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**Datasheet for the decision  
of 24 February 2021**

**Case Number:** T 1895/19 - 3.5.03

**Application Number:** 03720029.2

**Publication Number:** 1532841

**IPC:** H04R25/00

**Language of the proceedings:** EN

**Title of invention:**

Programmable auditory prosthesis with trainable automatic adaptation to acoustic conditions

**Applicant:**

Sivantos Pte. Ltd.

**Headword:**

Automatic parameter adaptation in a hearing aid/SIVANTOS

**Relevant legal provisions:**

EPC Art. 123(2)

**Keyword:**

Added subject-matter - main and auxiliary requests (yes):  
unallowable intermediate generalisation



**Beschwerdekammern**

**Boards of Appeal**

**Chambres de recours**

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Case Number: T 1895/19 - 3.5.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.03**  
**of 24 February 2021**

**Appellant:** Sivantos Pte. Ltd.  
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**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 4 December 2018  
refusing European patent application  
No. 03720029.2 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chair** K. Bengi-Akyürek  
**Members:** K. Peirs  
R. Winkelhofer

## Summary of Facts and Submissions

- I. The appeal is against the decision of the examining division refusing the present European patent application, *inter alia*, for added subject-matter (Article 123(2) EPC).
- II. Oral proceedings before the board were held on 24 February 2021 by videoconference.
- III. The appellant requests that the decision under appeal be set aside and that a patent be granted according to the claims of a **main request**, or, in the alternative, **an auxiliary request**. Both requests were filed for the first time on appeal.

At the end of the oral proceedings, the board's decision was announced.

- IV. Claim 1 of the **main request** reads as follows:

"An auditory prosthesis (30) comprising:  
a microphone (27) configured to receive sound and to produce a microphone output signal corresponding to the received sound;  
a sound processor (33) configured to process the microphone signal using a set of variable processing factors, each having a value, to produce an output signal;  
a data memory means;  
a user control means (36); and  
an output device configured to output the output signal to provide audio signals in a form receivable by a user of the prosthesis;  
characterised in that the prosthesis (30)

further comprises a sound analyser (37) configured to process the microphone signal to output a data set representative of an acoustic environment of the prosthesis (30); and

is configured to operate in:

a first mode in which the prosthesis is configured to provide the user with the ability to adjust, using the user control means, the value of at least one of the variable processing factors of the set and configured for the user to select an adjusted value according to a preference of the user for characteristics of each of a plurality of acoustic environments;

wherein the user-selected, adjusted value for the at least one variable processing factor preferred by the user for each of the plurality of acoustic environments and data indicative of the characteristics of each of the plurality of acoustic environments are stored in the data memory means;

and wherein the stored value of the at least one variable processing factor is indexed with a data set of the stored data indicative of the characteristics of each of the plurality of acoustic environments;

further characterised in that the prosthesis is configured to operate in:

a second mode in which the prosthesis is configured to process the microphone signal for a current acoustic environment, wherein the prosthesis is configured to:

provide, from the sound analyser (37), a data set representative of a current acoustic environment of the prosthesis (30);

select a value of the at least one variable processing factor for the current acoustic environment, based on the data set representative of the current

acoustic environment and the plurality of user-selected adjusted values stored in the data memory means for each of the data sets indicative of the characteristics of each of the plurality of acoustic environments of the first mode; and

process the microphone signal based on the selected value of the at least one variable processing factor to produce the output signal."

V. Claim 1 of the **auxiliary request** reads as follows (amendments vis-à-vis claim 1 of the main request indicated by the board):

"An auditory prosthesis (30) comprising:

a microphone (27) configured to receive sound and to produce a microphone output signal corresponding to the received sound;

a sound processor (33) configured to process the microphone signal using a set of variable processing factors, each having a value, to produce an output signal;

a data memory means;

a user control means (36); and

an output device configured to output the output signal to provide audio signals in a form receivable by a user of the prosthesis;

characterised in that the prosthesis (30) further comprises a sound analyser (37) configured to process the microphone signal to output a data set representative of an acoustic environment of the prosthesis (30); and

is configured to operate in:

a first mode in which the prosthesis is configured to provide the user with the ability to adjust, using the user control means, the value of at least one of the variable processing factors of the set

and configured for the user to select an adjusted value according to a preference of the user for characteristics of each of a plurality of acoustic environments;

wherein the user-selected, adjusted value for the at least one variable processing factor preferred by the user for each of the plurality of acoustic environments and data indicative of the characteristics of each of the plurality of acoustic environments are stored in the data memory means;

