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Datasheet for the decision of 16 July 2014

Case Number: T 0537/11 - 3.5.04

Application Number: 01997108.4

Publication Number: 1350384

IPC: H04N1/00

Language of the proceedings: EN

Title of invention:
METHODS AND APPARATUS FOR SECURELY TRANSMITTING AND PROCESSING DIGITAL IMAGE DATA

Applicant:
Electronics for Imaging, Inc.

Headword:

Relevant legal provisions:
EPC 1973 Art. 56

Keyword:
Inventive step - (no)

Decisions cited:

Catchword:

Beschwerdekammern
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Case Number: T 0537/11 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 16 July 2014

Appellant: (Applicant)	Electronics for Imaging, Inc. 303 Velocity Way Foster City, CA 94404 (US)
Representative:	Stöckeler, Ferdinand Schoppe, Zimmermann, Stöckeler, Zinkler & Partner Patentanwälte Postfach 246 82043 Pullach bei München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 19 October 2010 refusing European patent application No. 01997108.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	F. Edlinger
Members:	R. Gerdes
	B. Müller

Summary of Facts and Submissions

I. The appeal is directed against the decision to refuse European patent application No. 01 997 108.4, published as international application WO 02/056576 A2.

II. The patent application was refused by the examining division on the grounds that the subject-matter of the independent claims of the main request and the first and second auxiliary requests lacked an inventive step in view of the prior-art document

D1: PATENT ABSTRACTS OF JAPAN, vol. 1999, no. 08, 30 June 1999 (1999-06-30) & JP 11 088857 A (OKI ELECTRIC IND CO LTD), 30 March 1999 (1999-03-30), together with a machine translation into English.

In the decision under appeal the examining division also referred to the following document

D5: US 4 638 357 A.

III. The applicant appealed against this decision and requested that a patent be granted on the basis of the first or second auxiliary requests underlying the decision under appeal.

IV. With a letter dated 25 June 2014 in response to a communication annexed to a summons to oral proceedings the appellant submitted claims of a sole request replacing the claims of all previously pending requests.

V. Oral proceedings were held before the board on 16 July 2014. The admissibility of the amendments filed with the letter of 25 June 2014, their significance and

the clarity of the claims were discussed first. The board decided to admit the amendments with a further clarification of the independent claims, and the appellant submitted claims 1 to 15 as a sole request replacing the previous sole request filed with the letter of 25 June 2014.
The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the sole request submitted in the oral proceedings before the board.

VI. Claim 1 of the present sole request reads as follows:

"A method for processing digital image data comprising:
decomposing (12) an image at an origination site into low (26) and high (14) spatial frequency components;
scrambling the low frequency components (26) comprising encrypting (20") the low frequency components with an encryption key;
compressing (30) the high frequency components (14);
transmitting the compressed high frequency components from the origination site to the viewing destination via a first communication channel (52);
transmitting the scrambled low frequency components from the origination site to the viewing destination via a second communication channel (54);
separately and securely transmitting the encryption key (18) to the viewing destination;
decompressing (32') the compressed high frequency components at the viewing destination by reversing the compressing step;
descrambling (21) the low frequency components comprising decrypting the encrypted low frequency components;

re-composing (33) the decompressed high frequency components and the descrambled low frequency components into an image; and displaying the image."

VII. The examining division argued in the decision under appeal with respect to the requests then on file that D1 did not disclose the transmission of the image data from an origination site to a viewing destination and the transmission of the low and high frequency components over different communication channels. There was no synergistic effect of those two distinguishing features. The transmission of the low and high frequency signal components over two different communication channels did not solve any particular technical problem, but was a mere design choice (see decision under appeal, Reasons 14.1, 15.1 and 15.3).

VIII. The appellant argued with respect to the issue of inventive step that the claimed subject-matter differed from that of D1 in that the transmission of coded low and high frequency components was carried out over a first and a second communication channel. This feature and the further distinguishing feature that the encryption key was separately and securely transmitted to the viewing destination provided "an even more secure manner for transmitting image data to a viewing destination when compared to prior art approaches". Transmitting the scrambled low frequency components and the compressed high frequency components via different communication channels provided increased security compared to transmitting the components via the same communication channel. Intercepting or eavesdropping on two channels was more difficult for the separate transmission over two channels. Apart from these features, D1 also did not disclose the transmission of

coded image data between a coding part and a decoding part.

D1 disclosed the compression of high and low frequency components together. Therefore, it did not provide a hint to use two different communication channels for the signal components. D5 disclosed transmitting the scrambled audio signal and the interference signal via separate carriers, but it did not teach transmitting another portion of the audio signal via a different carrier. Besides increased security, the approach in the present application had the technical effect of reducing the amount of data that had to be encrypted. The high frequency components were of little significance for the reconstruction of the image. Hence, unauthorised copying of the digital image data was avoided.

Reasons for the Decision

1. The appeal is admissible.

2. Main request

2.1 It is common ground that D1 may be considered as the closest prior art with respect to the subject-matter of claim 1. D1 discloses an encoder in which digital image data are transformed into the frequency domain and decomposed into high and low frequency components. In order to protect the image data against piracy, the low frequency components are encrypted with an encryption key whereas the high frequency components are not submitted to the encryption step, in order to reduce the computational effort and efficiently compress the data. Hence, D1 provides the technical effect of

reducing the amount of data that have to be encrypted. The encrypted low frequency and the high frequency components are combined and compressed using a variable length encoder to generate coded image data (see D1, abstract and paragraphs [0001], [0003], [0004], [0010], [0014] and [0020]).

