

Meeting of International Authorities under the Patent Cooperation Treaty (PCT)

Twenty-Second Session
Tokyo, February 4 to 6, 2015

COLOR DRAWINGS

Document prepared by the International Bureau

SUMMARY

1. Formal proposals on detailed specifications for handling color drawings in international applications have been delayed. International Authorities are nevertheless invited to comment on technical issues which will affect their ability to handle color drawings to the extent required for effective international search and preliminary examination.

BACKGROUND

2. At its seventh session, the PCT Working Group approved a proposal by the International Bureau for a way forward on allowing the use of color drawings in international applications filed in electronic format (paragraphs 19 to 28 of document PCT/WG/7/10, reproduced in the Annex to this document).

3. It was intended to follow this agreement up by the end of 2014 with more specific proposals on some of the key technical details which would be relevant to how International Authorities and designated Offices would receive copies of international applications containing color drawings. However, closer analysis of the impact of the proposals on the International Bureau's systems have shown unexpected issues (see paragraph 5, below) which mean that it is not yet possible to make specific proposals on technical formats with confidence that they would be the most effective and economical solution to the problem.

4. The International Bureau remains confident that it will still be able to have suitable systems in place by July 2016 if so required, but recognizes that the delay in providing the technical details to International Authorities and designated Offices may mean that it is less likely that national Offices will be ready by that time (as had been hoped) to meet the condition of having adequate facilities available for handling international phase processes, especially international search and preliminary examination.

ISSUES

5. The technical issues under review are mainly concerned with the interaction of five concerns:

(a) at present, all non-text processing at the International Bureau is conducted using packages of page images, each image within any package being in the same format – a change from this arrangement would require a large number of sub-systems to be updated even though they may already be capable of handling any of the likely file formats which might be used individually;

(b) different file formats are good for different purposes – black and white TIFF pages of the variant specified in Annex F of the PCT Administrative Instructions allow text and black and white line art to be represented clearly and in a way which allows effective optical character recognition while having an extremely small file size; JPEG files can be very efficient at representing photographs; PNG files can offer fair, lossless compression of a wide variety of contents, but color versions generally offer poor optical character recognition compared to TIFF for text sections; each broad file type (TIFF, JPEG, GIF, PNG, etc.) may have many variants with different properties, some of which may be impossible to process accurately in some systems – it is necessary to ensure that the formats used are effective for their purposes and do not inflate the storage and network bandwidth requirements beyond what is necessary (storing all images in color could increase requirements by a factor of 20 or more);

(c) it is likely that some receiving Offices will wish to accept files from applicants in a wide range of formats, some of which may not be possible for all other Offices' systems to handle natively;

(d) many applicants are either not aware of exactly what format the images which they use are being created, saved and transmitted in, or else do not have the ability to control the output to provide specific variants requested by an Office – this applies especially to PDF version numbers and the formats of graphics embedded within a PDF file, which may be hidden or converted from the original format without the specific knowledge of the user creating the PDF file;

(e) it is not always possible to determine from an automated check whether a drawing is intended to contain matter other than black and white line art – if saved in a file format with a color depth greater than 1 bit, automated checks will assume that the drawing is a color one, even though there is nothing other than black and white and the conversion to a 1 bit format may work perfectly.

6. Conversion between file formats always carries some risk. The proposal to explicitly accept color drawings seeks to avoid one very clear problem of conversion – any color drawings which are received under the existing system are converted to black and white, necessarily losing a certain amount of information and potentially rendering them meaningless. Less obvious problems may include:

(a) Even where images appear to be pure black and white, depending on the color model used in the file, apparently black pixels may be recognized as dark grey, causing a “dithering” effect in the converted file.

(b) Some files contain “transparency” information, which is rarely converted reliably and may cause large areas to appear completely white or completely black, despite having varied content in the original version.

(c) Up-sampling or down-sampling of images where the resolution does not perfectly match that which is to be used for publication may cause loss of quality.

(d) Images created in vector formats frequently lose line width information when converted to bitmaps and not all methods of describing curves are properly supported by all image readers.

(e) Conversion utilities may simply be of poor quality for some file type pairs.

7. Nevertheless, it seems likely that any proposal made will require some degree of conversion of file formats because:

(a) receiving Offices wish to offer a good service to applicants by allowing as great a degree of flexibility as possible in the file formats which they accept, including PDF files containing a variety of embedded images of different types, which are not readily apparent from any simple inspection;

(b) it is necessary to ensure that the main records of an international application (especially the record copy) are kept in a format which is certain to still be readable in 30 years time (as required by Rule 93.2);

(c) International Authorities and designated Offices need to be certain that the files which they receive are in a format which they are capable of processing;

(d) in the longer term, it is hoped to move towards application processing being conducted in a “full text” format (most likely XML), irrespective of whether the application was originally filed on paper, with scanned text, as a PDF containing text, or in a full text format.