and wherein the stored value of the at least one variable processing factor is indexed with a data set of the stored data indicative of the characteristics of each of the plurality of acoustic environments;

further characterised in that the prosthesis is configured to operate in:

a second mode in which the prosthesis is configured to process the microphone signal for a current acoustic environment, wherein the prosthesis is configured to:

provide, from the sound analyser (37), a data set representative of a current acoustic environment of the prosthesis (30);

calculate, by means of analysis of the indexed user-selected adjusted values for the at least one variable processing factor corresponding to the data indicative of the characteristics of each of the plurality of acoustic environments of the first mode, coefficients of one or more equations used to predict an optimal setting of at least one variable processing factor of the sound processor for the current acoustic environment ~~select a value of the at least one variable processing factor for the current acoustic environment, based on the data set representative of the current acoustic environment and the plurality of user-selected~~

~~adjusted values stored in the data memory means for each of the data sets indicative of the characteristics of each of the plurality of acoustic environments of the first mode; and~~

process the microphone signal based on the selected value predicted optimal setting of the at least one variable processing factor to produce the output signal."

## **Reasons for the Decision**

### 1. *The present application*

The invention concerns a hearing prosthesis that can automatically adapt to changes in the listening environment. To do so, the hearing prosthesis comprises a **sound analyser** to classify the prevailing listening environment and a **sound processor** which can operate in two modes:

- a first mode in which the user can adjust settings of the hearing prosthesis;
- a second mode in which appropriate settings are calculated based on the classification by the sound analyser and the settings as adjusted by the user in the first mode.

### 2. *Main request: claim 1 - features*

Claim 1 of the **main request** comprises the following limiting features (with the board's labelling):

- (a) An auditory prosthesis comprising:

- (b) a microphone configured to receive sound and to produce a microphone output signal corresponding to the received sound;
- (c) a sound processor configured to process the microphone signal using a set of variable processing factors, each having a value, to produce an output signal;
- (d) a data memory means;
- (e) a user control means;
- (f) an output device configured to output the output signal to provide audio signals in a form receivable by a user of the prosthesis;  
wherein
- (g) the prosthesis further comprises a sound analyser configured to process the microphone signal to output a data set representative of an acoustic environment of the prosthesis;
- (h) [where the prosthesis] is configured to operate in:  
a first mode in which the prosthesis is configured to provide the user with the ability to adjust, using the user control means, the value of at least one of the variable processing factors of the set and configured for the user to select an adjusted value according to a preference of the user for characteristics of each of a plurality of acoustic environments;
- (i) wherein the user-selected, adjusted value for the at least one variable processing factor preferred by the user for each of the plurality of acoustic environments and data indicative of the characteristics of each of the plurality of acoustic environments are stored in the data memory means;
- (j) wherein the stored value of the at least one variable processing factor is indexed with a data set of the stored data indicative of the



characteristics of each of the plurality of acoustic environments;

- (k) where the prosthesis is further configured to operate in: a second mode in which the prosthesis is configured to process the microphone signal for a current acoustic environment, wherein the prosthesis is configured to:
  - (i) provide, from the sound analyser, a data set representative of a current acoustic environment of the prosthesis;
  - (ii) select a value of the at least one variable processing factor for the current acoustic environment, based on the data set representative of the current acoustic environment and the plurality of user-selected adjusted values stored in the data memory means for each of the data sets indicative of the characteristics of each of the plurality of acoustic environments of the first mode;
  - (iii) process the microphone signal based on the selected value of the at least one variable processing factor to produce the output signal.

3. *Main request: claim 1 - added subject-matter*

3.1 Claim 1 of the **main request** appears to be based on original claims 1 and 5 and on parts of the description of the present application as filed (henceforth, "description").

3.2 The appellant refers in view of the objections raised in the decision under appeal concerning added subject-matter to a combination of embodiments stemming from the *general* part of the description.

To verify compliance with Article 123(2) EPC, it must be ascertained, based on the application as a whole, in particular the *detailed* part of the description starting from page 20, whether or not the skilled reader would have had a direct and unambiguous indication in the original disclosure for such a combination.

3.3 In the present case, however, claim 1 of the main request contains added subject-matter extending beyond the content of the application as filed at least because of a two-fold unallowable intermediate generalisation, namely in **features (c)** and **(g)**.

3.3.1 In particular, the "sound processor" of **feature (c)** may have been based on the "sound processing means" of original claim 1 or "sound processing unit 33" of the description.

