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Datasheet for the decision of 10 September 2015

Case Number: T 2142/09 - 3.5.07

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Language of the proceedings: EN

Title of invention:
Process and system for analysing deformations in motor vehicles

Applicant:
Siri, Fausto

Headword:
Vehicle deformation analysis/SIRI

Relevant legal provisions:
EPC Art. 56

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Catchword:

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Case Number: T 2142/09 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 10 September 2015

Appellant: (Applicant)	Siri, Fausto V. Perniciaro, 38/2 I-16100 Mele (IT)
Representative:	Garavelli, Paolo A.BRE.MAR. S.R.L. Via Servais 27 10146 Torino (IT)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 15 July 2009 refusing European patent application No. 05729787.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	R. Moufang
Members:	M. Rognoni
	R. de Man

Summary of Facts and Submissions

I. The applicant (appellant) has appealed against the decision of the Examining Division to refuse the European patent application No. 05729787.1.

II. In the contested decision, the Examining Division came to the conclusion that the subject-matter of claim 1 filed during oral proceedings on 4 June 2009 was not novel (Article 54 EPC) with respect to the following prior art:

D7: EP-A-0 644 501.

III. With the statement of grounds of appeal, the appellant filed a set of claims 1 to 28, essentially corresponding to the claims underlying the contested decision, and requested that the decision under appeal be set aside and a patent be granted on the basis of these claims.

IV. With letter dated 18 December 2014, the appellant was summoned to attend oral proceedings to be held before the Board on 10 September 2015.

V. In a communication dated 2 June 2015 pursuant to Article 15(1) RPBA, the Board raised a number of objections under Articles 123(2), 83, 84 and 56 EPC, and expressed the preliminary opinion that the present application did not appear to relate to patentable subject-matter.

VI. The appellant did not make any submissions in reply to the Board's communication.

VII. Oral proceedings were held as scheduled on 10 September 2015 in the absence of the appellant. At the end of these proceedings the chairman pronounced the Board's decision.

VIII. Claim 1 according to the appellant's request reads as follows:

"Process for automatically identifying, analysing and estimating deformations particularly in motor vehicles, said process comprising the following steps:

- loading image data relevant to at least a three-dimensional image of a damaged vehicle in a vehicle image memory;

- in the image memory of damaged vehicles, calling up image data of at least a three-dimensional image of a sample vehicle from a database of sample vehicle images, said sample vehicle image being the image of a vehicle type corresponding to the damaged vehicle type;

- displaying image data relevant to damaged vehicle image and to the corresponding not damaged vehicle type;

- automatically comparing the three-dimensional image of the damaged vehicle with the corresponding three-dimensional image of the sample vehicle identifying, through an automatic comparison between said two images: damage location or deformation and detecting deformed regions;

- selecting by means of delimitation or highlighting graphic tools damaged or deformed regions identified by the automatic comparison on at least one of the two images;

- storing image pixel and respective image data, selected as corresponding to damaged or deformed regions as result of said comparison and selection steps, in a memory of a work program;

- computing perimeter, area and/or volume of damaged or deformed region or regions and/or further morphologic parameters by means of algorithms implemented by the work program, and/or identifying the location in space of the damage on the vehicle using the computation algorithm implemented by the work program on damaged or deformed regions and/or on results of said comparison stored in the work program memory;

- computing a deformation gravity degree and assigning said deformation gravity degree to each damaged or deformed region;

- computing labour times and costs for repairing the damaged or deformed region, starting from such computed perimeter, area and/or volume and/or morphologic parameters, using a database of repair times and costs available for every vehicle type; and

- producing a virtual image of the sample vehicle which is constituted by the virtual image set of individual structural parts of the vehicle forming indipendent [*sic*] structural units, that is individual vehicle parts, which virtual image can be displayed as image of assembled vehicle or as exploded vehicle image, each structural part of the vehicle being univocally identified by an identification code, and corresponding to the same structural part of the damaged vehicle."

Claims 2 to 14 are dependent on claim 1.

Claim 15 reads as follows:

"System for identifying, analysing and estimating deformations particularly in motor vehicles, according to the process of any one of the previous claims, characterized in that it comprises at least a central

processing unit (CPU) or a central logical unit to which the following are associated:

- at least a program for performing the steps of a process according to any one of the previous claims,
- at least a memory for storing said program,
- at least a memory for storing image data of at least a vehicle,
- at least a database of three-dimensional images of sample vehicles,
- alphanumeric and/or graphic data or command input means,
- selection means for selecting damaged or deformed regions in said vehicle,
- at least a unit for printing and/or displaying results; and
- at least a scanning unit for acquiring the three-dimensional image of a damaged vehicle, which unit is adapted to provide a two-dimensional or three-dimensional set of image data stored as image data of the damage vehicle."

