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

**Nineteenth Session
Canberra, February 8 to 10, 2012**

COLOR DRAWINGS IN INTERNATIONAL APPLICATIONS

Document prepared by the International Bureau

1. The third session of the PCT Working Group "...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, but that further study was required on the technical and legal issues which would be involved in permitting the filing and processing of such drawings as part of international applications..." (paragraph 197 of document PCT/WG/3/14 Rev.).

2. It was observed that the interest in supporting color drawings¹ extended to applicants and third parties alike: "... while color drawings might only be essential in a few cases, such as where microscopic images were shown of cells which had been colored to distinguish them, color drawings could make the disclosure much easier to understand in many cases, including mechanical arrangements. Color drawings could make the assessment of patent applications and understanding of technology much easier in a very general sense." (paragraph 199 of document PCT/WG/3/14 Rev.).

¹ In this document, the term "color drawings" includes photographs and other images which may contain shades of grey in addition to pure black and white.

3. The International Bureau intends to make a specific proposal on a way forward on this matter at the next session of the PCT Working Group. This document reproduces, in its Annex, Circular C. PCT 1317, dated November 10, 2011, which has been sent to Offices in their capacities as receiving Offices, International Searching Authorities, International Preliminary Examining Authorities and/or designated/ elected Offices, as well as to certain interested intergovernmental organizations as well as certain non-governmental organizations representing users of the PCT system. That Circular sets out information concerning the possible use of color drawings in international applications to assist Offices (in their capacity as a PCT receiving Office and as a designated/elected Office and, where applicable, in their capacity as a PCT International Authority) in assessing their own needs and interests, and requests information from Offices and users of patent information to assist in ensuring that such a proposal meets the needs of all interested parties as effectively as possible.

4. The views of International Authorities are of particular importance since, for the system to be effective for applicants, it will be necessary to ensure that International Searching Authorities are able to receive search copies in color to ensure that the international search is effective and International Preliminary Examining Authorities will need to be able to handle replacement sheets or drawing files in color as part of Article 34 amendments.

5. The International Authorities are invited to:

(i) provide feedback on issues set out in Circular C. PCT 1317, reproduced in the Annex to this document; and

(ii) raise any further issues which will need to be addressed to cover the particular needs of processing before the International Authorities.

[Annex follows]

ANNEX

COLOR DRAWINGS IN INTERNATIONAL APPLICATIONS
(reproduced from Circular C. PCT 1317, dated November 10, 2011)

C. PCT 1317

November 10, 2011

Madam,
Sir,

1. This Circular is addressed to your Office in its capacity as a receiving Office, International Searching Authority, International Preliminary Examining Authority and/or designated or elected Office under the Patent Cooperation Treaty (PCT). It is also being sent to certain interested intergovernmental organizations as well as certain non-governmental organizations representing users of the PCT system.

SUMMARY

2. This Circular provides background information on how accepting color drawings as part of international applications would affect the International Bureau's IT systems. It invites Offices to examine their own IT systems and legal constraints in preparation for discussion of a proposal in this area at the fifth session of the PCT Working Group, tentatively scheduled to be held at the end of May 2012. Any early feedback from Offices on the issues which they have found would be welcome and, if received by January 31, 2012, will be taken into account in the preparation of the proposals to be submitted to the PCT Working Group.

BACKGROUND

3. The third session of the PCT Working Group "...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, but that further study was required on the technical and legal issues which would be involved in permitting the filing and processing of such drawings as part of international applications..." (paragraph 197 of document PCT/WG/3/14 Rev.).

4. It was observed that the interest in supporting color drawings¹ extended to applicants and third parties alike: "... while color drawings might only be essential in a few cases, such as where microscopic images were shown of cells which had been colored to distinguish them, color drawings could make the disclosure much easier to understand in many cases, including mechanical arrangements. Color drawings could make the assessment of patent applications and understanding of technology much easier in a very general sense" (paragraph 199 of document PCT/WG/3/14 Rev.).