The image processing in the decoder is carried out inversely to the encoding, i.e. in a first step the compression encoding of the received image data is reversed so as to obtain the high frequency components as well as the encrypted low frequency components. In a second step the encrypted data are decrypted to retrieve the low frequency image components. Finally, the high and low frequency image components are subjected to an inverse frequency transform to obtain the image data (see paragraphs [0014] and [0015]).

D1 refers to "Decoding processing which receives image data ..." (see paragraph [0014]). Receiving data requires the complementary step of sending or transmitting data. Hence, transmitting the coded image data is considered to be implicitly disclosed in D1.

2.2 The following features of claim 1 are not disclosed in D1:

(a) The decoded data are displayed at a viewing destination,
(b) the transmission of the scrambled low frequency components and the compressed high frequency components is carried out via a first and a second communication channel, respectively,
(c) the encryption key is separately and securely transmitted to the viewing destination.

2.3 Feature (a) relates to the use of the data at the viewing destination and is consequently unrelated to features (b) and (c) pertaining to the transmission of data from the origination site to the viewing destination.

With respect to features (b) and (c) it was argued that these features contributed to image data security compared to transmitting all data via the same communication channel. Intercepting or eavesdropping on several channels was more difficult to implement for separately transmitted data, resulting in improved security of the transmission.

Regarding feature (c), the board agrees with the appellant that the technical problem relating to the transmission of the encryption key separately from the image data can be formulated as how to increase security of transmission.

As concerns distinguishing feature (b) the appellant argued that the separate transmission of the image data via two channels also contributed to image data security. It is accepted that transmission via two channels may improve security, depending on the properties of the channels. However, improved security would depend on the actual choice of the different channels and the allocation of the data to the different channels. For example, transmitting the signal components via different time-multiplexed channels having similar properties can hardly be considered to increase the security of the data compared with transmitting the data sequentially via a single channel. Hence, the separation of image data according to feature (b) does not necessarily improve the security of transmission. It follows that the

technical problem associated with distinguishing feature (b) should be formulated as how to transmit the coded image signals to the decoder.

Hence, features (a), (b) and (c) relate to different partial technical problems and may be considered separately in evaluating inventive step.

2.4 It is a common purpose of image data transmission to make image data available at a viewing destination such that they can be displayed after being decoded. Thus, feature (a) relates to an obvious application of image data transmission.

Regarding feature (c), the board holds that it was well known at the priority date that decryption of an encrypted message requires the availability of a key at the receiver side. For symmetric encryption methods such as DES (see D1, paragraph [0010]), this key is identical to the encryption key. The key could be stored in advance at the receiver or transmitted to the receiver using a separate and secure channel. Hence, the separate transmission of the encryption key according to feature (c) relates only to well-known aspects of encryption methods.

As to feature (b), it was also well known that depending on the availability of transmission bandwidth and economic considerations, data could be transmitted via different channels. Hence, given the circumstances the skilled person would consider the use of different channels for the transmission of image data. Since the properties of the channels are not further specified in claim 1, the board can also not discern any particular technical advantage in the allocation of the scrambled low frequency components to one channel and the

compressed high frequency components to the second channel, apart from the fact that these data are available as separate data sets. It follows that the specific allocation of image data is merely a convenient choice devoid of any inventive activity.

2.5 Hence, the subject-matter of claim 1 was obvious to a person skilled in the art in view of D1 and thus lacks inventive step (Article 56 EPC 1973).

2.6 The appellant's arguments did not convince the board. Even if it were accepted that the effect of enhanced security was further achieved by the separate transmission of image data via two appropriately chosen channels, such a step would not make the claimed subject-matter inventive.

The facility for increasing security using transmission over different channels was well known in the art. An example of the use of different channels for secure transmission is disclosed in D5, which relates to a method of scrambling a television signal "for use with pay television or similar systems". D5 discloses signal transmission via different channels, in which a first channel is used to transmit an audio signal with an added interference signal. A second channel carries the interference signal and a control signal required for the audio signal reconstruction (see D5, abstract; column 1, lines 5 to 8 and 30 to 63; column 2, lines 5 to 34 and claim 1). It can therefore be assumed that the skilled person was aware of the facility for transmitting different signal components via separate channels to enhance the security of a transmitted audio or video signal and would have made use of this option as required by the circumstances, such as available

bandwidth, amount of data to be transferred and security of data transmission.

The appellant argued furthermore that neither D1 nor D5 disclosed the specific allocation of image data to the two channels. In addition, D1 disclosed the combination and subsequent compression of encrypted low frequency components and high frequency components prior to transmission and therefore taught away from separate transmission of those signals.

Like the present application, D1 provides for a separation of image data into high frequency components and scrambled low frequency components. Hence, if several channels had to be used for image data transmission, it would have been an obvious choice to allocate low frequency image components to one channel and high frequency components to the other. The fact that the data are combined in D1 before being compressed is not considered a major obstacle for the skilled person, because it was well known at the priority date that encrypted data could not be efficiently compressed (see for instance D1, abstract and paragraph [0003]). Hence, the skilled person would have considered skipping the step of compressing the encrypted low frequency data.

3. It follows from the above that the appellant's sole request is not allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

K. Boelicke F. Edlinger

Decision electronically authenticated