

**Internal distribution code:**

- (A) [ - ] Publication in OJ
- (B) [ - ] To Chairmen and Members
- (C) [ - ] To Chairmen
- (D) [ X ] No distribution

**Datasheet for the decision  
of 10 March 2015**

**Case Number:** T 0516/13 - 3.2.08

**Application Number:** 00971395.9

**Publication Number:** 1221890

**IPC:** A61B3/107

**Language of the proceedings:** EN

**Title of invention:**

SYSTEM FOR CUSTOMIZED CORNEAL PROFILING

**Patent Proprietor:**

Technolas Perfect Vision GmbH

**Opponents:**

Carl Zeiss Meditec AG  
AMO Manufacturing USA, LLC

**Headword:**

**Relevant legal provisions:**

EPC Art. 100(c), 123(2), 54, 56, 53(c)  
RPBA Art. 12(4), 13(1)

**Keyword:**

Grounds for opposition - added subject-matter (yes)  
Novelty - auxiliary request (yes)  
Inventive step - auxiliary request (no)

**Decisions cited:**

G 0007/93

**Catchword:**



**Beschwerdekammern  
Boards of Appeal  
Chambres de recours**

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

Case Number: T 0516/13 - 3.2.08

**D E C I S I O N  
of Technical Board of Appeal 3.2.08  
of 10 March 2015**

**Appellant:** Technolas Perfect Vision GmbH  
(Patent Proprietor) Messerschmittstrasse 1-3  
80992 München (DE)

**Representative:** Vossius & Partner  
Siebertstrasse 3  
81675 München (DE)

**Respondent:** Carl Zeiss Meditec AG  
(Opponent 1) Göschwitzer Strasse 51-52  
07745 Jena (DE)

**Representative:** Geyer, Fehners & Partner  
Patentanwälte  
Perhamerstrasse 31  
80687 München (DE)

**Respondent:** AMO Manufacturing USA, LLC  
(Opponent 2) 3400 Central Expressway  
Santa Clara, CA 95051 (US)

**Representative:** Kazi, Ilya  
Mathys & Squire LLP  
The Shard  
32 London Bridge Street  
London SE1 9SG (GB)

**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 8 January 2013  
revoking European patent No. 1221890 pursuant to  
Article 101(3)(b) EPC.**

**Composition of the Board:**

**Chairman**            T. Kriner  
**Members:**           C. Herberhold  
                          D. T. Keeling

## **Summary of Facts and Submissions**

- I. By its decision posted on 8 January 2013 the Opposition Division revoked European patent EP-B 1221890.
- II. The Opposition Division held that the ground of opposition under Article 100(a) in combination with Article 54 EPC prejudiced the maintenance of the patent as granted. The auxiliary requests were either found to be not allowable since the subject-matter claimed was not novel or not inventive, or were not admitted into the proceedings.
- III. The appellant (patent proprietor) lodged an appeal against that decision in the prescribed form and within the prescribed time limit.
- IV. Oral proceedings before the Board of Appeal were held on 10 March 2015.

At the end of the oral proceedings the requests of the parties were as follows:

The appellant requested that the decision under appeal be set aside and that the patent be maintained as granted (Main request) or, in the alternative, that the patent be maintained on the basis of the claims of Auxiliary request 3 filed by letter of 9 February 2015, or Auxiliary requests 4 and 5 filed at the oral proceedings, or Auxiliary requests 5 to 9 filed with the grounds of appeal on 17 May 2013 and renumbered as Auxiliary request 6 to 10, or Auxiliary request 11, filed at the Oral Proceedings.

The respondents requested that the appeal be dismissed.

- V. Claim 1 of the **main request** (corresponding to claim 1 as granted) reads as follows:

"A system for determining refractive aberrations of an eye, comprising:  
a corneal topography tool adapted to provide corneal topography data of the eye (E);  
a wavefront aberration tool adapted to provide wavefront aberration data of the eye (E); and  
a computational unit (104) adapted to receive the corneal topography data and the wavefront aberration data and to develop a course of refractive treatment based on one of the data sets and to modify the course of refractive treatment based on the other of the data sets."