5. The International Bureau intends to make a specific proposal on a way forward on this matter at the next session of the PCT Working Group. This Circular sets out information concerning the possible use of color drawings in international applications to assist Offices (in their capacity as a PCT receiving Office and as a designated/elected Office and, where applicable, in their capacity as a PCT International Authority) in assessing their own needs and interests, and requests information from Offices and users of patent information to assist in ensuring that such a proposal meets the needs of all interested parties as effectively as possible.

POLICY ISSUES

6. There are three main policy issues underlying the question of managing color drawings:

- (a) The applicant should be able to disclose as clearly as possible the invention.
- (b) International Searching and Preliminary Examining Authorities should be able to understand the subject matter quickly and accurately for the purposes of establishing timely and accurate reports.
- (c) Third parties should be able to understand the invention as quickly and thoroughly as possible, whether to assess the scope of any patent granted or to learn about the technology.

7. As observed in the Working Group by Member States representing industrialized countries and developing countries, with large and small Offices alike, all of these desires point towards the more wide-spread use of color drawings. However, the solution also needs to take into account the time and cost which would be involved in changing the existing legal and technical framework within Member States as well as at the International Bureau, as well as any additional ongoing operating costs which would be involved and the priority which could be attached to making the necessary changes, even though they might be considered desirable in principle.

¹ In this Circular, the term "color drawings" includes photographs and other images which may contain shades of grey in addition to pure black and white.

TECHNICAL ISSUES

8. The drawing requirements in PCT Rule 11 largely reflect different processes for drawings compared to text which have traditionally been used in reproducing patent specifications. It should be also noted that for most mechanical purposes, a diagram can illustrate a concept more clearly than a photograph of an actual device. However, for some inventions, particularly in biotechnology, color photographs or drawings may be helpful or even essential to a thorough understanding. The cost barriers to the use of color drawings in documents, both printed and for electronic viewing, have fallen dramatically in recent years such that the main issues for setting up a new system would revolve around:

- (a) ease of automatically separating drawings from text and handling them in different ways, to the extent that they need to be scanned from paper; and
- (b) the size of files which need to be transferred, stored and processed.

9. However, for Offices which already have a significant degree of automation of processes, the limitation to black and white drawings may be built into systems in many places, meaning that upgrading systems to accept color drawings will involve significant amounts of development and testing in order to be confident that these drawings will work at all stages of the process.

10. Offices may wish to note that the International Bureau intends to develop web-based tools for Offices to perform a complete set of receiving Office functions as part of the ePCT range of services. These tools should be ready by the time the International Bureau is itself able to handle color drawings. Some similar functions will also be provided for International Authorities. This may permit Offices which decide to take advantage of this system to perform their international phase roles in relation to international applications with color drawings without any changes being needed to their local systems.

11. All delegations which spoke on the issue in the Working Group considered that it was likely to be acceptable to limit the possibility of filing color drawings to international applications filed in electronic form (PCT/WG/3/14 Rev). Consequently, this Circular concentrates on the issues referred to in paragraphs 8(b) and 9.

./ 12. The Annex contains a summary of findings from a review which has been conducted of what would be needed to permit the International Bureau's IT systems to handle color drawings based on the assumption that this would be limited to international applications filed in electronic form. This information is intended primarily to help national Offices in working out how their own IT systems might be affected so that they can provide the necessary information to the Working Group to allow an informed decision to be taken on whether, when and how to move forward on allowing such drawings in the PCT system.

13. While not intended to be a part of an immediate proposal, any implementation of color drawings by the International Bureau will be done in a way which recognizes the possible introduction of further acceptable file formats in the future (such as for 3D models or video files). Offices may also wish to consider such matters when assessing their own systems.

