Committee on WIPO Standards (CWS)

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PROPOSAL FOR THE REVISION OF WIPO STANDARD ST.88

*Document prepared by the Design Representation Task Force Co-leaders*

SUMMARY
1. The Design Representation Task Force (DRTF) is proposing revisions to the current version of WIPO Standard ST.88 to incorporate recommendations on 3D image and 3D model via reference to WIPO Standard ST.91 and to improve consistency and clarity via minor typographical changes.

BACKGROUND
2. At its eighth session in November 2020, the Committee on WIPO Standards (CWS) adopted the new WIPO Standard ST.88 on recommendations for electronic representation of industrial design, and requested the DRTF to prepare a proposal for treatment of Scalable Vector Graphics (SVG) format for the next CWS session (see paragraphs 31 to 41 of document CWS/8/24). At that time, it was also noted that the Standard as adopted did not make recommendations on 3D image and 3D model and it was proposed to revisit the topic at a later date to revise the Standard if necessary.

3. A revision to WIPO Standard ST.88 was approved by the CWS at its ninth session, introducing SVG as an optional format in paragraph 12 of the Standard (see paragraphs 80 to 83 of document CWS/9/25).

4. Following the adoption of the new WIPO Standard ST.91 “Recommendations on digital three-dimensional (3D) models and images” at the ninth CWS, and in view of Task No. 57 to “ensure the necessary revisions and updates of WIPO Standard ST.88”, the DRTF co-leaders have revisited the issue of including recommendations on 3D within WIPO ST.88, either explicitly or via reference to WIPO ST.91.
5. Two drafts accompanied by two rounds of discussion amongst the Task Force members were posted on the DRTF wiki page during 2023. All feedback from the Task Force members was incorporated and is presented in this final proposal for revision to WIPO Standard ST.88.

PROPOSED REVISION OF WIPO STANDARD ST.88

6. The DRTF has prepared a proposal for revision of WIPO Standard ST.88 for consideration and where appropriate approval by the CWS. The proposed revision is detailed in the Annex to the present working document as well as being summarized below. The two types of changes can be categorized as follows:

- **Category 1**: which relates to the incorporation of recommendations on 3D image and 3D model via reference to WIPO Standard ST.91; and
- **Category 2**: which covers minor typographic changes for improving consistency and clarity.

7. The following is a summary of Category 1 changes, as indicated in the Annex:

(a) paragraph 3 (a): update the current definition of ‘3D model’ to align with the definition provided in WIPO Standard ST.91; and add footnote referencing ST.91;
(b) paragraph 3 (b): add new term ‘3D image’ with the definition from ST.91; and add footnote referencing ST.91;
(c) paragraph 5 (d): add new reference, "WIPO Standard ST.91 Recommendations on digital three-dimensional (3D) models and images;"
(d) paragraph 17: add new section heading and paragraph as follows:

> "RECOMMENDATIONS FOR ELECTRONIC 3D IMAGE AND 3D MODEL FORMAT AND SIZE"

> "17. It is recommended that 3D image and 3D model formats for industrial designs, where accepted by the Office, follow relevant recommendations provided in WIPO Standard ST.91;"

(e) paragraph 25: add new paragraph as follows:

> "If the hologram is submitted as a 3D image or 3D model, then it should follow the recommendations for 3D images and 3D models above;"

(f) paragraphs 33 - 35: update the end of each paragraph with the following:

> ‘(for 3D specific recommendations, see also WIPO Standard ST.91).’

(g) paragraph 41: add new paragraph on recommendations for transformation of electronic images as follows:

> ‘For transformation of 3D images and 3D models, including converting 3D images or 3D models to 2D views, relevant recommendations in WIPO Standard ST.91 should be followed;’

(h) paragraph 25: add new paragraph on recommendations for hologram representation as follows:

> ‘If the hologram is submitted as a 3D image or 3D model, then it should follow the recommendations for 3D images and 3D models above;’ and

(i) paragraphs 33 - 35: update the end of each paragraph with the following:

> ‘(for 3D specific recommendations, see also WIPO Standard ST.91).’
8. The following is a summary of Category 2 changes, as indicated in the Annex [Note: Strikethrough denotes a deletion, underline denotes an addition]:

(a) paragraph 1: update the introduction text to align with section headings as follows:

‘This see Standard provides recommendations provide guidance on how to create, capture, store, display, manage, transform, search, publish and exchange electronic representations of industrial designs’;

(b) paragraph 2: revise text for clarity as follows:

‘These recommendations are intended to achieve facilitate:
• The Maximum re-use of the same electronic representations when for applicants to capture the same design at multiple Intellectual Property (IP) offices’;

(c) paragraph 3: revise text for consistency as follows:

‘For the purposes of this recommendations Standard, the following terms definitions apply unless otherwise specified’;

(d) paragraphs 3 (a)-(p): revise text in definitions for consistency and clarity by replacing ‘means’ with ‘is’ and moving acronyms to follow definitions;

