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Datasheet for the decision of 9 April 2025

Case Number: T 0556/24 - 3.5.07

Application Number: 17758252.5

Publication Number: 3497587

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Language of the proceedings: EN

Title of invention:
Audio matching

Applicant:
Intrasonics S.A.R.L.

Headword:
Audio matching/INTRASONICS

Relevant legal provisions:
EPC Art. 84
RPBA 2020 Art. 11

Keyword:
first auxiliary request, lack of essential features (no)
substantial procedural violation (no)
remittal to the examining division for further prosecution (Article 11 RPBA)
Reimbursement of appeal fee - (no)

Decisions cited:
G 0001/04, T 0888/07

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Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0

Case Number: T 0556/24 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 9 April 2025

Appellant: (Applicant)	Intrasonics S.A.R.L. 12-14 Rue Léon Thyes 2636 Luxembourg (LU)
Representative:	MacDougall, Alan John Shaw Mathys & Squire The Shard 32 London Bridge Street London SE1 9SG (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 30 October 2023 refusing European patent application No. 17758252.5 pursuant to Article 97(2) EPC**

Composition of the Board:

Chair	M. Jaedicke
Members:	C. Barel-Faucheux
	E. Mille

Summary of Facts and Submissions

I. The appellant (applicant) appealed against the examining division's decision refusing European patent application No. 17 758 252.5, published as international application number WO 2018/033696 A1.

II. The examining division cited, *inter alia*, the following documents:

D6: J. Herre et al., "Scalable Robust Audio Fingerprinting Using MPEG-7 Content Description", 2002, pages 165 to 168;

D7: "ISO/IEC CD 15938-4, Information Technology - Multimedia Content Description Interface - Part 4: Audio", ISO/IEC JTC 1/SC 29/WG 11, 14 March 2001, pages 1 to 115.

III. The examining division decided that independent claim 1 of the main request and of the first to second auxiliary requests did not meet the requirement of Article 84 EPC, taken in combination with Rule 43(1) and (3) EPC, that any independent claim had to contain all the technical features essential to the definition of the invention. The second auxiliary request had been filed during the oral proceedings, as had the third and fourth auxiliary requests. The examining division did not admit the third and fourth auxiliary requests into the proceedings since these requests were *prima facie* not allowable. The reason was that the objection under Article 84 EPC, taken in combination with Rule 43(1) and (3) EPC, which was raised against the second

auxiliary request, also applied to the third and fourth auxiliary requests.

The board notes that the third and fourth auxiliary requests, even though not admitted into the procedure by the examining division, were not annexed to the minutes of the oral proceedings before the examining division. This is unfortunate.

In an *Obiter Dictum*, the examining division stated that the subject-matter of claims 1 and 11 to 13 of the main request did not meet the requirements of Article 84 EPC in that the matter for which protection was sought was not defined. The claims attempted to define the subject-matter in terms of the result to be achieved.

Moreover, the subject-matter of claims 1 and 11 to 14 of the main request lacked an inventive step within the meaning of Article 56 EPC because the claims did not give rise over their full scope to a technical effect, thus not solving any technical problem, or making any technical contribution to the art, over their full scope.

In addition, the subject-matter of claims 1 and 11 to 14 of the main request lacked an inventive step over the disclosure of document D6 in combination with the disclosure of document D7.

Regarding the first auxiliary request, the amendments to claims 6 and 7 filed with the letter dated 11 August 2023 inserted subject-matter which extended beyond the content of the application as filed, contrary to the requirements of Article 123(2) EPC.

Claim 1 of the first auxiliary request did not meet the requirements of Article 84 EPC in that the matter for which protection was sought was not defined. The claims attempted to define the subject-matter in terms of the result to be achieved. Claim 1 of the first auxiliary request was not supported by the description as required by Article 84 EPC as its scope was broader than justified by the description and drawings. Claim 13 of the first auxiliary request was different in scope from claim 1 of the first auxiliary request regarding the algorithmic steps, and this rendered the claim set as a whole unclear as to the essential features of the invention. The objection under Articles 52(1) and 56 EPC, raised against the independent claims of the main request (in the *Obiter Dictum*), applied in the same way to claims 1, 10, 11, 13 and 14 of the first auxiliary request.