LEGAL ISSUES

14. Most PCT Contracting States have a legal requirement of black and white drawings in almost identical form to PCT Rule 11.13, both for direct national applications and for the national phase of international applications. In the absence of opt-out provisions, amending Rule 11.13 to explicitly permit the use of color drawings would oblige Contracting States to accept color drawings for the national phase processing of PCT applications (and might also be relevant to

normal national applications for member States of the Patent Law Treaty, if the PLT Assembly decided that the amendment should apply also under that Treaty). This approach would be a very simple change (from the point of view of the PCT Regulations) and provide the simplest arrangements for applicants and the greatest incentive to improve the quality of disclosures for the benefit of International Authorities and third parties by using color drawings wherever they are beneficial to explaining the invention. However, the changes which would be required to the national laws of most Contracting States would mean that, even if the Contracting States agreed in principle, it would probably be a very long time before the amendments were able to come into force.

15. Consequently, the Working Group will probably need to consider an option where no objections would be made to the filing of color drawings as part of the international application and its processing during the international phase (at least if they are provided as part of an electronic filing), but where the designated Offices remain free to require a black and white version to be provided, if needed, for the national phase. Technical arrangements might be offered to allow applicants to provide black and white versions of the application centrally for use by Offices which require that version.

NEXT STEPS

16. Your Office is invited to assess its IT to whether color drawings could be accepted by your Office as a receiving Office (at least for international applications filed in electronic form) and as a designated or elected Office and, where applicable, as an International Searching and Preliminary Examining Authority, with the aim of allowing the PCT Working Group to be in a position to make a positive recommendation in this area at its next session.

17. Any early feedback from your Office on the issues which you have found would be welcome and, if received by January 31, 2012, will be taken into account in the preparation of the document making proposals to the PCT Working Group. Comments should be sent by e-mail to pctbdd@wipo.int.

Yours sincerely,

James Pooley
Deputy Director General

Enclosure: Annex – Review of International Bureau (IB) systems

ANNEX
[to Circular C. PCT 1317]

REVIEW OF INTERNATIONAL BUREAU (IB) SYSTEMS

1. The information in this Annex is presented partly in order to provide an idea of the effort and timescale of the changes which would be required at the International Bureau, but mainly to assist some Offices (in their capacity as a receiving Office and as a designated/elected Office and, where applicable, in their capacity as an International Authority) in identifying matters which might need attention in equivalent aspects of their IT systems.

OVERVIEW

2. The International Bureau (IB) has reviewed its IT systems dealing with the receipt, processing, publication and distribution of International Applications (IAs). Several system components would be impacted by a change to allow full processing of color drawings in electronically filed PCT applications.

3. The evaluation of the impact on the existing systems of the IB has been done based on the following assumptions:

- (a) Only IAs filed in electronic form are taken into account.
- (b) Accepted formats are GIF, JPEG, PNG, PDF and TIFF/LZW format (as recommended for trademark use in WIPO Standard ST.67). In the future other formats such as 3D and videos could be accepted.
- (c) Excluded formats: embedded images and color text in the description.

4. A large number of Contracting States will certainly continue to require black and white drawings for many years to come. In this regard several possible arrangements could be envisaged for processing color drawings during the international phase. Taking this into account, the main options are as follows:

- (a) The applicant could be permitted to file color drawings, which would appear, in the original format, on the WIPO web applications (for example, ePCT, Patentscope) in the unofficial full text publication, but which would be converted to black and white for other forms of processing (including production of a black and white “pamphlet”). This would be inexpensive to implement, but would result in an increased number of IAs containing unsatisfactory drawings on national phase entry where the national Office relied on the black and white version of the IAs.
- (b) Drawings may be permitted in a limited number of formats, including the current pure black and white format (PCT Rule 11.13), and others which permit color (see paragraph 3 above) and are then processed in the original format throughout the international phase, including transmission of the IAs to designated Offices. For the benefit of Offices which still require black and white drawings in their national phase, a black and white version of the application could be produced but may have different resolution from the color one. Normally, this would involve an automatic conversion of the color drawings to black and white, with the consequent risk of poor quality results, but the applicant might be offered the option of providing black and white alternatives for inclusion in this version to seek to give a better result.

