

Patent Cooperation Treaty (PCT) Working Group

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COLOR DRAWINGS IN INTERNATIONAL APPLICATIONS

Document prepared by the International Bureau

SUMMARY

1. The restriction to the use of only black and white line drawings in international applications creates difficulties for adequately explaining certain types of invention. From the discussions to date, it would appear that there is wide agreement in principle that this is undesirable from the point of view of applicants, Offices seeking to examine applications efficiently and third parties trying to understand the invention. However, discussions appear to be caught in a “catch-22” situation: there is little incentive and willingness to review the international legal framework and to address the issue in the PCT while technical and legal barriers remain at the national level; yet, the lack of provision of a solution in the PCT means that there is also little incentive or direction to address the national barriers.
2. A complete solution will require changes at both the international and the national level, including changes to the PCT Regulations, national laws and a variety of IT systems at the International Bureau, receiving Offices, International Authorities and designated Offices, which will take many years. However, the change process has to begin somewhere.
3. The present document proposes an approach which should permit processing of color drawings through the international phase and into the national phase where that is permitted, while also providing a route to deliver black and white drawings to designated Offices for use in national phases where the color drawing is not permissible.

BACKGROUND

4. PCT Rule 11.13 requires that any drawings forming part of the international application be presented as black and white line drawings. National laws and a wide variety of IT systems have been set up to include that limitation. Paragraph 146 of the Receiving Office Guidelines states that "... Photographs may be filed where it is impossible to represent in a drawing what is to be shown. ..." However, in practice, this results in significant difficulties.

5. "Black and white" photographs are not simply black and white, but represent a wide range of shades of grey ("greyscale"). It is possible to file greyscale or color drawings (including photographs) on paper and, in certain cases, electronically. However, these are not compliant with Rule 11.13. This is a formalities defect which should, in principle, be corrected under Rule 26 "to the extent that compliance [with Rule 11] is necessary for the purpose of reasonably uniform international publication".

6. Any solution to address this issue should cover color and greyscale equally, since properly solving the technical issues for greyscale images would likely also permit color to be used unless a limitation were artificially imposed.

7. Although the International Bureau keeps original documents (to the extent that they are received from the applicant or the receiving Office), whether on paper or in electronic formats, all documents in color or greyscale are converted to a black and white image format for processing and publication. This process inevitably loses detail, sometimes to the extent that important information in the original image is difficult or even impossible to distinguish. Some examples of different types of problems with drawings and how they affected the work of the International Authorities were set out in document PCT/MIA/14/6.

8. The figures below show examples of results of conversion of a greyscale photo to black and white by different methods of dithering.



Image of Michelangelo's David taken from Wikimedia Commons

9. However, it may be difficult for the receiving Office to request substitute sheets to be provided for several reasons:

- (a) the receiving Office may not be certain how well the image will be represented when published by the International Bureau (see paragraph 5, above, concerning the extent to which a receiving Office is supposed to apply Rule 11);
- (b) even if able to see a version of the drawing following conversion to black and white, a formalities examiner may not be certain what the image is intended to show and, therefore, whether the quality is sufficient;

- (c) it may not be possible for the applicant to prepare drawings in compliance with Rule 11.13 which properly represent the substance of a greyscale or color original.

10. The International Bureau has made a number of proposals to address this issue in the past (documents PCT/WG/3/9 and PCT/WG/5/15). Contracting States “recognized the value of photographs and color drawings in making a clear and effective disclosure of certain types of invention and agreed that it was desirable to progress quickly on this matter” (paragraph 197 of document PCT/WG/3/14 Rev.) but were not, at those times, able to agree a way forward in view of the range of technical and legal issues involved in changing the system in a way which permitted filing and processing of an international application using color drawings before all Contracting States were legally and technically capable of processing them in the national phase.