Claims 16 to 28 are dependent on claim 15.

IX. In the statement of grounds of appeal, the appellant contested that document D7 anticipated the process according to claim 1 and essentially argued that the prior art merely gave an unordered list of possible functions that a computer would put at an expert's disposal to perform certain operations. Thus, it was not possible to derive from document D7 the ordered list of process steps recited in claim 1. Furthermore, a skilled person whose technical purpose was to enable a workshop worker to use a tool that, as shown in D7, had been developed for the expert, would have found no indication in D7 as to how to simplify and automate the known process. Hence, the subject-matter of claim 1

fulfilled the requirements of novelty and inventive step according to Articles 54 and 56 EPC.

Reasons for the Decision

1. The appeal is admissible.

2. The present invention is concerned with *"a process for identifying, analysing and estimating deformations particularly in motor vehicles wherein deformation and damaged region estimation is carried out in an objective manner"* (published application, page 4, lines 5 to 9).

According to the description (*ibid.* page 4, lines 10 to 20),"[a]*n advantageous embodiment of the process and system according to the present invention comprises the following steps: manually, automatically or semi-automatically selecting the damaged vehicle body region, computing perimeter, area and/or volume of the deformed or damaged region by means of a work program comprising suitable algorithms, identifying also various vehicle parts affected by deformation, computing a repairing time/cost and comparing it to replacing time/cost of piece choosing the more suitable time/cost one*" (underlining added).

3. Claim 1 of the appellant's request is directed to a process for automatically identifying, analysing and estimating deformations and comprises the following steps itemised by the Board:

(a) loading image data relevant to at least a three-dimensional image of a damaged vehicle in a vehicle image memory;

(b) in the image memory of damaged vehicles, calling up image data of at least a three-dimensional image of a sample vehicle from a database of sample vehicle images,

(i) said sample vehicle image being the image of a vehicle type corresponding to the damaged vehicle type;

(c) displaying image data relevant to damaged vehicle image and to the corresponding not damaged vehicle type;

(d) automatically comparing the three-dimensional image of the damaged vehicle with the corresponding three-dimensional image of the sample vehicle

(i) identifying, through an automatic comparison between said two images: damage location or deformation and

(ii) detecting deformed regions;

(e) selecting by means of delimitation or highlighting graphic tools damaged or deformed regions identified by the automatic comparison on at least one of the two images;

(f) storing image pixel and respective image data, selected as corresponding to damaged or deformed regions as result of said comparison and selection steps, in a memory of a work program;

(g) computing perimeter, area and/or volume of damaged or deformed region or regions and/or further morphologic parameters by means of algorithms implemented by the work program, and/or

identifying the location in space of the damage on the vehicle using the computation algorithm implemented by the work program on damaged or deformed regions and/or on results of said comparison stored in the work program memory;

(h) computing a deformation gravity degree and assigning said deformation gravity degree to each damaged or deformed region;

(i) computing labour times and costs for repairing the damaged or deformed regions, starting from such computed perimeter, area and/or volume and/or morphologic parameters, using a database of repair times and costs available for every vehicle type; and

(j) producing a virtual image of the sample vehicle which is constituted by the virtual image set of individual structural parts of the vehicle forming independent structural units, that is individual vehicle parts, which virtual image can be displayed as image of assembled vehicle or as exploded vehicle image, each structural part of the vehicle being univocally identified by an identification code, and corresponding to the same structural part of the damaged vehicle.

Interpretation of claim 1

4. The term "automatically" recited in claim 1 and referred to "identifying, analysing and estimating" could imply that the claimed process is carried out in an automatic manner, *i.e.* without direct control of the user.

4.1 It is, however, unlikely that all steps recited in the claim are actually meant to be carried out without human intervention.

In particular, step (e), which involves the use of "delimitation or highlighting graphic tools" to select damaged or deformed regions, seems to relate to a "semi-automatic selection mode" (cf. claim 6 of the application as published).

4.2 Hence, the Board considers that the term *"automatically"* in claim 1 does not mean that the claimed subject-matter is a fully automatic process, but should rather be interpreted in the sense that the process steps which do not necessarily require an input from the user are performed automatically.

4.3 The Board also notes that some of the wording used in claim 1 does not find direct correspondence in the application as originally filed. However, it can be accepted that the combination of steps recited in claim 1 is at least implicitly supported by the orignal disclosure (Article 123(2) EPC).

