

## **PATENT COOPERATION TREATY (PCT) WORKING GROUP**

### **Third Session**

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#### **PHOTOGRAPHS AND COLOR DRAWINGS IN INTERNATIONAL APPLICATIONS**

*Document prepared by the International Bureau*

#### **SUMMARY**

1. Photographs and color drawings are, in principle, prohibited from inclusion in international applications by Rule 11.13. Nevertheless, many photographs are submitted as drawings and an increasing number of applications received include drawings in color. For some fields of technology, photographs and color drawings provide the most efficient and effective way of explaining an invention for the applicant, examiner and third parties wishing to understand the technology alike. Much of the information in these applications may effectively be lost since, even if the receiving Office does not require the applicant to submit replacement sheets in compliance with Rule 11.13, the international publication is based on scans or conversions of the drawings to pure black and white, losing most of the color information, including shades of grey.
2. To remove this barrier will require a change in the technical standards for image processing and distribution within at least the international phase, as well as changes to administrative procedures within the receiving Offices, International Authorities and the International Bureau. Legally, the necessary changes could be made either by removing the restriction on color drawings in Rule 11 (which would mean that designated Offices would all be required to accept color drawings in the national phase and might also have implications for normal national applications before Offices of PLT Contracting Parties) or by excluding the restriction from enforcement for at least the international phase (which could have various effects, depending on the exact nature of the exclusion).
3. Further discussions of the costs and any other implications for the IB, national Offices and Contracting States will be required before a final proposal is made.

## ABBREVIATIONS

4. The following abbreviations are used in this document:

- DO: designated Office (an Office in its role processing the national phase of an international application; in this document, references to designated Offices also include, where applicable, elected Offices).
- EO: elected Office (an Office in its role processing the national phase of an international application specifically in the case where international preliminary examination has taken place).
- IA: International Authority (either ISA or IPEA).
- IB: International Bureau.
- IPEA: International Preliminary Examining Authority.
- IPRP: international preliminary report on patentability.
- ISA: International Searching Authority.
- JPEG: a group of image file formats very commonly used for photographs, allowing effective compression of color drawings without noticeable loss of quality.
- OCR: optical character recognition.
- PDF: a file format which may contain both text and graphics, used by some Offices to receive international applications and by the International Bureau to make international publications (and certain other documents) available through PATENTSCOPE<sup>®</sup> since it is more widely supported by web browsers than TIFF and permits easy publication of multiple page documents as a single unit.
- PCT: Patent Cooperation Treaty.
- PLT: Patent Law Treaty.
- RO: receiving Office.
- TIFF: a common image file format with a number of variations – the version used for the PCT is very efficient for storing images of text and line drawings, but does not support color, including shades of grey.
- XML: Extensible Markup Language (a set of rules for encoding documents electronically; most of the specific PCT implementation of this standard is defined in Annex F of the PCT Administrative Instructions).

## BACKGROUND

5. PCT Rule 11.13 makes the following special requirements which, if strictly adhered to, preclude the use of photographs and color drawings (the entire rule is reproduced, with the most relevant portions underlined).

*"11.13 Special Requirements for Drawings*

- "(a) Drawings shall be executed in durable, black, sufficiently dense and dark, uniformly thick and well-defined, lines and strokes without colorings.
- "(b) Cross-sections shall be indicated by oblique hatching which should not impede the clear reading of the reference signs and leading lines.
- "(c) The scale of the drawings and the distinctness of their graphical execution shall be such that a photographic reproduction with a linear reduction in size to two-thirds would enable all details to be distinguished without difficulty.

- “(d) When, in exceptional cases, the scale is given on a drawing, it shall be represented graphically.
  - “(e) All numbers, letters and reference lines, appearing on the drawings, shall be simple and clear. Brackets, circles or inverted commas shall not be used in association with numbers and letters.
  - “(f) All lines in the drawings shall, ordinarily, be drawn with the aid of drafting instruments.
  - “(g) Each element of each figure shall be in proper proportion to each of the other elements in the figure, except where the use of a different proportion is indispensable for the clarity of the figure.
  - “(h) The height of the numbers and letters shall not be less than 0.32 cm. For the lettering of drawings, the Latin and, where customary, the Greek alphabets shall be used.
  - “(i) The same sheet of drawings may contain several figures. Where figures on two or more sheets form in effect a single complete figure, the figures on the several sheets shall be so arranged that the complete figure can be assembled without concealing any part of any of the figures appearing on the various sheets.
  - “(j) The different figures shall be arranged on a sheet or sheets without wasting space, preferably in an upright position, clearly separated from one another. Where the figures are not arranged in an upright position, they shall be presented sideways with the top of the figures at the left side of the sheet.
  - “(k) The different figures shall be numbered in Arabic numerals consecutively and independently of the numbering of the sheets.
  - “(l) Reference signs not mentioned in the description shall not appear in the drawings, and vice versa.
  - “(m) The same features, when denoted by reference signs, shall, throughout the international application, be denoted by the same signs.
  - “(n) If the drawings contain a large number of reference signs, it is strongly recommended to attach a separate sheet listing all reference signs and the features denoted by them.”
6. In fact, it has already been recognized that the use of photographs is necessary in certain situations, as evidenced by paragraph 5.159 of Volume I/A of the Applicant's Guide, which sets forth an informal provision for accepting black and white photographs which is administered by the IB. The paragraph states:
- “5.159. **May a photograph be presented instead of a drawing?** The PCT makes no provision for photographs. Nevertheless, they are allowed where it is impossible to present in a drawing what is to be shown (for instance, crystalline structures). Where, exceptionally, photographs are submitted, they must be black and white, must be on sheets of A4 size, and must respect the minimum margins (see paragraph 5.133) and admit of direct reproduction. Color photographs are not accepted, nor are color drawings. Photographs are retained by the International Bureau as part of the record copy.”
7. While photographs are thus sometimes already accepted, there is often a significant loss in quality by the time that they are published as a result of their conversion to black and white, which loses most of the detail of shades of grey.