ISSUES TO CONSIDER

11. The relevant parts of PCT Rule 11.13 seem to have been drafted around two main considerations:

- (a) Traditionally, drawings had to be printed by different and more expensive processes than text; color printing was particularly expensive and difficult to guarantee faithful reproduction of colors.
- (b) For *most* disclosures of traditional mechanical and chemical inventions, a well-drawn diagram can convey the important aspects of an invention more quickly and clearly than a photograph.

12. Paragraph 3.1.3.1 of Annex F of the PCT Administrative Instructions sets out a pure black and white TIFF image file format as that which is preferred for filing and into which images filed in other formats should be converted.¹ This was chosen because:

- (a) it is a very common standard, for which cheap and effective processing and display tools were readily available when the standards were being created;
- (b) it allows black and white line drawings to be represented well – color and greyscale images were not expected because of the terms of Rule 11.13;
- (c) it reduces high resolution line drawings to a very small file size, which was important for transmission and storage;
- (d) it is also very good for storing images of text, from which effective optical character recognition (OCR) can be performed – OCR from greyscale file formats tends to be slower and less accurate.

13. Clearly the situation today is very different:

- (a) Publication of international applications (and many national applications) is done electronically.
- (b) Inspection of documents by third parties is generally from online systems – few printed copies are necessary.
- (c) Where printed copies are required, color copies are relatively cheap (though faithful reproduction of exact shades will generally still not be possible to guarantee).

¹ TIFF V6.0 with Group 4 compression, single strip, Intel encoded.

(d) File size, while still needing to be considered, is less of an issue as disk storage (including backup) is significantly cheaper and typical internet connection speeds have increased considerably. Issues will remain concerning internal network performance in Offices (including the International Bureau) if color drawings are used to represent a large proportion of pages – an A4 page coded according to the current standards is typically around 50kB in size, whereas a full color 300dpi TIFF image can be around 24MB, but it should be possible to keep this manageable with appropriate technical standards.

(e) Image processing tools are cheap and common for other file formats which were either unusual or even did not exist when the original systems were being developed.

14. Consequently, creating an entirely new system today would almost certainly be done differently. While there might still be policy or information access (such as for the color-blind) reasons for *encouraging* diagrams rather than photos where possible, color drawings and photographs would almost certainly be permitted at least in certain circumstances. It is also likely that system planners would recognize the desirability of information models which would permit the easy introduction of entirely new formats (3D models, animations, videos, etc.) in the future.

15. However, as things stand, there are many apparent obstacles to introducing new file formats:

(a) Many national Offices have Rules equivalent to those in PCT Rule 11.13 which are strictly enforced, whether for legal or for technical reasons. Applicants who file color drawings which are processed in that form through the international phase may still need to provide black and white drawings for the national phase.

(b) The systems of many patent Offices support only this TIFF image file format for filing, processing, publication and transmission of images. The systems of each Office in a chain needing to perform any action on the relevant files of the international application would need to be updated before the next Office could receive and process the files. Consequently, changes would be required to:

(i) online filing systems;

(ii) systems for transmission of documents between Offices;

(iii) document processing systems at the receiving Office, International Bureau, International Searching Authority, International Preliminary Examining Authority and designated and elected Offices;

(iv) international publication systems (PATENTSCOPE and the systems which support it).

(c) Third party patent information providers may expect to receive images only in the TIFF file format and need time to adjust to any new formats.

MOVING AT DIFFERENT SPEEDS

16. This is an issue where there appears to be consensus among the Contracting States that the end result is desirable in principle, but which is not of sufficiently high priority to many Contracting States for legal and technical changes to be considered a local priority. Waiting for all Contracting States to change their legal frameworks and technical systems before making any changes would mean that no change could come into force in any meaningful period of time.

17. Consequently, it is desirable to find a way forward which:
- (a) can be implemented without changes to Rule 11.13 until designated Offices are ready;
 - (b) gives encouragement to Offices to begin a process of change; and
 - (c) allows designated Offices to move at different speeds; but
 - (d) remains workable for applicants for as long as some designated Offices still require black and white drawings.
18. Ideally, receiving Offices and International Authorities should find a way to permit processing of color drawings through the whole of the international phase.