IV. With the statement of grounds of appeal, the appellant requested that the case be remitted to the first-instance department due to an alleged "substantive procedural violation in respect of not allowing deferment of the proceedings to allow the applicant time to adduce evidence to counter arguments made for the first time at the Oral Proceedings" before the examining division. If a remittal was not granted, it requested that the decision under appeal be set aside and that a patent be granted in accordance with the main request or one of the first to third auxiliary requests submitted with the statement of grounds of appeal.

The main request corresponded to the main request of the decision under appeal and, according to the appellant, the first auxiliary request corresponded to the second auxiliary request of the decision under

appeal. The second and third auxiliary requests were filed for the first time in the appeal proceedings to address objections in the decision under appeal.

A statutory declaration filed with the statement of grounds of appeal and made by Koen Schalkwijk, a scientist working for the appellant, described experiments that the appellant had carried out in support of its appeal case.

V. In a communication, the board preliminarily considered document D6 the closest prior art to the subject-matter of claim 1 of the main request and identified the features that distinguished the claimed invention from this prior art.

The board was of the preliminary opinion that the specific ordering performed to generate the fine query fingerprint was an essential feature for the subject-matter of claim 1 of the main request (Article 84 EPC).

Regarding the subject-matter of claim 1 of the first auxiliary request, requiring that the respective filter coefficients or how they were derived be stipulated in the claim was, in the board's view, not necessary for compliance with Article 84 EPC.

The board was of the preliminary opinion that the skilled person would not arrive at the subject-matter of claim 1 of the first auxiliary request when combining document D6 with document D7. But the board intended to remit the case to the examining division for further prosecution (Article 11 RPBA).

The board was of the preliminary opinion that the substantive procedural violation alleged by the appellant had not occurred.

VI. In a reply to the board's communication, the appellant stated that it withdrew its "[a]ppeal in respect of the claims of the Main Request" and agreed "to the Board's proposal to remit the case for further prosecution on the basis of the first auxiliary request".

The board considers this statement as a withdrawal of the main request. This decision will therefore deal with the first auxiliary request as the appellant's highest-ranking request.

VII. In view of the appellant's reply, the oral proceedings were cancelled.

VIII. Claim 1 of the first auxiliary request reads as follows (itemisation of the features added by the board):

"An audio matching system comprising:

A means for capturing an audio signal;

B means for processing the captured audio signal to generate a two-dimensional spectrogram representing a frequency content of the captured audio signal in a plurality of frequency sub-bands at successive time points within the captured audio signal;

C means for processing the spectrogram to generate a fine query acoustic fingerprint representative of the captured audio signal, the fine query acoustic fingerprint comprising a two-dimensional array of values representing content of the captured audio signal at a first number of bits per second of captured audio signal;

D means for generating a coarse query acoustic fingerprint representative of the captured audio signal, the coarse query acoustic fingerprint comprising a two-dimensional array of values representing the content of the captured audio signal at a second number of bits per second of captured audio signal that is less than the first number of bits per second of captured audio signal;

E an audio database comprising a plurality of database entries, each entry being associated with audio content, and each entry comprising:

E1 i) a fine database acoustic fingerprint representative of the associated audio content;
ii) information relating to the associated audio content;

F means for matching the coarse query acoustic fingerprint with coarse database acoustic fingerprints associated with said plurality of database entries to identify a subset of possibly matching database entries;

G means for matching the fine query acoustic fingerprint with the fine database acoustic fingerprints of the database entries in said subset of possibly matching database entries to identify a matching database entry; and

H means for outputting a matching response comprising said information of the identified matching database entry;

G1 wherein the means for generating the fine query acoustic fingerprint is configured to generate the fine query acoustic fingerprint from the spectrogram by applying a first set of different filters to the spectrogram by, for each filter in the first set of different filters, applying the filter to a plurality of temporally adjacent portions of the spectrogram, each portion comprising spectrogram values from at least one frequency sub-band in one or more adjacent time points, to generate a corresponding plurality of values that form a row or column of the two-dimensional fine query acoustic fingerprint;