8. Some Contracting States already permit photographs and color drawings in their national applications. In some cases, the applicant is required to provide additional copies of the drawings or to pay an additional fee towards the special processing which may be required for such applications.
9. The eighth session of the Working Group on Reform of the PCT agreed that it was desirable in principle to permit photographs and color drawings, but recognized that various technical and administrative questions needed to be considered, covering both the international phase and the effect on designated Offices in the national phase. Consequently (paragraph 80 of document PCT/R/WG/8/9), that Working Group "agreed that a task force be established with a view particularly to making recommendations providing for the inclusion of photographs and color drawings in international applications. The task force should operate via the PCT reform electronic forum, its work being coordinated by the Delegation of the United States of America. Participation in the task force would be open to all participants in the Working Group."
10. The operation of that task force was suspended at an early stage, pending developments in relation to work in the Trademark Standards Task Force of the Standards and Documentation Working Group on a proposal for a new "WIPO Standard ST.67 - Recommendations for the electronic management of the figurative elements of trademarks. It had been expected that relevant recommendations by the Trademark Standards Task Force would be available shortly and should be taken into account by the task force on physical requirements of international applications. However, the relevant issues remain unresolved in that forum.

## ISSUES

11. The main issues which the International Bureau has identified as needing resolution are as follows:
  - (a) *Processes during international phase* – What special processes need to be in place at the International Bureau, receiving Office and International Authorities to handle international applications which include photographs and color drawings?
  - (b) *Effect on the national phase* – Should designated Offices be obliged to accept photographs and color drawings for the national phase or should they be able to require the furnishing of conventional black and white drawings?
  - (c) *Scope* – Should the applicant be free to file photographs and color drawings in all cases? Should there be an incentive to prepare conventional black and white drawings where possible?
  - (d) *Specific technical issues* – What changes should be made to the electronic file formats which are used and other related processes and standards to allow the effective transmission of documents between Offices?
  - (e) *PLT issues* – while not strictly a matter for this Working Group, Offices of PLT Contracting Parties should consider the effects of any changes if the PLT Assembly chose to apply the amendment under the PCT to the PLT.

## Processes during the international phase

12. During the international phase, documents need to be passed between different Offices, viewed and manipulated for various purposes and published. While there are a wide range of systems involved within the IB and in national Offices, the key actions include the following:

- (a) *Receipt by the RO* on paper or in electronic form: Paper copies may be scanned by the RO or else forwarded to the IB by post. The international application as filed may even today include images in color or using shades of grey, whether filed on paper or in some electronic file formats (PDF filings or XML filings if the RO accepts JPEG images as well as TIFF).
  - (b) *Transmittal of the search copy* by the RO to the ISA: At present, this is still most commonly done using paper if the ISA is not the same Office as the RO (even international applications filed in electronic form are sometimes printed out for this purpose).
  - (c) *Transmittal of the record copy* by the RO to the IB. If the transmittal is done on paper, the IB scans the record copy immediately on receipt<sup>1</sup>. By this point in the process, any color information, generally including shades of grey, is lost for future processing, though the original information should be accessible from the home and record copies if required.
  - (d) *International publication*.
  - (e) *Transmittal of annexes of the international preliminary report on patentability* containing amendments from the IPEA to the IB and in turn to the EOs.
  - (f) *Communication of the international application to the DOs* – this no longer involves paper transmissions; all designated Offices receive these communications either by download or on DVD.
13. At present, all of the electronic processes involve the text and images being scanned or converted into pure black and white formats. For effective OCR of international applications filed on paper, it is important that the text continues to be scanned in pure black and white: the results are of significantly higher quality than OCR from color or greyscale scans. It is also desirable for reasons of file size that black and white drawings, as well as images of the text, should be stored in black and white file formats. This affects the costs of both storage and ensuring adequate capacity for transmission of documents.
14. Technically, it would be highly desirable if photographs and color drawings were submitted in electronic form by the applicant, rather than having to scan them from paper. It is much more difficult and costly to achieve a high quality scan of a color image than of a black and white line drawing.
15. The costs involved in moving to accepting photographs and color drawings during the international phase would be of two types:
- (a) *one-off costs* coming mainly from updating IT systems in Offices to accept and create drawing files in new formats (most of the internal IB systems are currently designed to prepare and process black and white TIFF files only); and