(e) paragraph 4: add two acronyms, DPI and PPI;

(f) paragraph 5: update text for clarity by capitalizing ‘r’ for all instances of ‘Recommendation’;

(g) paragraphs 6 and 42: replace all instances of ‘IP office’ and ‘office’ to ‘Office’;

(h) paragraph 9: update end of text to specify ‘of the receiving Office’, as follows:

‘Offices should not apply any transformations to images received from applicants which do not comply with the Office’s image requirements of the receiving Office’;

(i) paragraphs 11-16 and 24: insert ‘2D’ before each instance of ‘image’ to improve clarity;

(j) paragraph 21: update paragraph reference from ‘22’ to ‘23’;

(k) paragraph 38: relocate final paragraph on publishing video files from section ‘Recommendations for electronic video format and size’ to section ‘Recommendations for online publication of representations’; and

(l) paragraph 45: remove ‘captured by the industrial property office’, as touch-ups can be made by the receiving Offices for publication or any other Offices for other purposes, as follows:

‘Offices may perform limited touch-ups of electronic images captured by the industrial property office.’
9. The CWS is invited to:

   (a) note the content of this document and the Annex to the present document; and

   (b) consider and approve the proposed revisions to WIPO Standard ST. 88 as described in paragraphs 7 and 8 above and reproduced in the Annex to the present document.

[Annex follows]
STANDARD ST.88

RECOMMENDATIONS FOR ELECTRONIC REPRESENTATION OF INDUSTRIAL DESIGNS

Revision approved by the Committee on WIPO Standards (CWS) at its ninth session on November 5, 2011.
Proposal presented for approval by the Committee on WIPO Standards (CWS) at its eleventh session

INTRODUCTION

1. This Standard provides recommendations that provide guidance on how to create, capture, store, display, manage, transform, search, publish and exchange electronic representations of industrial designs.

OBJECTIVES

2. These recommendations are intended to facilitate:

   • The maximum re-use of the same electronic representations when applicants file the same design at multiple Intellectual Property (IP) offices;
   • A common set of requirements for IP offices to exchange electronic representations data;
   • A common set of requirements for IP offices to process and publish electronic representations; and
   • A common set of requirements to enhance automated search of electronic representations.

DEFINITIONS AND TERMINOLOGY

3. For the purposes of this Standard, the following terms and definitions apply unless otherwise specified:

   (a) “3D model” means an electronic file that is created by specialized software, for mathematically representing the surface of an object’s visual representation in three dimensions;
   (b) “3D image” is a digital image that represents objects displayed in three dimensions such as 3D photos and stereoscopy;
   (c) “industrial design” means the visual aspect of an object, including its two-dimensional and three-dimensional features of shape and surface. Industrial designs are protectable through registration in an industrial property office or another competent authority. Some jurisdictions distinguish between a “design” for two-dimensional objects and a “model” for three-dimensional objects;
   (d) “DPI” or “Dots Per Inch” or “DPI” means a measurement of a physical device, such as a display or printer, of the number of individual dots that can be placed within the span of one linear inch. DPI is commonly applied to monitors, scanners and even digital cameras for which the technical correct term is pixels per inch, but DPI is commonly used instead. For the purposes of the present Standard, therefore, DPI is used as a measurement for all image input or output devices mentioned in this Standard;
   (e) “electronic representation” means the drawing(s) and/or photograph(s) representing a design on computer files, which may have been created and/or converted from the original physical representation, the original paper representation and the original electronic representation;
   (f) “EXIF” or “Exchangeable Image File Format” or “EXIF” is a standard for storing metadata with different image formats, including JPEG and TIFF. It is commonly used by digital cameras, smartphones, scanners, and other systems handling image or audio files;
   (g) “hologram” means a photographic recording of a light field, rather than of an image formed by a lens, and it is used to display a fully three-dimensional image of the holograph subject;

1 As defined in WIPO Standard ST.91.
2 As defined in WIPO Standard ST.91.
3 DPI is not a property of the image itself, which is independent of any physical measurements. Electronic image files do not contain an inherent DPI, but may contain a suggested DPI value that provides output devices with a recommended density for displaying the image.
“image search” is a method of search for designs by inputting one or more images;
“metadata search” is a method of search for designs by inputting metadata text;
“original electronic representation” means the electronic drawing(s) and/or photograph(s) representing a design as submitted by the applicant on computer files;
“original paper representation” means is the drawing(s) and/or photograph(s) representing a design as submitted by the applicant on paper;
“original physical representation” means is the physical product specimen (or model) embodying a design as submitted by the applicant to the IP office;
“raster image” means is an image that is composed of a map of points (pixels), referred to as a bitmap. Typical file formats for raster images include JPEG, TIFF, PNG and BMP;
“resolution” means is the number of pixels in an electronic image representing its width and height. This is usually given as width x height, e.g. 1024 x 768;
“vector graphics” means is an image file that is composed of shapes formed of mathematical formulas and coordinates on a 2D plane. As opposed to raster images, vector graphics have the property of scaling infinitely without any degradation of quality; and
“view” means is the 2D image formed when the design (normally a 3D object) is viewed or projected from a certain position, e.g., front view, rear view, perspective view.