G2 wherein each filter of the first set of different filters comprises a plurality of filter coefficients and wherein the means for generating the fine query acoustic fingerprint is configured to apply each filter to a portion of the spectrogram by weighting each spectrogram value of the portion with a respective filter coefficient and by combining the weighted values to generate the value of the fine query acoustic fingerprint;

G3 wherein the means for generating the fine query acoustic fingerprint is configured to order the rows or columns of the fine query acoustic fingerprint that are generated by applying the first set of filters to the spectrogram so that similar rows or columns are adjacent to each other;

I wherein the means for generating the coarse query acoustic fingerprint is configured to generate the coarse query acoustic fingerprint from the fine query acoustic fingerprint by applying a second set of different filters to the fine query acoustic fingerprint by, for each filter of the second set of different filters, applying the filter to a plurality of temporally adjacent portions of the two-dimensional fine query acoustic fingerprint, to generate a corresponding plurality of values that form a row or column of the two-dimensional coarse query acoustic fingerprint;

J wherein each filter of the second set of different filters comprises a plurality of filter coefficients and wherein the means for generating the coarse query acoustic fingerprint is configured to apply each filter to a portion of the fine query acoustic fingerprint by weighting each value of the portion of the fine query acoustic fingerprint with a respective filter coefficient and by combining the weighted values to generate the value of the coarse query acoustic fingerprint."

Reasons for the Decision

The application

1. The application relates to audio matching systems in which a portable user device, such as a computer tablet or a cellular telephone, can capture sounds which can be identified by a matching process (description as originally filed, page 1, lines 2 to 6). It also relates to a technique for generating audio fingerprints that are robust to noise and other interference and that make it easier to distinguish between fingerprints of different audio samples (description as originally filed, page 2, lines 1 to 3).

2. In the statement of grounds of appeal, the appellant summarised the invention as follows:
"The audio matching system has a database of entries, each entry being associated with audio content. Each entry includes a fine database acoustic fingerprint as well as some information related to the associated audio content. The purpose of the system is to identify a matching entry in the database from an input audio query. Typically, the process would involve generating a fine query acoustic fingerprint which is then matched with the fine database fingerprints. However, this is very time consuming and processing intensive. It has been proposed, therefore, to generate lower resolution coarse fingerprints for the database entries and the input query and to compare these first to reduce the number of fine fingerprints that need to be compared to find a match – thereby reducing the time and processing required to find a match."

The invention generates the coarse fingerprints by applying a set of filters to the fine fingerprints.

Admissibility of the first auxiliary request

3. According to the appellant, the claims of the first auxiliary request correspond to the claims of the second auxiliary request filed at the oral proceedings in response to the communication from the examining division on 7 September 2023.

4. While it is unfortunate that the second auxiliary request filed at the oral proceedings was annexed neither to the minutes of the oral proceedings nor to the decision, the board accepts the appellant's statement that the claims of the first auxiliary request correspond to the claims of the second auxiliary request filed at the oral proceedings. Since the second auxiliary request filed at the oral proceedings was admitted by the examining division, the current first auxiliary request is in the appeal proceedings (Article 12 (1) and (2) RPBA).

Basis for the first auxiliary request

5. During the oral proceedings before the examining division, the representative provided support for the amendments as follows: the ordering feature was based on claim 17 as originally filed, additional basis was found in original claims 2 to 8 for the fine fingerprint and 9 to 16, 18 and 19 for the coarse fingerprint.

6. The board further notes that dependent claim 17 as originally filed specified that "the means for

generating the fine query acoustic fingerprint is configured to order the rows or columns of the fine query acoustic fingerprint that are generated by applying the set of filters to the spectrogram so that similar rows or columns are adjacent to each other", while dependent claim 18 as originally filed specified that "the means for generating the fine query acoustic fingerprint is configured to order the rows or columns of the fine query acoustic fingerprint in order to increase coherence between neighbouring rows or columns of the fine query acoustic fingerprint" (emphasis by the board).