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<sup>1</sup> The IB scans paper documents or (where not already in this format) converts electronically filed image files into TIFF V6.0 black and white images with Group 4 compression, single strip, Intel encoded.. The resolution of the images is either 300 or 400 dpi. This format is then used as the basis for all subsequent international phase processing of the image, though for some end results, such as international publication, the images may either be further converted to JPEG format or else embedded into PDF files for easier viewing in common software in addition to being offered in the TIFF format.

- (b) *recurring costs* in any special treatment which is required for international applications including photographs or color drawings – initial review suggests that the largest component of this would be in the extra work involved if color drawings were received in an international application filed in paper form, in either:
  - (i) separating the drawings pages of international applications filed on paper for scanning in color, reviewing the quality of the scan (as noted in paragraph 14, above, automation of this process is much less reliable than scanning of black and white line drawings), and ensuring that the black and white text and color drawings pages are properly reassociated; or
  - (ii) separating the relevant documents for separate processing, including posting in paper form to the ISA and IB in the case of ROs which scan other international applications on receipt;

though there would also be additional costs in storage of the larger image files and in ensuring that adequate capacity existed for transmitting these files between Offices.

- 16. The change would appear not to involve any costs for ROs which do not currently either receive applications in electronic format or scan paper copies for transmission to the IB.

#### **Effect on the national phase**

- 17. The effect on the national phase would depend on how the process was implemented. In any case, there would appear to be no effect for Contracting States which already permit the use of photographs and color drawings.

#### *Allowing color drawings in both the international and national phases*

- 18. The most simple legal change would be to amend Rule 11.13 to permit photographs and color drawings to be used (possibly subject to additional fees). This would also be preferable in terms of allowing a consistent approach on formalities throughout the application process.
- 19. If this were done, DOs would need to ensure that their systems were able to process such drawings for the national phase. In most cases, this would include suitable provision in any publication processes, though it could be envisaged that a note on the front page of a publication could indicate that an application includes color drawings which are represented in black and white in the publication but are available for inspection in color at the national Office. In any case, it is likely that at least some small-scale investment in color scanning and printing equipment would need to be considered and any electronic processing systems would need to be tested and potentially upgraded to ensure that they were able to handle color files.

#### *Accepting color drawings remaining as an option for Contracting States*

- 20. Alternatively, Rule 11.13 could instead remain at least largely unchanged, but be made subject to a provision that photographs and color drawings should nevertheless not be objected to during the international phase. This would mean that national Offices could still require applicants to prepare conventional black and white drawings for the national phase if required.
- 21. This would be less advantageous for applicants than the first option, but would at least permit them to bring photographs and color drawings effectively into those national phases where they were permitted and would leave them no worse off in those national phases where the drawings were not permitted.

22. For the Offices themselves, this option would eliminate, or at least greatly reduce, any need which there might otherwise have been to update their electronic systems or to invest in color printing equipment. On the other hand, for those applications where photographs and color drawings are the easiest and most effective way of describing the invention, the formalities and substantive examination will be more difficult than if these drawings were simply permitted and it is likely that any granted patents will be more difficult for third parties to read and assess for scope and validity than would otherwise be the case.

## Scope

### *Cases when photographs and color drawing should be accepted*

23. As discussed above, there are some cases where it is almost impossible to represent an invention properly using a line drawing. However, it remains the case that in most cases, a well-executed black and white drawing will allow details to be shown more clearly than a photograph and it would be desirable if the drawings explained the invention as clearly as possible. On the other hand, receiving Offices will not be in a position (nor would this fall under their responsibilities under the PCT) to make judgments on the substance of whether it would be possible to represent the invention effectively as a drawing rather than a photograph or in black and white rather than in color.
24. Consequently, for the purposes of the international phase, any incentive to prepare conventional drawings should be in the form of recommendations to the applicant or fees payable on a clear fact that the drawings include color or shades of grey. However, the definitions could leave discretion for national Offices to require replacement drawings in cases where an examiner concludes that the relevant subject matter could be more clearly depicted by a drawing than a photograph.