- VI. Claim 1 of **Auxiliary request 3** is based on claim 1 as granted wherein the underlined features have been amended:

"A system for determining refractive aberrations of an eye, comprising:  
a corneal topography tool adapted to provide corneal topography data of the eye (E);  
a wavefront aberration tool adapted to provide wavefront aberration data of the eye (E); and  
a computational unit (104) adapted to receive the corneal topography data and the wavefront aberration data and to develop a course of refractive treatment based on the corneal topography data and to modify the course of refractive treatment based on the wavefront aberration data,  
wherein the computational unit (104) is adapted to calculate the wavefront aberration of the eye (E) from the corneal topography data, wherein the computational unit (104) is adapted to adjust the calculated

wavefront aberration data base upon the wavefront aberration data provided by the wavefront aberration tool."

VII. Claim 1 of **Auxiliary request 4** is based on claim 1 as granted, its subject-matter further comprising

"a camera adapted to capture an image of an iris of the eye (E) that is used for alignment of the wavefront aberration data with the corneal topography data."

Furthermore, dependent claims 6 and 7 as granted have been deleted, with the remaining dependent claims being renumbered accordingly.

VIII. **Auxiliary request 5** corresponds to Auxiliary request 4 further specifying the system as follows:

"a camera adapted to capture an image of an iris of the eye (E) wherein the computational unit is adapted to use the captured image for alignment of the wavefront aberration data with the corneal topography data."

IX. **Auxiliary requests 6** corresponds to the main request wherein in claim 1 the definitions of the corneal topography tool and the wavefront aberration tool have been amended as follows:

"a corneal topography tool adapted to provide corneal topography data of the eye (E) at one resolution;"

"a wavefront aberration tool adapted to provide wavefront aberration data of the eye (E) at another resolution;"

- X. **Auxiliary request 7** corresponds to Auxiliary request 6 with claim 1 being amended by addition of the features defined in dependent claim 7 as granted (dependent claims having been renumbered accordingly):

"wherein the computational unit (104) is adapted to calculate the wavefront aberration of the eye (E) from the corneal topography data".

- XI. **Auxiliary request 8** corresponds to Auxiliary request 7 with claim 1 being further amended by addition of the features defined in dependent claim 9 as granted (dependent claims having been renumbered accordingly):

"wherein the computational unit (104) is adapted to adjust the calculated wavefront aberration data based upon the wavefront aberration data provided by the wavefront aberration tool".

- XII. **Auxiliary request 9** corresponds to Auxiliary request 7 with claim 1 being amended by addition of the features defined in claim 3 as granted (dependent claims being renumbered accordingly):

"a camera adapted to capture an image of an iris of the eye (E) that is used for alignment of the wavefront aberration data with the corneal topography data".

- XIII. **Auxiliary request 10** corresponds to Auxiliary request 7 with claim 1 being amended by addition of the following features (which are equally based on claim 3 as granted but further amended to clarify that it is the computational unit which is adapted to use the captured image for alignment; again the dependent claims have been renumbered accordingly):



"a camera adapted to capture an image of an iris of the eye (E) wherein the computational unit is adapted to use the captured image for alignment of the wavefront aberration data with the corneal topography data."

- XIV. **Auxiliary request 11** corresponds to Auxiliary request 4 with the amendment further specifying the corneal topography tool to be at one resolution and the wavefront aberration data to be at another resolution, as discussed for Auxiliary request 6 above.

To put it differently, Auxiliary request 11 consists of former Auxiliary Request 9, with deletion of the features in double brackets and of Claims 6 and 7 and with renumbering of Claims 8 and 9 as Claims 6 and 7.

- XV. The following documents played a role for the present decision:

C1: WO-A-92/01417;  
C32: US-A-5 214 455;  
C38: US-A-5 070 833.

- XVI. The essential arguments of the appellant can be summarised as follows:

*Main request - Interpretation of Claim 1*

According to claim 1 a first information source was used to develop a course of refractive treatment, whereas a second, other information source was used to modify the treatment. The wording included situations in which solely one information source was used in the first step and solely another information source in the second, but also included the embodiments shown in Figure 4b and defined in dependent claims 7 to 9,

wherein in the first step the wavefront data was adjusted based on topography data. Even after being so adjusted, the data still remained wavefront data, the embodiment thus falling under the scope of claim 1. The claim did however not cover a situation as described in prior art C1, with first and second information source data being jointly used to develop a course of refractive treatment, wherein only after actual treatment the same information sources were again used to modify the course of the treatment. Said situation was clearly different from the subject-matter of claim 1, where a developed course of treatment to be applied was modified before the treatment was actually executed.