7. This ordering present in feature G3 of claim 1 of the first auxiliary request therefore has a basis in the application as originally filed.

Clarity of the first auxiliary request

8. The examining division stated in its decision that it was clear from the passage of the description as originally filed, on page 19, lines 27 to 41, that the following feature was essential to the definition of the invention:
"the specific ordering performed to generate the fine query fingerprint"

9. Since this ordering is present in feature G3 of claim 1 of the (current) first auxiliary request, this objection does not apply to claim 1 of the first auxiliary request.

10. The board notes that the statutory declaration filed with the statement of grounds of appeal described the experiments that Mr Schalkwijk had carried out for the appellant. Mr Schalkwijk had run various experiments.

10.1 In the first experiment, the fine fingerprints were the usual ones used by the appellant in its audio matching system – and therefore the fine fingerprints were ordered using the ordering feature in the way reflected in feature G3.

In this first experiment, Mr Schalkwijk used three different sets of randomly chosen filters to filter the fine fingerprints to generate coarse fingerprints that he used to compare against coarse database fingerprints obtained in the same way. The results of the first experiment showed that with all three sets of randomly chosen filters, there was an improvement in terms of (1) the time taken to compare the 750 coarse query fingerprints for 750 input audio queries with the 12 000 coarse database fingerprints to identify possible matches and then compare the fine query fingerprints and fine database fingerprints for the possible matches found from the coarse search to identify the best match in the database for a given input audio query in comparison with (2) the time of the worst case scenario, that is the time taken to perform a comparison of a fine query fingerprint with all the fine database fingerprints.

10.2 In the second experiment, Mr Schalkwijk used fine fingerprints that were not ordered in the way reflected in feature G3, and he then used the same three sets of randomly chosen filters as in the first experiment to generate the coarse fingerprints. The results showed that the invention still worked and indeed for two of the sets of filters the time taken in the second experiment was actually shorter compared with the time taken in the first experiment. Mr Schalkwijk considered that this was because these three randomly chosen sets

of filters were not good at retaining the information content within the fine fingerprints when they were ordered in the manner described in the patent specification and were better able to retain that information content when the information was more evenly distributed within the fine fingerprint (as they would be when the fine fingerprints were not ordered in the manner described).

10.3 In a third experiment, Mr Schalkwijk used the fine fingerprints used by another company in a similar audio matching system with the three randomly chosen sets of filters used in Experiment 1 and no ordering in the way reflected in feature G3 of the fine fingerprints. As could be seen from the results of the third experiment, even when third-party fine fingerprints were used as the source for generating the coarse fingerprints, the use of those coarse fingerprints resulted in a significant reduction in the time needed to find a matching database entry compared to the time taken by performing the database search using the fine fingerprints.

10.4 The board considers that the three experiments confirm the intuitive understanding of coarse and fine audio fingerprints as being coarse and fine approximations of the actual audio content that can be used for a coarse and fine filtering to identify potentially matching audio signals.

11. The board notes that, under the established case law of the boards, Article 84 EPC has to be interpreted as meaning not only that a claim must be comprehensible from a technical point of view, but also that it must define the object of the invention clearly, that is, indicate all its essential features. An independent

claim should explicitly specify all essential features needed to define the invention (G 1/04, Reasons 6.2).

All features necessary for solving the technical problem with which the application is concerned have to be regarded as essential features. The essential features should comprise those which distinguish the invention from the prior art (see Case Law of the Boards of Appeal of the EPO, 10th edn. 2022, section II.A.3.2). According to the board in T 888/07, if from the wording of an independent claim it must be concluded that a solution to the problem of the invention is achieved by not needing a step, whereas this very feature according to the description cannot be abolished but is necessary for a workable solution, this feature is to be considered an essential feature of the invention. An independent claim missing this feature is therefore neither clear nor supported by the description (Catchword, point 1, Reasons 3.2).

