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**D E C I S I O N**  
of 12 October 2001

**Case Number:** T 0492/00 - 3.5.1

**Application Number:** 88116181.4

**Publication Number:** 0310110

**IPC:** H04L 1/22

**Language of the proceedings:** EN

**Title of invention:**  
(1+N) hitless channel switching system

**Patentee:**  
NEC CORPORATION

**Opponent:**  
Siemens AG

**Headword:**  
Channel switching system/NEC

**Relevant legal provisions:**  
EPC Art. 56, 114(2)

**Keyword:**  
"Inventive step (no)"  
"Late filed document (admitted into the proceedings)"  
"Continuation of the proceedings in writing (no)"

**Decisions cited:**  
T 0633/97

**Catchword:**  
-



Case Number: T 0492/00 - 3.5.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.1  
of 12 October 2001

**Appellant:**  
(Proprietor of the patent)

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**Representative:**

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**Respondent:**  
(Opponent)

Siemens AG  
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**Representative:**

Heusler, Wolfgang, Dipl.-Ing.  
v. Bezold & Sozien  
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**Decision under appeal:**

Decision of the Opposition Division of the  
European Patent Office posted 7 March 2000  
revoking European patent No. 0 310 110 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** S. V. Steinbrener  
**Members:** R. S. Wibergh  
H. Preglau

## Summary of Facts and Submissions

- I. This is an appeal by the proprietor of European Patent No. 0 310 110 against the decision of the Opposition Division to revoke the patent.
  
- II. The respondent had opposed the patent on the grounds that the invention was not new or did not involve an inventive step having regard to the documents  
  
D1: EP-A-0 225 643 and  
  
D2: US-A-4 328 581.
  
- III. The Opposition Division held that the subject-matter of the invention according to the six requests then on file was not inventive over D1 in combination with D2. Reference was also made to a further document, filed by the patentee:  
  
D3: *W. W. Peterson et al.*, "Error-correcting codes", 2nd ed., Cambridge USA: MIT Press, 1984, 230-241.
  
- IV. In a communication pursuant to Article 11(2) of the Rules of Procedure of the Boards of Appeal the Board expressed the preliminary opinion that although it appeared questionable whether D1 and D2 could be combined, the skilled person may have arrived at the invention according to claim 1 of the requests on file from D1 alone by using his technical background knowledge.
  
- V. By letter dated 12 September 2001 the appellant filed new sets of claims according to a main request and auxiliary requests 1 to 3. Furthermore, pre-published and post-published circumstantial evidence was

submitted, in particular a company brochure intended to demonstrate the commercial success of the patented system was filed:

D7: "FRX Series SDH Digital Microwave Radio", by Fujitsu, 1997.

D7, which was published some ten years after the priority date of the patent in suit, contained information about a commercial system using "an early warning errorless switching system to continuously monitor errors ahead of error correction, so that the system can switch to protection before the user is aware of a propagation disturbance".

VI. Oral proceedings before the Board were held on 12 October 2001. The day before, the appellant had filed a non-prior art document:

D8: *A. Grazioli et al.*, "A concept for protection switching in SDH radio systems", 3rd ECRR, April 1991, Paris, 76-84.

D8, written by employees of a company belonging to the respondent corporation, mentioned a technique (see in particular page 78, left column, bottom) said to correspond to the invention of the patent in suit. The document was intended to show that even the respondent recognised the advantages of the present invention.

At the beginning of the oral proceedings the respondent asked that a further pre-published document be considered,

D9: *B. Baccetti et al.*, "New-generation modems for high capacity QAM radio systems", European Conference on Radio-Relay Systems ECRR, 4-7 November 1986, Munich, 344-351.

When asked by the Board the appellant declared that he would be able to study D9 at least provisionally at the oral proceedings and was given time to do so. He also filed claims according to a new auxiliary request 1, retaining the previous auxiliary requests 1 to 3 as auxiliary requests 2 to 4.

VII. Claim 1 according to the main request read as follows:

"A (1+N) ( $N \geq 1$ ) hitless channel switching system of a digital transmission system in which a transmitting side (100) is connected to a receiving side (200) through N regular channels and a single standby channel, comprising:

in said receiving side,

- a) means for detecting a bit error rate of each channel
- b) channel degradation determining means (3) for the regular channels; and
- c) switching means for switching the one regular channel where the degradation is detected to said standby channel characterised by
- d) means (2) for performing an error correction before said switching means; and
- e) wherein a degradation of the bit error rate is detected before the error correction takes place."

VIII. Claim 1 according to auxiliary request 1 differed from the main request in that feature d) read "means (2) for performing an error correction" and in that the following final feature was added: "whereby the system sufficiently follows the quality degradation speed of a propagation path".