*Main request - Article 100(a) and 53(c) EPC*

Claim 1 defined a system and thus related to a product, for which the exception from patentability enshrined in Article 53(c) EPC did not apply.

*Main request - Article 100(c) EPC*

Claim 1 as granted was based on claim 32 as filed, dependent claims 3 and 7-9 as granted were basically identical to dependent claims 21, 25-27 as originally filed. Although independent claim 19 as filed, on which dependent claims 21, 25-27 as filed were dependent, defined a system with a computational unit adapted to combine wavefront aberration data and corneal topography data, its subject-matter still encompassed the subject-matter of claim 1 as granted. Hence, the application as originally filed disclosed the subject-matter of the system defined in the independent claim of the patent as granted in combination with the subject-matter of dependent claims 21, 25-27 as filed.

Further support was in dependent claims 10, 11, 14-16 as originally filed as well as in Figure 4b - which showed development of the course of refractive treatment at step 584 and treatment modification at step 588 - and the description page 4, lines 8-11 and 14-20.

Consequently, the subject-matter defined in the claims as granted did not extend over the disclosure of the application as originally filed.

*Auxiliary request 3 - Admissibility, Article 123(2) EPC*

Auxiliary request 3 had been filed within the one month time limit before the oral proceedings as set in the Board's communication, taking into account the statement made therein that C1 did not disclose wavefront aberration data to be calculated from corneal topography data. It was based on claims 1, 7 and 9 as granted, which - as discussed above - found basis in the application as originally filed. It was thus *prima facie* allowable and should be admitted into the proceedings.

*Auxiliary request 4 - Admissibility, Article 123(2)*

Auxiliary request 4 essentially combined claims 1 and 3 as granted and corresponded to Auxiliary request 3 as filed with the statement of grounds of appeal, which corresponded to Auxiliary request 2 as discussed in the opposition proceedings and in the impugned decision. By discarding the subject-matter of dependent claims 7-9 as granted, the result of the preceding discussion on unallowable amendment was duly taken into account. The request was thus based on a former request already in the proceedings in which only the subject-matter of

some former dependent claims had been removed. There was no difficulty for the Board or the respondents to deal with the request, which should consequently be admitted.

*Auxiliary request 4 - Novelty*

Document C1 did not disclose all the features of independent claim 1. Firstly, the computational unit was described therein to develop a treatment plan based on both wavefront aberration and corneal topography data, but without a modification step being applied before the treatment was executed and without the modification being based on "the other of the data sets". The system according to the present invention, on the other hand, performed the development and modification step only on data, before any treatment was actually executed.

Furthermore, the camera disclosed in C1 was only suitable to capture the relatively coarse moiré patterns but was not adapted to capture high resolution images of the iris, which were required for reliable iris image based data alignment. Nor was the computational unit itself adapted to align the different data sets based on those iris images.

Consequently, the subject-matter of claim 1 was new over prior art C1.

*Auxiliary request 4 - Inventive step*

In any case it was not obvious to provide the system of C1 with a camera suitable to gather high resolution iris images to be used in data alignment. Firstly, C1 only dealt with tracking of eye movement during laser

treatment. There was no indication in C1 to use the camera image for alignment of the different data sets. Thus, the skilled person had no reason to consult C32, which referred to image alignment but not to eye tracking. Secondly, even if the skilled person were to consider the teachings of C32 or C38, said documents only referred to combined iris/retinal or iris/scleral images for alignment, not to iris images *per se*.

Hence even a combination of the teaching of documents C1 and C32 or C1 and C38 did not render the claimed subject-matter obvious.

*Auxiliary request 5 - Admissibility*

As it had become clear in the discussion, the wording of Auxiliary request 4 was open to misinterpretation. In fact, the feature that the iris image was used for data alignment defined a property of the computational unit as much as it defined the camera itself. Nothing more was clarified in claim 1 of Auxiliary request 5, which had to be regarded as an amendment of low complexity, made in response to an objection during the oral proceedings before the Opposition Division, which should thus have been admitted by the Opposition Division or at least should be admitted by the Board.