Option (a) is unsatisfactory because of the effect on the quality of the international publication. Option (b) would appear to be the more satisfactory option and is the basis of the review below.

FINDINGS

5. The systems involved in most stages of processing have one or more components which interact with the drawings. The interactions include format and integrity checks, rendering the drawings into a page-style view, showing the drawings on screen, editing the drawings and OCR systems which need to be able to distinguish drawings from text in IAs filed on paper or as PDF files.

6. At the moment, most IB systems are set up to accept only TIFF Group IV file formats. Some also accept GIF and JPEG and others, usually then converting the result to TIFF. The main processes for electronically filed applications (some of which involve multiple systems) include the following:

- (a) Preparing the PCT request form (PCT-SAFE) offers PCT users the means to prepare their international applications in electronic form and to file them either via secure online transmission or using physical media such as CD-R. The application body (description, claims and drawings) are generated in PDF, TIFF or XML format.
- (b) Receipt of electronic copy: Accepts TIFF, GIF and JPEG formats (and also some others when embedded in PDF documents; GIF and JPEG are only permitted by a small number of receiving Offices), performs format and integrity tests. Converts all drawings to TIFF for main processing (original formats also kept for records and may be used for some processing – see below).
- (c) Viewing by International Bureau in electronic dossier, including both the viewing itself and the addition of new indicators flagging the use of different file types to ensure correct processing.
- (d) Rendering of search copy as paper or electronic file (for international applications filed at RO/IB).
- (e) OCR of international applications received in PDF format: In these applications, the text and drawings come in a single file with many complex component parts. Because of the assumptions relied on by the present processing systems to handle the different parts correctly with a high degree of automation, this may be one of the most difficult systems to update, even though the drawings themselves are not usually subject to OCR (though a few drawings do contain considerable amounts of text, contrary to the requirement of Rule 11.11).
- (f) Preparation of media (for example, DVDs) containing published international applications and related material: this mainly involves making copies of existing files and the development relates to adding new file types and file descriptions, rather than image processing.
- (g) Changing print systems to automatically direct color copies to appropriate printers: The IB no longer routinely prints complete paper sets of IAs for any Offices, but delivers specific copies on request. If color copies of IAs were required, they would need to be directed to color printers (see paragraph 13).

(h) Preparation of publication copy of international application: this would require integration of new drawing editors for making both manual and automated changes to drawings (processes such as “stamping” pages with application numbers and indications of substitute sheets, and extracting images for the front page), in addition to updating the system to deal with different file types and related type indicators.

(i) Publication of the IAs is made available in electronic form and updated weekly (Patentscope). The components involved are in some cases general purpose graphics file processing tools which can already deal with other file formats.

7. The additional file size and processing requirements for color drawings would require additional disk space and potentially new and more powerful servers, depending on the number of color drawings (the examiners’ workstations are expected to be sufficiently powerful for the local processing required). For very large scale use of color drawings, improved internal and external network capacity would also need to be considered, but this is currently considered unlikely to be a problem in the short to medium term.

8. The details of both processing and disk requirements depend on the amount of use of color drawings and decisions on permitted file size. Bearing in mind that multiple copies of IAs need to be stored, the estimates of *additional* disk capacity are as follows:

Average size of a color drawing 1 MB, 10% of filings include color drawings: +1TB /Year

Average size of a color drawing 1 MB, 50% of filings include color drawings: +5TB/Year

Average size of a color drawing 5 MB, 50% of filings include color drawings: +25TB/Year

Average size of a color drawing 10 MB, 50% of filings include color drawings: +50TB/Year

9. To put this in perspective, the current global size of the storage system for PCT processing is approximately 50TB. The above figures do not take into account further increases if priority documents also routinely contain color drawings. This is likely to be a major proportion of the cost of implementing a new system because the cost of storage is not simply proportional to the amount of disk space required but increases much faster as a result of other factors, such as the need to ensure that the system is capable of both serving the processing requirements and backing up the larger amounts of data properly.