5. Claim 1 according to the appellant's request corresponds essentially to the independent claim considered by the Examining Division, apart from the following minor editorial amendments made to steps (h) and (j) (additions are shown in italic and deletions as strikethrough):

(h) computing a deformation gravity degree and assigning said deformation gravity degree to each damaged or deformed ~~vehicle part~~ *region*;

(j) producing a virtual image of the sample vehicle ..., each structural part of the vehicle being univocally identified by an identification code *and corresponding to the same structural part of the damaged vehicle*.

6. According to the contested decision, the Examining Division held that all the features recited in claim 1 then on file were either explicitly or implicitly disclosed in document D7.

7. The appellant has, *inter* alia, argued that the operations defined in document D7 were wholly general and constituted mainly a list of possible functions that a computer could carry out. It was however not explained how these functions were performed by the computer and on which basis.

7.1 In the Board's opinion, the same objections could be raised against the present application which, apart from referring in general terms to some unspecified algorithms, gives no details as to how some obviously complex tasks, such as "computing a deformation gravity degree and assigning said deformation gravity degree to each damaged or deformed region" or "computing labour times and costs for repairing the damaged or deformed regions", can be performed "automatically", *i.e.* without direct human intervention.

Hence, if the present application is to comply with Article 83 EPC, it has to be assumed that the skilled person had sufficient specific knowledge at the priority date of the present application to implement the functions recited in claim 1 automatically.

8. Furthermore, in the appellant's view document D7 was fundamentally different from the present invention because the former dealt with a system in which an unskilled operator photographed a damaged car and sent all relevant data remotely to an expert who looked at the damaged part and compared it with a corresponding part of an undamaged vehicle in order to evaluate the damage. In fact, document D7 disclosed a process in which only the identification of deformations was performed automatically, while the analysing and estimating functions were carried out by an expert.

In the appellant's opinion, the reference in the contested decision to features "*implicitly*" disclosed in document D7 showed that the Examining Division had based its refusal of the present application on hindsight.

8.1 In particular, the appellant has relied on the following arguments:

(k) As to the first two steps (a) and (b), the Examining Division had objected that they "implicitly" followed from document D7. This line of reasoning, however, implied an *ex-post* evaluation of the prior art.

(l) As to steps (c) and (d), the appellant declared that it did not submit anything with respect to these steps "in order not to excessively burden the Grounds" [of appeal].

(m) As to step (e) of claim 1, document D7 stated that there was a coloured visualisation made by the computer, while it was the user that selected damaged or deformed regions by means of a mouse.

(n) Regarding step (f), the storage function according to document D7 related to files on car damages, not to image pixel and data corresponding to damages.

(o) As to step (g), it was the expert in document D7, and not the process (computer) that quantified the damage. This was the essential difference between the application and the prior art which allowed an unskilled workshop operator to use the process of the invention.

(p) Regarding step (h), document D7 simply stated that the program displayed the damages from all relevant angles and provided an automatic measure of their importance. Such data were used by the expert. In the present application, this data was used by the program in order to perform further calculations.

(q) Regarding step (i), document D7 taught that the known system, through its operations, allowed the expert to quantify damages, repairs and costs, not that the system computed this data, how it computed it and starting from what initial data it computed labour times and costs.

(r) As to step (j), document D7 did not operate in the same way as the invention.

9. As to point (k), the Examining Division relied on column 9, lines 2 to 7 and Figures 1 to 3 of document D7 to arrive at the conclusion that step (a) was implicitly disclosed in the prior art.

Starting from column 8, line 14, document D7 explains that two-dimensional colour images of a vehicle and of its damage part(s) together with three-dimensional data representative of its damage part(s) are stored in a file in the memory of a computer. The file is then sent to the computer of an expert who with the help of image processing software can visualise and assess the damage suffered by the vehicle. In the Board's opinion, the image processing referred to in document D7 necessarily implies that image data relevant to an image of a damaged vehicle are loaded in a memory, as specified in step (a).

According to the Examining Division, step (b) implicitly followed from column 9, lines 12 to 21 and claim 5, column 11, lines 35 to 37.

Starting from line 15 in column 9, document D7 specifies that there are electronic files containing three-dimensional digital data, provided by car manufacturers, which relate to a certain number of car parts. These three-dimensional representations are used to compare damaged parts with the corresponding undamaged parts in order to evaluate the extent of damage. In claim 5 there is a direct reference to a database of undamaged car parts.

In the Board's view, the above passages of document D7 necessarily imply step (b) recited in claim 1.