*Auxiliary requests 6-11 - Admissibility*

Basis for the corneal topography data being at one resolution and the wavefront aberration data being at another resolution could be found at page 33, lines 29 to 30, which disclosed that the various data were typically provided at varying resolutions. The subject-matter of independent claim 1 of Auxiliary requests

6-11 did therefore not extend over the disclosure of the application as originally filed.

XVII. The essential arguments of the respondents can be summarised as follows:

*Main request - Interpretation of Claim 1*

Following the appellant's statement that the embodiment defined in dependent claims 7 to 9 and shown in Figure 4b of the patent fell under the scope of claim 1, it had to be concluded that in the step of developing a course of refractive treatment information from both information sources, i.e. wavefront aberration data as well as corneal topography data, could be used. There was then no reason why the further modification step should be interpreted in a more restricted way. Consequently, the subject-matter of claim 1 included embodiments wherein wavefront aberration and corneal topography data were used in treatment development as well as in treatment modification. Furthermore, claim 1 did not exclude that in between treatment development and treatment modification treatment was actually executed.

*Main request - Article 100(a) and 53(c) EPC*

In some legislations, a claim to a system could be interpreted as a combination of a product and a method. Insofar as a method for developing and modifying a course of refractive treatment was claimed, the subject-matter was excepted from patentability by virtue of Article 53(c) EPC.

*Main request - Article 100(c) EPC*

Although claim 1 as granted found support in claim 32 as originally filed, there was no basis for combining the subject-matter of dependent claims 3 and 7 to 9 with the subject-matter of the independent claim. In particular "combining wavefront aberration with corneal topography data", as defined in claim 19 as originally filed, was different from using a first one of these two types of data for treatment development and the other one for treatment modification. As discussed before, in view of dependent claims 7-9 as granted, claim 1 apparently included the treatment development as well as the treatment modification to be based on both wavefront and corneal topography data, subject-matter which had not been part of claim 32 as originally filed. Combining the subject-matter of independent claim 32 with the subject-matter of dependent claims 25 to 27 as originally filed thus broadened the scope of the independent claim.

Also the particular embodiment shown in Figure 4b could not provide sufficient basis for the combination: it related to a very specific situation, wherein first topography data were gathered, then an adjustment of wavefront aberration based on said topography data took place in order to develop the course of refractive treatment, and only then a topography based modification of the treatment was envisaged. Furthermore, the cross-check performed at Figure 4b, No. 588 and originally described on page 16, lines 6 to 9 could hardly form sufficient basis for a claim directed to "modifying the course of refractive treatment" in general. Taking the features of the Figure 4b embodiment out of context, thereby allowing to start the process with either one of the data sets

and supporting modification based on both data sets, was not disclosed in the Figure 4b embodiment.

Equally, with respect to the iris camera defined in dependent claim 3, there was no clear and unambiguous disclosure of such a camera in combination with the particular system of claim 1 as granted.

Consequently the subject-matter of dependent claims 3, 7 to 9 was based on an unallowable amendment.

*Auxiliary request 3 - Admissibility, Article 123(2) EPC*

Auxiliary request 3 had been filed late, without being motivated by any development in the case. It furthermore included the subject-matter of dependent claims 7 and 9 and thus subject-matter not originally disclosed as discussed above with respect to the main request. Auxiliary request 3 should thus not be admitted into the proceedings or be held unallowable under Article 123(2) EPC.

*Auxiliary request 4 - Admissibility, Article 123(2)*

The respondents had objected to dependent claim 3 as granted as being an unallowable amendment. This objection equally applied to claim 1 of Auxiliary request 4, which combined the subject-matter of claims 1 and 3 as granted. Moreover, the objections had been raised long before the oral proceedings, such that the modified request could and should have been presented earlier. Therefore Auxiliary request 4 was not clearly allowable and should not be admitted into the proceedings or be held unallowable under Article 123(2) EPC.



