

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)**

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
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FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IB2018/057411

International filing date (day/month/year)
25.09.2018

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26.09.2017

International Patent Classification (IPC) or both national classification and IPC
INV. G06T1/00 H04N1/32

Applicant
IMPRESA NACIONAL-CASA DA MOEDA, SA

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:



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Date of completion of this opinion

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - the international application in the language in which it was filed.
 - a translation of the international application into English, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>3, 6, 10, 11, 13</u>
	No: Claims	<u>1, 2, 4, 5, 7-9, 12, 14-24</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-24</u>
Industrial applicability (IA)	Yes: Claims	<u>1-24</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Reference is made to the following documents:

- D1 US 2017/109857 A1 (CHEN YUNG-YAO [TW] ET AL) 20 April 2017 (2017-04-20)
- D2 US 2011/194726 A1 (DAS GUPTA MITHUN [US] ET AL) 11 August 2011 (2011-08-11)
- D3 WO 2005/029390 A2 (INT BARCODE CORP [US]; LUBOW ALLEN [US]) 31 March 2005 (2005-03-31)
- D4 US 7 769 236 B2 (CA NAT RESEARCH COUNCIL [CA]) 3 August 2010 (2010-08-03)
- D5 US 2008/035730 A1 (LOOK THOMAS F [US]) 14 February 2008 (2008-02-14)

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 1 The subject-matter of **claim 1** is **not new** (Art. 33(2) PCT). Indeed, document D1 discloses a method for generating an image with coded information (D1, abstract) where the information to be encoded is associated with a pattern of graphic elements (D1, par. 11-13: the encoding rules of D1 define the patterns (of pixels) that encode the information).
It has to be noted that the claimed "graphic elements" and "symbols" can both be interpreted as "pixels", as for instance is also done in claim 7 or at p. 11, last par., of the description, and a "pattern of pixels" is also used in D1 to encode information.
- 2 The subject-matter of **claim 1** is **not new** also against any of documents **D2** to **D5** (D2, par. 10, 77, Fig. 1: the patterns represent "0" and "1" to encode information; D3, par. 7, 80-81, Fig. 7-8: the superimposed grid provides pixel patterns that encode the information; D4, par. 27, 58-62, Fig. 4: pixel patterns encode the information; D5, par. 18-20, Fig. 2-6: a data cell contains symbols that represent the encoded information).

- 3 Dependent **claims 2 to 12** do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of **novelty** and/or **inventive step**, see documents D1 to D5 and the corresponding passages cited in the search report
- 3.1 As to **novelty**:
- claim 2: all the cited documents disclose that the position of a symbol determines the pattern (see also the cited figures of D1-D5);
 - claims 4-5: the graphic elements can be "nested" (see at least D5, Fig. 2);
 - claim 7: the base image is halftoned and the black and white pixel patterns are embedded (see D1, par. 56-61, that discloses halftoning and pattern embedding; D2, par. 109-110, 154, Fig. 7, 14; D3, par. 7, 78-80);
 - claims 8 and 9: considering the interpretation of these unclear claims as given at 9 below, each of D1 to D3 discloses halftoning (D1, par. 56-61, that discloses halftoning and pattern embedding; D2, par. 109-110, 154, Fig. 7, 14; D3, par. 7, 78-80);
 - claim 12: at least D5 discloses the use of color and/or shape (D5, e.g. par 20, Fig. 3-6).
- 3.2 As to **inventive step**:
- claim 3, see remarks below at 8;
 - claim 6: the filling with random patterns seem to allow for a "disguise" of the real information coding pattern in the predefined area, but the advantages (increase of security) and disadvantages (less reliability of detection: the encoding pattern has to be located very precisely in the image and among the other patterns) are well known to the skilled person);
 - claim 10: once that the usage of different graphical elements, i.e. symbols, is known, as e.g. in D5 (see Fig. 3-6), the use of alternatives on different images is a mere matter of implementation decision of the user in dependence of the characteristic of the substrate, the kind of image, the printing technique and/or the characteristics of the acquisition devices to be used (but see remarks at point 10 below);
 - claim 11: the separation of a decryption key from the message to be decrypted is one of the most immediate characteristics of transmission of encrypted messages, and therefore trivial.

- 4 **Claims 13 to 16** claim illustrations, respectively images produced according to the previous claims, and are therefore **not new** (claims 14; claim 15, noting that all of D1 to D5 disclose implicitly or explicitly the printing on a physical support; claim 16, noting that the use of borders is known at least from D2, par. 157-159) or **not inventive** (claims 13).
- 5 The above statements apply to the corresponding **reading claims 17 to 22 and 24**, mutatis mutandis, being they symmetrically correspondent to the **generating** claims 1 to 12.
- 6 The above statements for claims 1 to 16 apply to the corresponding **system claim 23**, mutatis mutandis.

Re Item VIII

Certain observations on the international application

- 7 As a general remarks, it is noted that even though not per-se unclear, the terms "graphic element", "symbol" and "pattern" used throughout the claims are so broad that create a plurality of interpretations as to their respective meaning. It seems even that the terms "symbol" and "graphical element" are used sometime with the same meaning, i.e. (see description at p. 11, last par.) as "pixel" or "geometric shape".
Such a broad use creates some unclarity especially in the dependent claims, as below detailed.
- 8 **Claim 3 is not clear** (Art. 6 PCT). In fact, it seems that the claimed features only sum up to the "obtainment" of two patterns with (possibly different) symbols at corresponding positions, but it is not clear which use is done of the patterns. Even if imaging that the two patterns, once obtained are added separately or together to an existing image, it is not clear what problem is solved in this way. The only thing that the skilled person can imagine, is the generation of redundancy to make the coding more reliable. This problem and this particular solution, though, are merely a well-known design option that the skilled person would use.
- 9 **Claims 8 and 9 are not clear** (Art. 6 PCT). In fact, it is not clear whether the position of the different graphical elements (i.e. the pattern) encodes the information (at least a "0" or a "1", even though n-ary alphabets can be thought of), as in claim 2 on which claim 8 (and 9) depend, or a "statistical"

value as the claimed "ratio". It seems that one of the possible interpretation of these features is that a pattern is "thresholded" or "binarized" to represent codes from a binary alphabet.

- 10 **Claim 10** is also not clear (Art. 6 PCT) because the generation of two images containing patterns made of different symbols (respectively "geometric ... shapes" and "pixels") at corresponding positions does not solve any apparent problem, especially considering that the claim does not indicate any relationship between the two images and/or the two patterns. Therefore, the claim can be interpreted as the generation of two different kinds of patterns for two different images, where the two patterns only have different symbols at corresponding positions.

It seems that claim 11 gives a relationship between the two images and the two patterns.

- 11 **Claim 16** is **not clear** (Art. 6 PCT) because it is not clear how an image can be at the same time "*within the peripheral area*" and "*not intersecting it*". It seems that the claim refers to the disposition as in Fig. 5.