PROPOSED WAY FORWARD

19. The International Bureau proposes the following way forward:
- (a) Permit filing of international applications with color drawings at any receiving Office willing to receive them in appropriate electronic form. This is likely to mean allowing JPEG or PNG file formats, either as part of an XML application or embedded into a PDF file.
 - (b) Conduct all international phase processing in color, including formalities examination, international publication, international search and international preliminary examination.
 - (c) Allow the optional centralized submission of black and white drawings by the applicant for use in the national phase before those designated Offices which still require black and white. Alternatively, the applicant could separately submit replacement sheets to a designated Office which so required it in the national phase.
20. Agreement by a receiving Office to accept color drawings would take the form of making such documents technically possible to file electronically (as some Offices already do) and not converting them to black and white before transmitting them to the International Bureau. For example, this might include:
- (a) allowing JPEG or PNG files to be referenced in XML applications and allowing the page images to be rendered in a color format for viewing; or
 - (b) not taking active steps to exclude the possibility of color drawings in PDF applications and, where a conversion to images is made, permitting this to be in color.
21. These changes would apply only to the drawings part of the international application. The description claims and abstract should, wherever possible, be provided in text formats. To the extent that images of text are provided, they should continue to be in pure black and white, which minimizes file sizes and improves the quality of optical character recognition (see also paragraph 12, above).

AUTOMATED CREATION OF BLACK AND WHITE DRAWINGS

22. ePCT could also offer applicants an automated process for creating the black and white conversion referred to in paragraph 19(c), above, including the ability to see a preview of the result and decide whether it was necessary to make a manual conversion instead. This could be implemented very quickly as it is very similar to the arrangements which already exist in ePCT, where an uploaded document is detected to contain color or greyscale images.

ASSISTANCE FOR RECEIVING OFFICES

23. Through hosted filing services and browser-based services for Offices, ePCT now offers the possibility of allowing any receiving Office the ability to accept electronic filings from its applicants and to perform receiving Office functions electronically. Following the introduction of additional languages for the interface and further improvements to the functionality and ease of use, it is hoped that a majority of receiving Offices which do not support their own electronic filing systems will make use of this opportunity.

24. Once the International Bureau's core processing and publication services are updated to permit color drawings, the browser-based part of the system would require only minor modifications to handle the processes proposed. Thus, within the timescales envisaged, this approach could benefit applicants from all Contracting States equally, irrespective of whether the relevant national Office has developed its own infrastructure to allow electronic filing.

PAPER FILINGS

25. The International Bureau would continue to store any color drawings which it receives on paper (as should receiving Offices) and will attempt to make copies on individual request by a designated Office, but it is not envisaged that this solution would include scanning them in color to make them routinely available. The Working Group has in the past agreed that this type of solution could be limited to electronic filings (see paragraph 201 of document PCT/WG/3/14 Rev.). The fact that ePCT will be able to allow any receiving Office to offer an electronic filing service means that this is very unlikely to disadvantage any applicant.

TIMING

26. Implementing this proposal would require many internal systems at the International Bureau to be upgraded in order to allow the necessary processing. It would also be important International Authorities had suitable arrangements in place to allow examiners to see color versions of international applications (including corrections, rectifications and amendments) when conducting the international search and preliminary examination.

27. Assuming that the approach were recommended by the PCT Assembly during 2014, the earliest time by which the International Bureau could reasonably expect to have all the necessary systems in place would be in time to handle international applications filed in January 2016. July 2016 would be preferred. Estimates will be required of when International Authorities could have sufficient systems in place.

LEGAL CHANGES

28. Initial analysis suggests that any legal changes required could be limited to modification of Annex F of the PCT Administrative Instructions. If the Working Group agrees to the principles of the proposal above, the specific changes required and the timing of implementation would be the subject of detailed consultations by PCT Circulars.

29. The Working Group is invited to comment on the proposals in this document.

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