However, in present claim 1, the following aspects, which a skilled reader would have considered to be inextricably linked to this sound processing means or this sound processing unit, have been omitted:

3.3.1.1 First, it is immediately apparent from original claim 1 that the sound processing means is operable in a particular *first mode* and, *simultaneously*, in a particular *second mode*. Likewise, the description on page 21, line 16 to page 23, line 23 specifies a *first* and a *second mode* only in the context of sound processing unit 33.

By contrast, present claim 1 imposes no such restrictions on the sound processor of feature (c): it only specifies a first and second mode in the more

general context of the prosthesis. It is not apparent from the original disclosure that the operation in such a first and second mode could have been performed by a component of the prosthesis *other* than the sound processing means/unit.

3.3.1.2 Moreover, the "sound processing means" of original claim 1 and "sound processing unit 33" of page 21, lines 16 to 19 of the description both produce an output signal to operate an output device.

In present claim 1, however, the output signal of the sound processor produced by virtue of feature (c) is not provided to the output device of feature (f). Instead, as can be derived from feature (k)<sub>(iii)</sub>, additional processing is required by the prosthesis to provide the output signal.

3.3.1.3 The "sound processor" of feature (c) therefore represents an unallowable intermediate generalisation of the "sound processing means" of original claim 1 or "sound processing unit 33" of the description in that

- it no longer (simultaneously) operates in a first and second mode and
- it performs only a subset of the originally disclosed processing steps to produce the output signal.

3.3.2 Moreover, the "sound analyser" of **feature (g)** may be regarded as being based on page 23, lines 25 to 29 of the description, but the following aspects have been dispensed with, despite being inextricably linked to the sound analyser as originally disclosed.

3.3.2.1 First, from page 23, lines 25 to 29 of the description, it is immediately apparent that the sound analyser *monitors* the acoustic environment of the prosthesis, implying a *systematic* review, whereas the sound analyser of **feature (g)** merely *processes* the microphone signal to output a data set representative of an acoustic environment *at a certain point in time*.

This is consistent with the sound analyser of present claim 1 providing a data set for a *current* acoustic environment when the prosthesis is in the second mode, as apparent from **feature (k)<sub>(i)</sub>**: present claim 1 does not specify that this data set must be produced *systematically or continuously* over a period of time. Rather, it could be produced only *once*, e.g. when activating the second mode.

3.3.2.2 Also, from line 23 of page 24 of the description and Figure 2 as filed, it is immediately apparent that the original sound analyser provides an output to data processing unit 38. This data processing unit uses, as set out on page 24, line 23 to page 30, line 5 of the description, data from data memory locations 34a to 34e to estimate the optimal sound processing operation of sound processor 33.

The skilled reader would therefore have understood immediately that data processing unit 38 is instrumental in defining the functional relationship between

- the "sound processor" of feature (c);
- the "data memory means" of feature (d);
- the "sound analyser" of feature (g).

Nevertheless, present claim 1 is silent about data

processing unit 38. Instead, the sound analyser of feature (g) only has a connection to the prosthesis as a whole (rather than to the sound processor, the data memory means and data processing unit 38), as apparent from feature (g) itself or the expression "data set representative of [a/the] current acoustic environment" of **features (k)<sub>(i)</sub> and (k)<sub>(ii)</sub>**.

3.3.2.3 The "sound analyser" of feature (g) therefore also constitutes an unallowable intermediate generalisation of the "sound analyser" as originally disclosed in that

- it does not need to be active over a period of time; and
- it has no functional relationship *whatsoever* (particularly not via a data processing unit such as data processing unit 38) with the claimed "sound processor" and "data memory means".

3.4 The appellant did not provide any further comments on the above issues during the oral proceedings before the board.

3.5 In conclusion, claim 1 of the main request does not comply with Article 123(2) EPC.

4. *Auxiliary request: claim 1 - added subject-matter*

4.1 Claim 1 of the **auxiliary request** differs from claim 1 of the main request in that feature (k)<sub>(ii)</sub> is replaced by

- (1) calculate, by means of analysis of the indexed user-selected adjusted values for the at least one variable processing factor corresponding to the data indicative of the characteristics of each of

the plurality of acoustic environments of the first mode, coefficients of one or more equations used to predict an optimal setting of at least one variable processing factor of the sound processor for the current acoustic environment,

and in that, in feature (k)<sub>(iii)</sub>, the expression "selected value" is replaced by the term "predicted optimal setting".

4.2 These amendments do not remedy the deficiencies set out above for claim 1 of the main request.

4.3 As a consequence, claim 1 of the auxiliary request does not comply with Article 123(2) EPC either.

## Order

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

The appeal is dismissed.

The Registrar:

The Chair:



B. Brückner

K. Bengi-Akyürek

Decision electronically authenticated