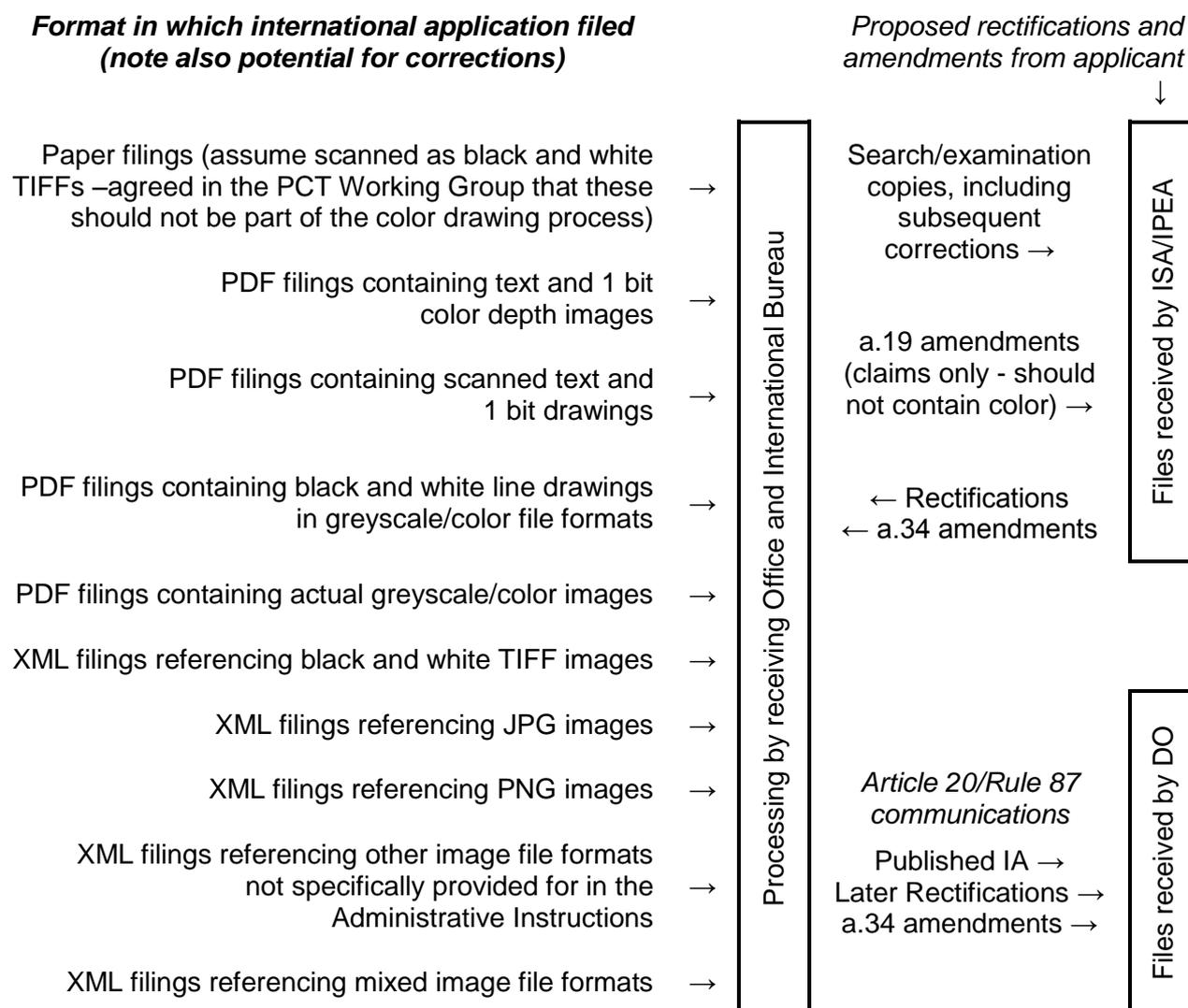
8. Special provision for provision of black and white documents will almost certainly be essential for designated Offices. However, as implied in paragraphs 26 and 27 of document PCT/WG/7/10, the International Bureau considers that it is important that color drawings should be supported by International Authorities for international search and preliminary examination from the outset, at least to the extent that examiners should be able to view color versions of the drawings.

IDENTIFICATION OF ISSUES FOR INTERNATIONAL AUTHORITIES

9. Even in advance of a specific technical proposal, the International Bureau would welcome comments from International Authorities on their technical needs and issues which would affect timing of changes. These may be made either during the session or by email to pct.mia@wipo.int.

10. Without prejudice to the types of issue which may be raised, the International Bureau would particularly value information concerning the views of International Authorities on the most appropriate balance between direct use of original material in the processing steps and conversion of files to consistent formats to minimize the risk of system errors during later processing steps (noting that the International Bureau will always keep copies of the original version of files which it receives, to consult in the event that conversion problems are detected later on).

11. To assist consideration of this matter, the following diagram highlights some of the possible formats in which an international application might be filed so that Offices can consider what issues they would face in different cases if the original documents, or images directly extracted from the original documents, were passed on in their original file formats without conversion.



12. The two way arrows are a reminder of the fact that Authorities need to process requests for rectification and amendment from the applicant and communicate the results back to the International Bureau for publication and communication to other Offices. Such activities would need to be planned for, but take place in smaller volumes and later in the process than transmission of the search copies. As long as examiners were able to view the incoming color documents in order to perform their search and preliminary examination properly, it may be practical to implement the new arrangements before work on such systems is complete at all Authorities and rely on ad-hoc procedures for the small number of amendments and rectifications involving color drawings which could be expected in the interim.

13. As well as comments concerning file and package formats, other desirable information would include details of ongoing work and associated procedural deadlines which would affect the timing by which different levels of proposed technical specifications and sample packages would be needed to ensure that the necessary degree of compatibility could be achieved by any particular date.

14. *The Meeting is invited to comment on technical issues which will affect their ability to handle color drawings to the extent required for effective international search and preliminary examination, including estimates of the time likely to be required for completion of technical work sufficient to allow examiners to receive and consider color drawings for the purposes of international search and preliminary examination.*

[Annex follows]

WAY FORWARD PROPOSED IN PARAGRAPHS 19 TO 28
OF DOCUMENT PCT/WG/7/10
AND APPROVED BY THE WORKING GROUP

Extract from document PCT/WG/7/10

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.

[End of Annex and of document]