### *Types of international application*

25. Administratively, it would be most effective to accept color drawings only in international applications filed in electronic form. This would eliminate the need for receiving Offices to put special processes in place to give special treatment to international applications with color drawings and reduce the risk of loss of details (especially fine distinctions of shade in photographs) during scanning. The disadvantage to applicants in such an arrangement would be limited, noting that, even though not all receiving Offices accept the filing of international applications in electronic form, any applicant is permitted to file their international application with the International Bureau (subject to the receipt of any security clearance required under national laws).

### *Color text and inline drawings in the description*

26. This paper does not envisage any option for allowing color text in the description, claims or abstract. At present, Rule 11.9(d) implies that all text should be in a single color and the systems for handling the full text of the international application (including the definitions for representing an application body in XML) do not allow for multiple colors.
27. It is also not envisaged to allow photographs and color drawings to be included in the description, claims or abstract. Under Rule 11.10, images are permitted to be included in these parts of an international application to represent chemical and mathematical formulae and (in the description and abstract) tables, but the systems similarly assume that these will be in black only. For international applications filed on paper, it would be very difficult to scan the text in black and white (which, as noted in paragraph 13, above, is important for high quality OCR) and still capture color drawings embedded in the text.

### **Technical issues**

28. The main technical issues to be decided revolve around the question of the required quality, particularly in terms of the fidelity of color reproduction for any scanning which is required and in the file format chosen to represent the images for international phase processing. The format also needs to be practical in terms of typical file sizes and easy availability of tools for use by applicants and Offices.
29. On reflection, it does not appear to be essential to await the results of the Trademark Standards Task Force in respect of considering the necessary electronic file formats and related considerations (see paragraph 10, above). While consistency in file formats between intellectual property types would be desirable in principle to allow Offices to develop common tools, in practice, there is little or no interchange of documents (such as priority documents) between the different areas and systems tend to be largely independent.
30. Moreover, the requirements for patents drawings are not the same as for trademarks. In particular, there is less need for strict color fidelity in patent documents. In most cases, in patent documents, it is only necessary to be able to distinguish different colors from one another. In cases where the exact color is important, it will anyway be essential to describe this using text in the body of the application with the aid of an appropriate color space description since few Offices or third party readers will anyway have sufficiently accurately calibrated scanners, screens or printers to deal with precise colors or to store paper in conditions which will prevent fading of colors.

### **PLT Issues**

31. If the PCT Regulations were amended to permit the filing of international applications with color drawings, the PLT Assembly would need to consider whether to apply the amendment under the PCT to the PLT, so that Offices of PLT Contracting Parties would be obliged to accept color drawings for conventional national applications to at least the same extent that they permit them for international applications under the PCT.
32. Under the PCT, designated Offices receive copies of the international application already in electronic form, whereas for conventional national applications, the national Office needs to deal with all of the procedures including the receipt and, where relevant, scanning of the application. Furthermore, many Offices process a larger number of conventional national applications than international applications. Consequently, the effect of accepting color drawings for national applications might be greater than doing so only for international applications. Preferably, any consequences for the PLT Contracting Parties should be identified and taken into account before finalizing amendments to the PCT.

### **FURTHER WORK**

33. The IB has not yet completed its analysis of the impact of updating its systems and processes to handle photographs and color drawings. Based on its preliminary analysis, it would propose accepting color drawings only for international applications filed in electronic form, which would both reduce the cost of implementation and increase the quality of the drawings provided to International Authorities and designated Offices.
34. It is proposed that the Working Group discuss at this session the general issues surrounding accepting color drawings. PCT Offices would then review the cost and any policy and legal implications of accepting such drawings in any or all of their roles as RO, ISA or DO. Offices of PLT Contracting Parties would also assess the effects of introducing equivalent changes into the requirements for conventional national applications. Non-PLT Offices might also wish to assess the effects of changes for conventional national applications for national policy purposes, even though they would not be under any international obligation to introduce any such change.



35. In parallel, and helping to inform the assessment of national effects, the technical details should be the subject of a consultation with technical representatives of Offices using a procedure similar to the "proposal for change" procedure under Annex F of the PCT Administrative Instructions. One possibility would be the use of JPEG/JFIF file format, which is already referred to in Annex F as a format which receiving Offices may optionally support for receiving the initial filing of international applications.
36. Following those reviews, a complete proposal would then be presented to the next session of the PCT Working Group.
37. *The Working Group is invited to:*
  - (a) *discuss the issues set out in paragraphs 11 to 32, above;*
  - (b) *give any recommendations considered necessary to guide a technical consultation as referred to in paragraph 35, above; and*
  - (c) *recommend to PCT Offices that they make an analysis of the implications, including cost, legal and policy considerations, of accepting color drawings in their role as RO, ISA or DO and to Offices of PLT Contracting Parties that they make a similar analysis for conventional national applications.*

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