IX. Claim 1 of auxiliary requests 2 and 3 was identical with claim 1 of the main request.

X. Claim 1 according to auxiliary request 4 was different from that of the main request in that the following additional feature was inserted between features d) and e): "wherein said detecting means is included in said error correcting means (2) which corrects a bit error and outputs an error correction control signal (G) representing the bit error rate to said channel degradation determining means".

XI. All five requests contained, in addition to claim 1, one or more independent claims also directed to a (1+N) hitless channel switching system of a digital transmission system. These claims were based on independent claim 2 as granted and included further limiting features.

XII. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request filed on 12 September 2001 or alternatively based on auxiliary request 1 submitted at the oral proceedings or alternatively based on the auxiliary requests 2 to 4 (corresponding to the former auxiliary requests 1 to 3 filed on 12 September 2001). As a further auxiliary request the appellant asked that the proceedings be continued in writing.

The appellant furthermore asked the Board to indicate whether another independent claim might be allowable in case claim 1 of the various requests was not.

XIII. The respondent requested that the appeal be dismissed.

XIV. At the end of the oral proceedings the Chairman announced the Board's decision.

## Reasons for the Decision

### *The appellant's main request*

1. The invention concerns a digital communication system in which a signal can be switched from a fading channel to a back-up channel. Fading is recognised as an increase in the detected bit error rate (BER). To increase data integrity, error correction is used. The receiver comprises error detection means, error correction means, and switching means for switching between a regular channel and a stand-by channel, in this order.
  
2. It is common ground that D1 is the closest prior art document. D1 describes a hitless channel switching system of a digital transmission system in which a transmitting side is connected to a receiving side through N regular channels and two or more stand-by channels. The receiver comprises:
  - means for detecting a "code error rate" of each channel (see page 10, 2nd para);
  - channel degradation determining means (Figure 2, 220) for the regular channels; and
  - switching means (210,211) for switching a regular channel where degradation is detected to a stand-by channel.

The "code error rate" is described on pages 5 and 6 and can be equated with the "bit error rate" mentioned in claim 1 of the patent in suit. D1 does not mention error correction.

3. The appellant accepts that D1 discloses the features contained in the preamble of claim 1. (The difference that there is a single stand-by channel in the invention but at least two stand-by channels in D1 was regarded as without consequence under the circumstances.)
4. Starting out from D1, the technical problem consists in further enhancing the signal quality on the channel. The invention proposes to add error correction, and to do this in such a way that the error correction is performed after the means for detecting a degradation of the BER, but before the switching means.
5. The skilled person is an engineer in the field of digital data communication. He would necessarily be skilled in the art of data coding. Error correction is a long-established technique which could always be expected to be used when data are sent over a noisy communication channel, and no technical contribution can be involved in merely suggesting to correct errors in the received data. The skilled person would however necessarily have to decide how to perform the error correction, naturally while preserving the important capability of the known system to switch channels as a function of the quality of the received signal. The invention mainly covers a single aspect of this problem, namely where to locate correction in the data stream: before or after error detection.
6. The respondent has argued that error correction always implies error detection since data have to be identified as erroneous before they are replaced, something which the appellant has not denied. D3, Figure 8.5 (page 232), might serve to illustrate this principle.



It can therefore be argued that the skilled person, recognising the need for error correction and keeping in mind that the error detection capabilities of the known system should not be impaired, would immediately think of replacing the error detection means by error correction means and use the inherent error detection function of the error correcting means to monitor the channel quality. This measure alone would have the consequence that the error correction means is situated after the error detection means but before the channel switch. The Board is of the opinion that such a modification was well within the capabilities of a person skilled in the art of data coding. This is already a strong indication that the subject-matter of claim 1 lacks an inventive step.

7. During the examination and opposition proceedings the appellant has argued that it was conventional at the time the invention was made to perform error correction before the BER detection (cf. Figure 2 of the patent in suit). As a consequence, the skilled person would not have thought of reversing the order of processing. At the oral proceedings before the Board, however, the appellant admitted that such a technique was merely "in-house" state of the art. This considerably weakens the argument since the existence of a technical prejudice may be ruled out. The respondent has pointed out that if error correction were performed before error detection, as suggested by the appellant, the error signal - which is the signal indicative of the channel quality on which the channel switching principle according to D1 relies - would be masked. At low error rates the signal would practically vanish. The Board agrees with the respondent that the skilled person would not have considered this possibility, since it goes against a technical principle underlying D1.