*Auxiliary request 4 - Novelty*

As correctly discussed in the decision of the Opposition Division, document C1 disclosed in Figure 16 a computational unit which developed a treatment plan, No. 1618, based on both corneal topography data, No. 1608, 1607 and wavefront aberration data, No. 1609, said treatment plan being modified in an iterative procedure, the computational unit thus falling under the definition of claim 1 in the light of the interpretation established during the present proceedings. Furthermore Figure 16, step 1616 and 1617 had to be considered a cross-check preventing application of the developed course of refractive treatment under certain conditions, comparable to the cross-check in step No. 588 of Figure 4b of the patent. As shown in Figure 4, document C1 further disclosed a camera in order to track eye movements, which was suitable to capture an image of the iris suitable for alignment of the wavefront aberration data with the corneal topography data. With the claim wording requiring nothing more than suitability of the camera image for alignment, the camera disclosed in C1 fell under the scope of present claim 1. Document C1 thus disclosed all the features of independent claim 1 which was therefore not novel.

*Auxiliary request 4 - Inventive step*

Even if C1 was found not to disclose a camera suitable for wavefront and topography data alignment using iris images, this difference could not be considered inventive. As also discussed by the Opposition Division in item 2.3.5.1 of the decision, the Iris was the usual structure used to align or merge eye data and for tracking eye movements. The person skilled in the art,

looking for an alternative to the moiré pattern-based tracking of C1, would thus find in documents C32 or C38 the teaching to use iris image-based alignment techniques.

The subject-matter of claim 1 was therefore obvious.

*Auxiliary request 5 - Admissibility*

Auxiliary request 5 corresponded to Auxiliary request 3 as discussed in the impugned decision, which had not been admitted by the Opposition Division, as it was a very late filed amendment, isolated from the description and in reaction to objections which had to be expected. In accordance with the established case law, the Board should not overrule a discretionary decision from the first instance, which - as in the present case - was based on proper criteria applied in a sensible way. Therefore, Auxiliary request 5 should not be admitted into the proceedings.

*Auxiliary requests 6-11 - Admissibility*

These late filed requests should not be admitted, among others because they were *prima facie* in violation of the requirements of Article 123(2) EPC. The application as originally filed gave no basis for corneal topography data and wavefront sensor data generally being different in resolution. The passage cited by the appellant related to data from various sources, whereas, with respect to corneal topography data from a corneal topography system a higher resolution than that of wavefront sensor data was explicitly disclosed on page 33, lines 30 to 32 of the application as filed.

## **Reasons for the Decision**

1. The appeal is admissible.
2. Main request
  - 2.1 Interpretation of Claim 1

Claim 1 as granted defines that a course of refractive treatment is to be developed "based on one of the data sets" and to be modified "based on the other of the data sets". As explicitly confirmed by the appellant and also in accordance with paragraphs [0018] and [0028] of the patent, which refer to the disclosure of Fig. 4b as an "embodiment of the invention", the definition in claim 1 is meant to include the embodiment shown in Figure 4b. This drawing illustrates that a wavefront is used to determine an ablation profile (step 584), i.e. to develop a course of refractive treatment, said wavefront being the result of merging (step 582) a measured pupillary wavefront (steps 576, 578) and a calculated wavefront (step 572), the calculated wavefront being calculated from and thus based on measured corneal topography data (step 552).

It thus has to be concluded that the term "to develop a course of refractive treatment based on one of the data sets" does not exclude that said development is also based on the other data set. Due to the symmetric wording of claim 1 this finding further implies that the term "to modify the course of refractive treatment based on the other of the data sets" equally cannot exclude basing the modification on the other data set, i.e. on the data set which had before been used to develop the course of refractive treatment.

Hence, the term "based on one of the data sets" will in the following be understood to mean "based (mainly) on one of the two data sets mentioned and possibly also on other data sets", while the term "based on the other of the data sets" will be understood to mean "based (mainly) on the other of the two data sets mentioned and possibly also on other data sets".

## 2.2 Article 100(a), Article 53(c) EPC

Claim 1 defines a system for determining refractive aberrations of an eye, comprising a corneal topography tool, a wavefront aberration tool and a computational unit. It thus relates to a product and not to a method. Also the steps of developing or modifying a course of refractive treatment are not claimed as method steps *per se*, but only such as to further characterise the computational unit, i.e. to further characterise a structural component of the apparatus. As Article 53(c) EPC explicitly stipulates that the provision shall not apply to products for use in any method of treatment or therapy, Article 53(c) EPC does not prejudice the maintenance of the patent as granted.