9.1 As to point (l), the Board agrees with the Examining Division that steps (c) and (d) are disclosed in document D7.

As explained in column 4, lines 15 to 21 of D7, one of the steps of the known process consists in

automatically comparing the three-dimensional data of a damaged part with three-dimensional data of the corresponding undamaged part. To this effect, the process according to D7 makes use of image processing software which allows the display of two-dimensional and three-dimensional images, and the comparison of a damaged vehicle part with a corresponding undamaged part stored as digital data in a database provided by the vehicle manufacturers (cf. D7, column 9, lines 4 to 28). As this comparison necessarily identifies the differences between damaged und undamaged parts, it allows the identification of damage location or deformation and the detection of deformed regions. In this respect, document D7 specifies in column 9, lines 34 to 40, that, starting from the comparison between damaged and undamaged parts, software on the expert's computer allows the display of differences between damaged and undamaged parts and the provision of cuts or profiles of the damaged parts.

9.2 As to point (m), the Board considers that feature (e) is to be performed by the user with the help of "delimitation and highlighting graphic tools". It is thus not different from the selecting functionality provided by the CAD/CAM application referred to in document D7 (column 2, lines 32 to 38), as noted by the Examining Division.

9.3 As to point (n), in the Board's opinion, it is implicit that also in the process of D7 image data corresponding to damaged or deformed regions are stored in a memory (see point 9. above). If there is a difference between step (f) and D7, it can only be in the way the image data is obtained.

9.4 As to points (o) to (q), the Board accepts that the argumentation provided by the Examining Division is not sufficient to conclude that steps (g) to (i) are either implicitly or explicitly disclosed in D7.

9.5 As to point (r), the Board notes that step (j) merely reflects a well-known functionality of the CAD/CAM application referred to in D7, as pointed out in the contested decision. Furthermore, it seems merely directed to providing a graphic interface for the user and does not contribute to the solution of the problem of automatically identifying, analysing and estimating deformations.

9.6 In summary, the Board acknowledges that the subject-matter of claim 1 of the appellant's request is new within the meaning of Article 54 EPC.

10. Features (g) to (i) which distinguish the subject-matter of claim 1 from the process known from document D7 relate to computing the damage or deformation extent on a vehicle, computing a corresponding deformation gravity degree for each damaged or deformed region, and computing labour times and costs for repairing the damaged or deformed region. A corresponding assessment of damage and repair costs is performed by an expert in the process according to document D7.

10.1 Starting from document D7, a problem addressed by the claimed invention can be seen in automating steps which in the prior art required the intervention of an expert.

10.2 As pointed out above, steps (g) to (i) of claim 1 correspond essentially to actions which an expert asked

to identify, analyse and estimate deformations in a vehicle would explicitly or implicitly perform.

10.3 The present application does not disclose how steps (g) to (i) are actually implemented and in particular which kind of computation algorithms would be required in step (g) or to compute a deformation gravity degree according to step (h). It must therefore be assumed that the applicant considered the actual implementation of these steps to be within the reach of the skilled person (cf. points 7. and 7.1 above).

10.4 From the above it follows that the underlying teaching of the present invention consists merely in the realisation that steps, which are usually performed by an expert facing the task of providing an estimate of damage suffered by a motor vehicle and of the corresponding repair cost, can be carried out automatically by means of appropriate computing algorithms.

Hence, in this respect, the claimed process follows a well-established trend directed to replacing manual processes with automatic processes whenever possible. In the Board's opinion, the application of this approach to the process of document D7 would not require any inventive activity on the part of the skilled person.

10.5 In summary, the Board finds that the present application does not disclose any special teaching for the automatic implementation of a set of functions which are essentially known from document D7 or at least obvious to the skilled person in the context of process automation.

As far as the subject-matter of claim 1 is concerned, it would have been obvious to a skilled person, starting from the teaching of document D7 and facing the task of conceiving a process for the identification, analysis and evaluation of deformations in motor vehicles which did not require the direct intervention of an expert, to arrive at a process for automatically performing a combination of steps as recited in claim 1 of the appellant's request.

10.6 Hence, the Board comes to the conclusion that the subject-matter of claim 1 does not involve an inventive step within the meaning of Article 56 EPC.

11. The same objection applies, *mutatis mutandis,* to claim 15, which is directed to a *"system for identifying, analysing and estimating deformations particularly in motor vehicles according to the process of any one of the previous claims"* and merely comprises features needed to perform the process of the invention.

12. As the appellant's sole request does not provide a basis for granting a patent, the appeal has to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

I. Aperribay R. Moufang

Decision electronically authenticated