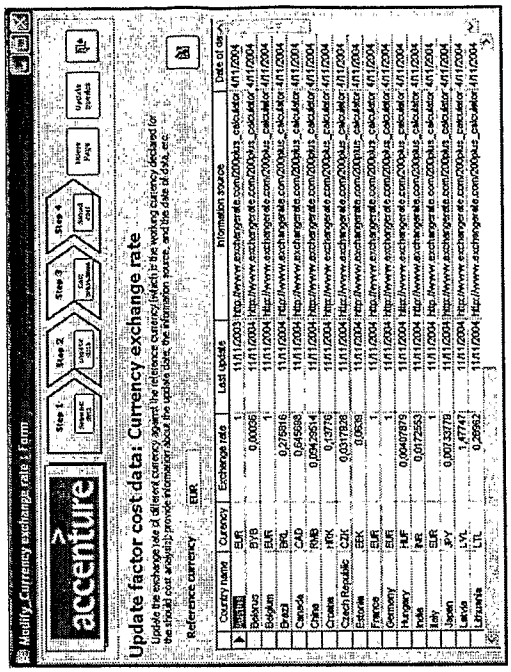


Fig 34

Currency exchange rate

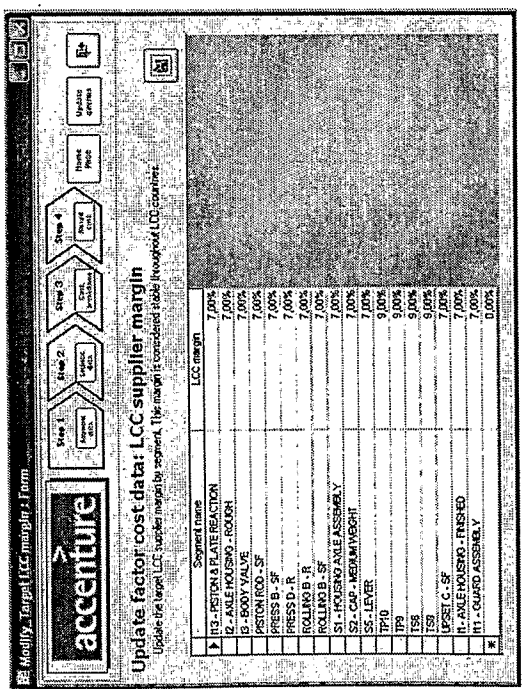


Fig 31

LCC supplier margin

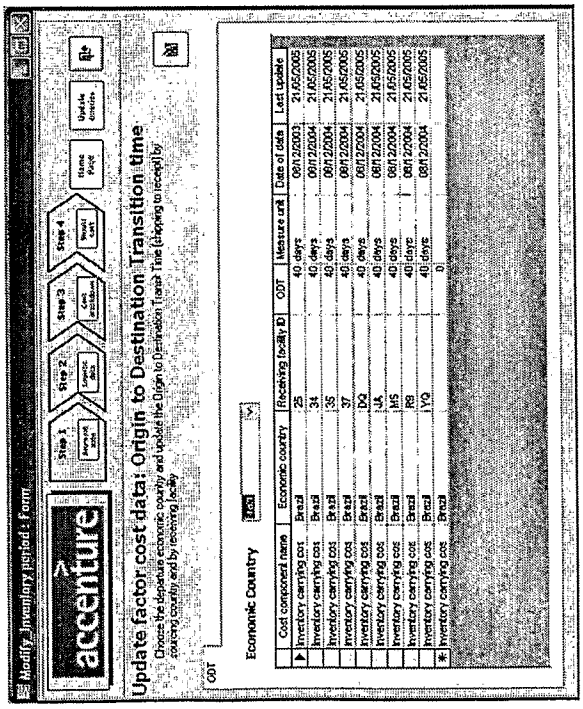


Fig 33

Origin to Destination Transition time

PATENT COOPERATION TREATY

PCT

DECLARATION OF NON-ESTABLISHMENT OF INTERNATIONAL SEARCH REPORT

(PCT Article 17(2)(a), Rules 13*ter*.1(c) and Rule 39)

Applicant's or agent's file reference	IMPORTANT DECLARATION	Date of mailing *(day/month/year)*
P40046WO/GCF		15/01/2007
International application No.	International filing date *(day/month/year)*	(Earliest) Priority date *(day/month/year)*
PCT/IB2006/001994	19/05/2006	
International Patent Classification (IPC) or both national classification and IPC		
G06Q10/00		
Applicant		
ACCENTURE GLOBAL SERVICES GMBH		

This International Searching Authority hereby declares, according to Article 17(2)(a), that **no international search report will be established** on the international application for the reasons indicated below

1. [X] The subject matter of the international application relates to:
   - a. [ ] scientific theories
   - b. [ ] mathematical theories
   - c. [ ] plant varieties
   - d. [ ] animal varieties
   - e. [ ] essentially biological processes for the production of plants and animals, other than microbiological processes and the products of such processes
   - f. [X] schemes, rules or methods of doing business
   - g. [ ] schemes, rules or methods of performing purely mental acts
   - h. [ ] schemes, rules or methods of playing games
   - i. [ ] methods for treatment of the human body by surgery or therapy
   - j. [ ] methods for treatment of the animal body by surgery or therapy
   - k. [ ] diagnostic methods practised on the human or animal body
   - l. [ ] mere presentations of information
   - m. [ ] computer programs for which this International Searching Authority is not equipped to search prior art
2. [ ] The failure of the following parts of the international application to comply with prescribed requirements prevents a meaningful search from being carried out:
   [ ] the description [ ] the claims [ ] the drawings
3. [ ] A meaningful search could not be carried out without the sequence listing; the applicant did not, within the prescribed time limit:
   - [ ] furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.
   - [ ] furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.
   - [ ] pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13*ter*.1(a) or (b).
4. [ ] A meaningful search could not be carried out without the tables related to the sequence listings; the applicant did not, within the prescribed time limit, furnish such tables in electronic form complying with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions, and such tables were not available to the International Searching Authority in a form and manner acceptable to it.
5. Further comments:

Name and mailing address of the International Searching Authority	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	Marja Brouwers

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 203

A meaningful search is not possible on the basis of all claims because all claims are directed to - Scheme, rules and method for doing business - Rule 39.1(iii) PCT and formulated to merely specify commonplace features relating to a technological implementation of such matter to such an extent that a meaningful search is not possible. The examiner could not determine any technical solution defined in response to a technical problem within the content/scope of the application as originally filed. Any problem herein addressed do not appear to require a technical, but rather a commercial, i.e. business oriented solution, namely least cost procurement (per regions) in the field of supply chain management .Whilst the implementation of such non technical solution may include the use of generic or conventional technical features like database queries and interactions, these plainly serve their well defined known functions in programming a supply chain/procurement requirement (Rule 39.1(vi) PCT) as would be recognised by the skilful in the relevant technical field.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.