## 2.3 Article 100(c) EPC

It is uncontested that claim 1 as granted finds basis in claim 32 as originally filed. However, claim 32 as originally filed did not have any dependent claims. As pointed out by the appellant, dependent claims 3-11 as granted are worded very similar to dependent claims 21-27, 29, 30 as originally filed. However, independent claim 19 as originally filed, from which these claims are dependent, defines a computational unit adapted to combine the wavefront aberration data with the corneal topography data. A computational unit which combines

wavefront aberration data with corneal topography data is different from a computational unit which develops a course of refractive treatment based on one of these data sets and modifies the course of refractive treatment based on the other of these data sets. Equally, dependent method claims 14-16 as originally filed, which to some extent overlap in wording with dependent claims 7-9 as granted, are dependent on claim 1 as originally filed, claim 1 defining the development of a refractive course of treatment of the eye from the determined corneal topography and the determined wavefront aberration, thus equally combining the different data sets rather than using them consecutively.

The claims of the application as originally filed *per se* therefore do not provide a basis for the feature combination claimed in granted dependent claims 7-9.

Furthermore, the passage on page 4, lines 8-11 and 14-20 of the description as originally filed as well as the embodiment shown in Figure 4b do not clearly and unambiguously disclose the subject-matter claimed for the following reasons:

As explicitly stated on page 3, lines 30-32 the first passage concerns further techniques to combine wavefront and topography data and to employ both in the course of treating refractive errors of the eye. There is no clear and unambiguous disclosure of applying one after the other, i.e. of a modification step based on the other data after development of the course of refractive treatment based on the first data.

With respect to the disclosure on page 4, lines 14-20, the "overall wavefront and corresponding treatment" is

developed, based on both topography and wavefront data. There is again no disclosure of a modification step based on "the other" data set after treatment development, nor of a modification based on calculated wavefront aberration data adjusted by measured wavefront aberration data.

It is true that in Figure 4b, after the determination of the ablation profile (step 584), there is disclosed a further step in which the ablation profile is "compared with Elevation Based Ablation". However, said step essentially only acts as a cross-check (see page 16, lines 6-9), which is at best a very specific "modification of the course of refractive treatment", with this modification being furthermore specifically based on elevation data, i.e. on topography data.

Therefore, in the Figure 4b embodiment there is no clear and unambiguous disclosure of a general modification of a course of refractive treatment developed before, let alone of the modification being based on wavefront aberration data as included in the subject-matter of dependent claims 7-9.

Hence, the subject-matter of dependent claims 7-9 extends over the disclosure as originally filed, the objection under Article 100(c) EPC against these claims thus being justified.

The situation is different regarding the subject-matter of dependent claim 3 as granted, the wording of which is based on claim 21 as originally filed. The person skilled in the art knows that, in order to use data provided by different measurement tools, these data have to be brought into the same coordinate system with respect to the eye to be treated, no matter whether

said data are to be combined before treatment development or to be used consecutively. The skilled person thus immediately understands the iris camera to be an option in any of the systems for determining refractive aberrations of an eye comprising more than one measurement tool or employing consecutive measurements. Consequently, the subject-matter of dependent claim 3 finds basis in the application as originally filed.

3. Auxiliary request 3

3.1 Admissibility

Claim 1 of Auxiliary request 3 is based on claim 1 of Auxiliary request 4 as debated before the Opposition Division and discussed in the impugned decision, with the subject-matter further restricted by the development of a course of refractive treatment being based on the corneal topography data and the modification of the treatment being based on wavefront aberration data. The claim is thus restricted to one of the two possibilities claimed in the independent claim of an already admitted request, an amendment which is of low complexity. Moreover, it was submitted a month before the oral proceedings before the Board of Appeal, a time interval which with respect to the amendments made in the present case is considered sufficient for the respondents to prepare their counter-arguments. Consequently, the Board exercised its discretion under Article 13(1) RPBA to admit Auxiliary request 3 in the proceedings.

3.2 Article 123(2) EPC

Claim 1 of Auxiliary request 3 includes the subject-matter of dependent claims 7 and 9 as granted. It thus cannot be considered originally disclosed for the same reasons as detailed in point 2.3 above.