10. The management of color drawing and photographs would have little impact on the standard ST.36 and Annex F. The IB expects to make some small adjustments to its IT systems, especially tools used to extract and to upload data exchanged with Offices.

EFFORT / COSTS ESTIMATE

11. The effort needed to make the changes to the electronic systems would depend on the exact details of the required changes (notably, the extent to which dual output of color and black and white drawings is required by national Offices which do not accept color drawings for their national phase processing). However, the development effort is expected to be around 200-300 man/days, excluding the required update to the OCR processes¹, updates to or replacement of the PCT-SAFE XML Editor² and any infrastructure costs involved in handling the larger files and additional processing.

12. With the possible exception of the OCR processes, none of the individual changes likely to be needed would take more than 40 man/days of development work, including testing of interaction with other related components.

13. Noting that paper copies of IAs are currently only printed either for sending from RO/IB to International Searching Authorities (a process that the IB hopes will be very much reduced or eliminated within the next few years), or else in response to special requests, the existing color printing capacity of the IB is expected to be sufficient. The additional costs in this area are therefore expected to be development costs and the additional expense of printing color copies, without further infrastructure costs.

14. While printing color documents is approximately 5 times as expensive as printing black and white documents, the overall additional cost to the IB of printing color "pamphlets" is expected to be insignificant as long as designated Offices do not make additional requests for copies of international applications specifically because the drawings are in color.

15. Provided that the ability to file color drawings is limited to IAs filed in electronic form, the additional manpower costs should be limited to the increased preparation time and handling time for creating and dispatching the additional physical media required to hold the larger files being sent to Offices which require their data on CD or DVD.

16. Ongoing additional costs would be expected for:

- (a) maintaining the larger IT infrastructure mentioned above;
- (b) printing color documents, which should be low provided that requests for paper copies do not increase; and
- (c) providing a greater number of blank media required to transfer the larger files to Offices requiring information on DVD, which will again be low, except that will take more time to burn them.

¹ The assessment of the time and cost of updating the OCR system has not yet been completed. It is expected to be one of the more expensive and difficult system components to change, but will nevertheless not result in a very large percentage increase in the overall estimated cost.

² It appears technically fairly simple to enhance the PCT-SAFE Editor to permit additional file types, but it is not clear whether this would be permitted under the current license (further negotiations are needed with the current owner of this product).

CONCLUSION

17. The upgrade of the existing IB systems for the management of photographs and color drawings will certainly require additional investments in terms of software development, hardware upgrade and maintenance. However, the need to fit the relevant work into efficient development schedules for each system, together with the need to provide high quality sample data to Offices and other data users 6 months in advance of the change, means that approximately 1 year would be needed by the IB for implementation after a decision on the precise scope of the changes. This period might need to be increased to take into account the needs of receiving Offices, International Authorities and designated Offices in making any necessary changes to their systems.

18. Limitation to only black and white drawings might be built into some Offices' systems and might require significant amounts of development and testing in order to support photographs and color drawings at all stages of the process. National Offices are invited to launch an internal assessment to identify the potential impact that such changes may have on their systems and equipments, and necessary tests to compare actual and expected behaviors of their systems when handling both black & white and color drawings.

19. Accepting color drawings should be considered in some cases as the only way to properly disclose a claimed invention. The two possible categories (black & white, and color) for presenting drawings in PCT applications would coexist for a period of time to enable Offices that cannot yet manage color drawings to continue their activities in good conditions and gradually prepare to join the Offices that already accept color drawings.

[End of Annex and of document]