12. According to the description, the technical effect of the invention is to reduce the processing burden to find a matching entry in the database (description as originally filed, page 16, lines 10 to 12) by significantly reducing the number of database entries that have to be compared with the fine query acoustic fingerprint and the corresponding number of comparisons (description as originally filed, page 19, lines 27 to 30 and page 30, lines 38 to 41).

13. This technical effect is achieved in claim 1 of the first auxiliary request by the use of the coarse fingerprints derived from the fine fingerprints, which are generated, respectively, via the second set and first set of filters.

14. In its decision on the then pending second auxiliary request, which corresponds to the current first auxiliary request, the examining division stated that the definitions of the claimed first and second sets of different filters were essential to achieving the purpose and technical effect of the claimed invention of producing coarse (low resolution) fingerprints for audio matching. The configurations of the "first set of filters" and "second set of filters" were undefined in terms of the respective filter coefficients or how they were derived. The examining division was of the view that the feature space for the selection of filters was vast, reference being made to page 13 of the description, final paragraph, and page 23, lines 18 to 30. The use of optimisation in the description did not imply that all filters in the feature space were, to an extent, effective. The examining division was of the view that the coarse fingerprints had to have the property of being usable in coarse searching and that this was only achieved in the description by limitations on the filters employed in generating the fine, and subsequently the coarse, fingerprints.

15. The board notes that the description as originally filed, page 13, lines 35 to 37, reads: "There are many different possible filter combinations that can be used to generate a fingerprint and the first optimised set of filters has been found through an optimisation process."

Moreover, the description, page 23, lines 27 to 30, reads: "Taking all such limitations into account, the total number of possible filters (N_f) is
3x16x8x32 + 2x10x6x32 = 16,128 filters.
The training process described below allows an optimal set (combination) of filters 47 to be identified

without having to consider every possible combination ($16,128^{32} = 4x10^{134}$ combinations)."

16. In the board's view, the limitations on the filters of page 23, lines 18 to 27 or the training process to identify an optimal set of filters do not necessarily have to be specified in detail in the claim if the relevant details are given in the application as originally filed. Requiring that the respective filter coefficients or how they are derived be stipulated in the claim is, in the board's view, not necessary. The first set and the second set of filters could be optimised, if necessary, according to the optimisation processes presented in the description and figures as originally filed (see description as originally filed on page 6, lines 11 to 38, page 7, lines 7 to 31, page 23, line 32 to page 30, line 6 together with Figures 12a and 12b, page 30, line 8 to page 34, line 3 together with Figures 15a and 15b).

The board considers that the skilled person reading the application as filed would conclude that the invention seems to work for a wide range of possible first and second sets of filters. This seems to also be in line with the experimental data submitted by the appellant. It is clear from the wording of claim 1 that the first and second set of filters have the purpose of creating fine and coarse audio fingerprints, and the claim wording does not require any optimisation of the sets of filters beyond this claimed functionality. An optimisation of the sets of filters appears to have the aim of optimising the effect, but this is not a clarity issue. It is instead an issue that might be relevant for inventive step.

Consequently, the board does not consider the examining division's clarity objection against the second auxiliary request to be convincing. It follows that the decision under appeal is to be set aside.

Remittal for further prosecution

17. Since inventive step has not been decided for the current first auxiliary request but was dealt with in an *Obiter Dictum* in the decision under appeal and the primary object of the appeal proceedings is to review the decision under appeal (Article 12(2) RPBA), the board considers that there are special reasons for remitting the case (Article 11 RPBA) to the examining division for further prosecution.

Alleged substantial procedural violation

18. In the statement of grounds of appeal, the appellant requested that the case be remitted to the examining division due to an alleged substantial procedural violation for not allowing deferment of the proceedings to allow the appellant time to adduce evidence to counter arguments made for the first time at the oral proceedings before the examining division.

18.1 The appellant explained that in the summons to oral proceedings dated 6 April 2023, the examining division raised various clarity objections against claim 1 and some of the dependent claims and inventive-step objections based on newly cited documents D6 and D7. On 11 August 2023, the appellant filed a response to this summons maintaining the then pending independent claim 1 with some changes to the dependent claims as a main request. It also filed claims of a new first

auxiliary request that sought to address the clarity objections raised by the examining division in its summons.