4. Auxiliary request 4

4.1 Admissibility

Auxiliary request 4 corresponds to Auxiliary request 3 as filed with the grounds of appeal (Auxiliary request 2 as discussed in the impugned decision), wherein the subject-matter of dependent claims 7-9 as granted has been deleted from the independent and the dependent claims. In view of the Board's finding that dependent claims 7-9 as granted made the patent objectionable under Article 100(c) EPC, the deletion of the subject-matter of these claims is considered an appropriate and straightforward reaction to the course of the proceedings. Therefore, Auxiliary request 4 was admitted into the proceedings.

4.2 Article 123(2)

As discussed in point 2.3. above, the subject-matter defined by the combination of claims 1 and 3 as granted is considered originally disclosed.

4.3 Novelty

Applying the claim interpretation developed in point 2.1 above, document C1 discloses (in particular in Figure 16):



A system for determining refractive aberrations of an eye, comprising:

a corneal topography tool (No. 1603, 1608) adapted to provide corneal topography data of the eye;  
a wavefront aberration tool (No. 1609, see also page 16, line 14 - page 17, line 9) adapted to provide wavefront aberration data of the eye; and  
a computational unit (No. 1615-1617) adapted to receive the corneal topography data and the wavefront aberration data (see the arrows between Nos. 1607-1609 and No. 1615).

A course of refractive ablation treatment, i.e. a delta in corneal shape (see No. 1618) is developed based among others on wavefront aberration data (No. 1609).

This course of refractive treatment is modified, on the one hand, in an iterative procedure (page 31, line 10-16) - which is not excluded by the wording of the claim - after a first treatment has been applied, the modification being based among others on corneal topography data (Nos. 1608, 1607).

On the other hand, it is also modified - in the sense of a cross-check (similar to the cross-check at No. 588, discussed with respect to the embodiment shown in Figure 4b of the patent as granted) - in steps 1616 and 1617 of C1, Figure 16. Based on corneal topography data, a Finite Element Model is determined to perform thermal malaxation analysis ensuring that therapy is only applied if the constraints are respected.

Document C1 further discloses a camera (Figure 4, No. 406) which images moiré patterns on the eye in order to track eye movement in particular during laser treatment. Given the fact that the moiré patterns are

relatively coarse (see Figure 9, No. 908) compared to the fine structures of the iris used for iris image based alignment (see Figure 8 of the patent), there is no clear and unambiguous disclosure that the camera disclosed in C1 is indeed suitable to capture high resolution iris images which can be used for alignment of different data sets measured with respect to the eye.

The subject-matter of claim 1 of Auxiliary request 4 is therefore novel.

#### 4.4 Inventive step

Document C1 uncontestedly represents the closest prior art.

As discussed in point 4.3 the subject-matter of claim 1 differs from the disclosure of C1 in that a camera is provided which is adapted to capture an image of an iris of the eye that is (suitable) to (be) used for alignment of the wavefront aberration data with the corneal topography data.

However, also in the C1 system, the data measured before (and the treatment plan derived thereof) and after treatment need to be compared in order to decide whether the therapy was successful ("pass") or whether a further run through the closed loop cycle is required (C1, page 31, lines 6-16). During laser therapy, the location of the eye is surveyed in real time by the moiré based eye tracking algorithm (C1, page 31, lines 2-7) in order to guarantee alignment of the thermal therapy to be applied with the desired corneal shape and the finite element model derived. Immediately thereafter ("Upon gimbaling completion...") the

optical characteristics of the eyes are again measured and it is decided whether the therapy was successful or not. In this context, it is considered implicit that the eye tracking algorithm - which had continuously been applied to guarantee alignment between the treatment plan/model and the actual treatment during the treatment - is also used to guarantee alignment of the pre-operative measurements (from which the treatment plan and the FE model were derived and which are therefore in the same coordinate system) with the post-operatively determined optical characteristics of the eye.

Hence, the problem to be solved is to provide an alternative tracking technique to determine alignment of the (measurement) data taken at different points in time.