Furthermore, even if it could be shown that this possibility would have appeared to the skilled person as preferable in some respects, this would not prove that the invention is inventive. With the exception of the rare case that the existence of a technical prejudice can be established, the obviousness of one possibility of an alternative does not prove the non-obviousness of the other possibility. The relevant question is always whether the invention as claimed was obvious to a person skilled in the art, not whether other hypothetical inventions were perhaps even more obvious.

To sum up, even if the skilled person did consider placing error detection after error correction, he would most probably have rejected this possibility since it would clearly disturb the channel switching function. This is a further indication that the invention was obvious.

8. Finally, D9 states that forward error correction in a digital radio system offers "built-in BER monitoring capability, obtained through syndrome inspection at the decoder" (page 346). This appears to be a clear pointer towards the invention and supports the conclusions already reached.
9. Under these circumstances it is without importance that the invention may have been commercially successful (which has in fact not been established, since D7 at most demonstrates that the invention has been offered for sale). Nor is it relevant that the respondent might be convinced of the advantages of the invention, as suggested by D8. Indeed, it is only to be expected that opponents recognise some value in a patent they choose to attack. It can however not be generally assumed that a commercially interesting invention is also a non-obvious invention.

10. It follows that the channel switching system set out in claim 1 does not involve an inventive step (Article 56 EPC).

*The appellant's auxiliary request 1*

11. According to claim 1 of auxiliary request 1 "the system sufficiently follows the quality degradation speed of a propagation path". This feature merely expresses an obviously desirable result to be achieved not lending inventive step to the claim. The request can therefore not be allowed.

*The appellant's auxiliary requests 2 and 3*

12. Claim 1 of these requests is identical with claim 1 of the main request. The requests are thus not allowable either.

*The appellant's auxiliary request 4*

13. Claim 1 additionally contains the feature that the detecting means is included in the error correcting means which corrects a bit error and outputs an error correction control signal representing the bit error rate to the channel degradation determining means.

As explained above (see point 5), it must be assumed that the skilled person in this case would be aware of the basic principles of error detection and correction and would recognise that conventional error correction circuits comprise error detection means and thus the possibility to monitor the channel degradation. Therefore the request cannot be allowed due to lack of inventive step.

*The appellant's request for continuation of the proceedings in writing*

14. The appellant has requested the proceedings to be continued in writing on the grounds that an allegedly important document, D9, was filed only at the oral proceedings before the Board.

Pursuant to Article 114(2) EPC, the Board may disregard evidence which is not submitted in due time by the parties concerned. In the present case, various documents (and requests) were submitted by both parties at a very late stage of the appeal proceedings, documents D8 and D9 even after expiry of the one month time limit set by the Board in the communication annexed to the summons to oral proceedings.

Although in the Board's view the filing of new evidence shortly before or - as regards D9 - even during oral proceedings should be avoided as much as possible for obvious reasons, in exercising its discretion having regard to admittance of late filed documents the Board has to take account of the specific facts of the case under consideration, in particular of the complexity of the new subject matter submitted, the current state of the proceedings, and the need for procedural economy (see, for example, decision T 633/97, not published in OJ EPO). In the present case, it appears to the Board that the content of D9, in particular the passage relied on by the respondent to establish a link from D1 to the claimed invention, could be understood and assessed by a skilled person in the time available at the oral proceedings. This has not been contested by the appellant who declared at the oral proceedings that he was able to study D9 at least on a provisional basis. Therefore, the Board has decided to admit exceptionally also document D9 into the proceedings.

However, even if it could not be expected of a patentee accompanied by a technical expert to analyse a document such as D9 - which is a conference paper some eight pages long - in detail at oral proceedings, the outcome of the present appeal does not hinge on D9 since - for the reasons outlined above (see points 6 to 8) - D9 is not seen as vital for the present decision, but merely serves to corroborate it. Thus, in spite of the late filing of a relevant document and even if it were assumed that more time was required for in-depth consideration, the Board neither finds that a continuation of the proceedings in writing nor a remittal of the case is justified in this particular instance.

*The other independent claims of all requests*

15. Besides claim 1, each request contains one or more independent claims of more restricted scope. The appellant has asked the Board to consider whether the patent could be maintained on the basis on one of these claims if claim 1 of all requests would fall.

In principle, if one claim of a request is found not to be allowable a Board has no obligation to examine the other claims of that request. In opposition proceedings it may even be regarded as against the principle of impartiality to hint at possible amendments which might render the patentee's request allowable (unless the amendments concern merely formal aspects of the patent). In the present case such hints are anyway not possible for the simple reason that, in the judgment of the Board, no subject-matter in the patent is likely to prove inventive over the cited prior art. The exact formulation of the claims is therefore not decisive.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:

M. Kiehl

S. Steinbrener