18.2 On 7 September 2023, i.e. less than one week before the oral proceedings scheduled on 13 September 2023, the examining division issued a further communication raising new objections against the unamended independent claim 1 of the main request, including an objection that claim 1 lacked an essential feature and that the phrase "set of filters" in claim 1 was unclear. These objections applied to the claims on file prior to the summons – so they were not new objections resulting from the appellant's amendments filed in response to the summons.

18.3 During the course of the oral proceedings, it became clear to the appellant that the examining division was of the opinion that the invention would not work without:
i) the specific ordering described on page 19, lines 27 to 41
ii) either the specific filter coefficients used in the filters (i.e. the actual numerical values of these coefficients) or the details of the optimisation process used to select the optimum set of filters (see paragraph 2.1.1 of the decision)

18.4 The board notes that the examining division's summons contained the objection that the number or values of the coefficients or how the coefficients of the plurality of filters were to be defined in the context of the invention was not clear in claim 1 of the then pending sole request. Therefore, item ii) was not a new objection.

18.5 The board notes that item i) corresponds to the new objection raised by the examining division in its notification of 7 September 2023 (point 1).

18.6 The appellant stated in the statement of grounds of appeal that when it became clear to the appellant that the examining division considered that the invention did not work without the features of items i) and ii), the appellant asked for an adjournment to give it time to run experiments to show that the invention did work and that there was no basis for jumping to such a conclusion. The appellant stated that it was denied the opportunity to submit such evidence, and thus it was not given a proper opportunity to be heard on these new objections.

18.7 In view of this alleged substantive procedural violation, the appellant requested reimbursement of the appeal fee and a remittal of the case to the examining division so that it could properly consider the evidence filed with the statement of grounds of appeal.

18.8 The board notes that the representative argued, during the oral proceedings before the examining division, that coarse fingerprints reduced the number of fine fingerprints to be tested. Even if a coarse fingerprint did not reduce the number of tests, it did not defeat the purpose. The appellant offered to provide a simulation experiment to prove this. After resumption of the oral proceedings, the examining division's chairman presented the examining division's opinion that the discussed feature (i.e. the ordering) was essential according to page 19, last paragraph. The examining division did not doubt that some single instances of experiments would show a benefit, but the division doubted that there could be an exhaustive

experiment showing a benefit "over the whole range" of the claim (see minutes of the oral proceedings before the examining division, points 2 and 3).

18.9 The board notes that according to point 2 of the minutes of the oral proceedings, the appellant offered to provide a simulation experiment but did not expressly request an adjournment of the oral proceedings. The examining division did not decide on any request to adjourn the oral proceedings.

18.10 There is no request for adjournment mentioned in the minutes of the oral proceedings, and the appellant did not request that the examining division correct the minutes (see Case Law of the Boards of Appeal of the EPO, ibid., III.C.7.10.3 on the correction of minutes: "It is the boards' settled case law that parties and their representatives are expected to check minutes carefully as soon as they receive them, especially to ensure that nothing is missing and that they are accurate, and to point out any deficiency promptly, since the minutes are the only means of ascertaining what actually occurred during the oral proceedings at first instance"). Consequently, the examining division did not need to decide on any request to adjourn the oral proceedings. It follows that the substantive procedural violation alleged by the appellant did not occur.

18.11 Under Rule 103(1)(a) EPC, the appeal fee is to be reimbursed if the appeal is allowable and if such a

reimbursement is equitable by reason of a substantial procedural violation. Since no substantial procedural violation occurred, the requirements set out in Rule 103(1)(a) EPC for a reimbursement of the appeal fee are not fulfilled, and the appellant's request is to be refused.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The request for reimbursement of the appeal fee is refused.
3. The case is remitted to the department of first instance for further prosecution.

The Registrar: The Chair:

S. Lichtenvort M. Jaedicke

Decision electronically authenticated