Document C38 teaches that eye movements may also be precisely determined by analyzing camera images of in particular the pupil, the iris, the sclera and the blood vessels on the sclera (column 2, lines 15-22). The person skilled in the art would thus consider tracking based on these images (which include iris images) an alternative to the moiré based tracking, the technique implying the use of a camera adapted to capture an image of an iris of the eye that is suitable for alignment of the wavefront aberration data with the corneal topography data as well as a corresponding modification of the computational unit.

Even if one followed the appellant's argument that the moiré pattern based eye tracking was only used during therapy and that it did not qualify as alignment determination mechanism, this would only result in the technical problem being reformulated as to provide

means which make it possible to determine how the treatment has affected the measurements.

Document C32 teaches (abstract and e.g. column 1, line 17-28) that in order to determine how much a treatment has affected the measurements (i.e. in order to evaluate the effect of the treatment), eye alignment may be determined by comparing a combined iris/retinal image at the present time (e.g. post-treatment) with a stored iris/retinal image at a past time (e.g. pre-treatment). Analogously, the person skilled in the art would find it obvious to employ iris/retinal image based alignment as known from C32 in order to guarantee alignment of the pre- and post-treatment data. Again, this implies the provision of a camera adapted to capture an image of an iris of the eye (the claim does not exclude that retinal images are equally used) that is suitable for alignment of the wavefront aberration data with the corneal topography data as well as a corresponding modification of the computational unit.

Thus, the subject-matter of claim 1 of Auxiliary request 4 is obvious and does not involve an inventive step.

5. Auxiliary request 5

5.1 Admissibility

Auxiliary request 5 corresponds to Auxiliary request 3 treated before the Opposition Division, wherein furthermore the subject-matter of dependent claims 7-9 as granted has been deleted from the independent and the dependent claims. The Opposition Division had not admitted the request (which at that time still included the subject-matter of dependent claims 7-9 as granted)

into the proceedings making use of its discretionary power under Article 114(2) EPC.

A Board of Appeal should only overrule the way in which a department of first instance has exercised its discretion if the Board concludes it has done so according to the wrong principles, or without taking into account the right principles, or in an unreasonable way (G7/93, OJ 1994, 775).

The Opposition Division was of the opinion that the request was inadmissible, as it had been filed after the Rule 116(2) EPC time limit, was based on features taken from the description and aimed at reformulating a non-limiting claim feature because of an interpretation of the feature which could not have been surprising to the appellant (point 2.4.2. of the impugned decision).

Rule 116(2) in combination with Rule 116(1) EPC, last sentence gives the Opposition Division the discretionary power to disregard amendments if, as in the present case, the subject of the proceedings has not changed. Basing an amendment on the description at such a late point in time is difficult to foresee and thus disadvantageous to the other parties. The Opposition Division thus used a correct criterion in a reasonable way.

Under these circumstances the Board saw no reason to overrule the decision of the Opposition Division and did not admit Auxiliary request 5 into the proceedings.

6. Auxiliary requests 6-11

6.1 Admissibility

Auxiliary requests 6 to 10 were filed together with the grounds of appeal. Auxiliary request 11 was filed during the oral proceedings before the Board. By virtue of Article 12(4) and Article 13(1) RPBA, their admission into the proceedings thus remains at the discretion of the Board.

Respective Claim 1 of Auxiliary requests 6 to 11 comprises the feature that the cornea topography data of the eye are at **one resolution** and the wavefront aberration data of the eye are **at another resolution**.

In support of this feature the appellant has pointed to page 33, lines 29 to 32, stating that various types of refractive data from various sources can be employed in developing a course of treatment, these data typically being provided at **varying resolutions**.

However, whereas this statement relates to "various sources", including ultrasound, slit-scanning or optical coherence topography techniques, the disclosure of the application as originally filed is much more specific with respect to the particular resolution of the corneal topography data and the wave front sensor data: In this regard, on page 33, lines 30 to 33, it is explicitly stated that the corneal topography data from the corneal topography system generally will have a **higher resolution** than the wavefront sensor data. The claim amendment, which defines the resolution of these two types of data to be "different", is thus an intermediate generalization contrary to the requirements of Article 123(2) EPC.

Auxiliary requests 6 to 11 are therefore *prima facie* not allowable. Hence, the Board exercises its discretion such as to not admit them into the proceedings.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:



V. Commare

T. Kriner

Decision electronically authenticated