4. The following acronyms are used in this document:
(a) 4K UHD stands for 4000 pixels Ultra-High-Definition, a video resolution of at least 3840 x 2160 pixels;
(b) ANSI stands for American National Standards Institute;
(c) DPI stands for Dots Per Inch;
(d) EXIF stands for Exchangeable Image File Format;
(e) GIF stands for Graphics Interchange Format;
(f) GPS stands for Global Positioning System;
(g) IEC stands for International Electrotechnical Commission;
(h) ISO stands for International Organization for Standardization;
(i) JPEG stands for Joint Photographic Experts Group;
(j) PDF stands for Portable Document Format;
(k) PNG stands for Portable Network Graphics;
(l) PPI stands for Pixel Per Inch;
(m) TIFF stands for Tagged Image File Format;

REFERENCES
5. The following WIPO Standards are of relevance to should be applied as referenced in this Standard:
(a) WIPO Standard ST.80 F Recommendation concerning bibliographic data relating to industrial designs;
(b) WIPO Standard ST.81 F Recommendation concerning the content and layout of industrial design gazettes;
(c) WIPO Standard ST.86 F Recommendation for the processing of industrial design information using XML (Extensible Markup Language);
(d) WIPO Standard ST.91 F Recommendation on digital three-dimensional (3D) models and images; and
(e) WIPO Standard ST.96 F Recommendation for the processing of intellectual property information using XML (EXTENSIBLE MARKUP LANGUAGE).

GENERAL RECOMMENDATIONS
6. This Standard recommends that industrial design documents should provide images in an electronic format, including applications, publications, and other documents containing designs. Electronic image formats and sizes recommended by this Standard should be accepted by each IP Office.

7. If an Office has established its preferred electronic representation of designs which differs from this Standard, it is recommended that the Office announce its preferences in its official publications or websites regularly. This includes elements such as image format, resolution, and file size.
8. Offices should preserve the original electronic representation submitted with an application for archival purposes.

9. Offices should not apply any transformations to images received from applicants which do not comply with the image requirements of the receiving Office, such as changing the size, resolution, scaling, color space, or other features to bring the image into compliance. If an application contains images which do not comply with the Office's requirements, the images should be rejected with a message informing the applicant which requirement was not met and how to provide acceptable images.

10. Offices should not remove any information from submitted images for archival purposes. Copies of the image for other purposes, such as publication or data exchange, should have sensitive or personal information removed. For instance, EXIF metadata in an image file may contain data such as name or GPS location.

RECOMMENDATIONS FOR ELECTRONIC 2D IMAGE FORMAT AND SIZE

11. This Standard recommends JPEG and PNG as preferred electronic 2D image formats for industrial designs.

12. Where supported by the Office, images may optionally use one of the following alternative formats instead of a preferred format:

   (a) SVG format: this format is not preferred because some Offices have uncertainties about integrating SVG with their existing processes and requirements;
   (b) TIFF format: this format is not preferred because it is not compressed, leading to very large file sizes; and
   (c) GIF format: this format is not preferred because PNG is a newer format with better support for color and transparency features.

13. 2D images should not use PDF format. PDF is designed for complex documents not for storing images, and can contain extraneous information besides the image. Determining the precise boundaries between images and other document elements (such as where the margin begins) may be difficult in PDF. Converting or extracting images from PDF to other formats may introduce errors or unintended changes.

14. Offices should accept at least one of the preferred 2D image formats for filing and should accept all of the preferred 2D image formats for data exchange. Offices may accept other 2D image formats for filing as well, as long as they convert the image to one of the preferred formats for data exchange and publication.

15. 2D images should be accepted in color, grayscale, and black & white as chosen by the applicant. Files of at least 5 MB in size should be accepted. 2D images should have a minimum resolution of 300 x 300 pixels and a maximum resolution of 3840 x 2160 pixels (corresponding to 4K UHD). When a design application or submission includes multiple 2D image files, it is recommended that Offices set a limit on the total size of all images in the design application. This limit should not be less than 100MB, and may be higher if the Office wishes to accept larger submissions.

16. Where the recommendation related to suggested sizes is not able to be followed due to the variable nature of the figurative elements, e.g., long and narrow strip or ribbon type figurative elements, it is recommended that in addition to a total view, the complete 2D image also be presented as multiple sections, with each section in a separate file that complies with the requirements above, and textual instructions on how the sections fit together.

RECOMMENDATIONS FOR ELECTRONIC 3D IMAGE AND 3D MODEL FORMAT AND SIZE

17. It is recommended that 3D image and 3D model formats for industrial designs, where accepted by the Office, follow relevant recommendations provided in WIPO Standard ST.91.

RECOMMENDATIONS FOR ELECTRONIC VIDEO FORMAT AND SIZE

18. Files containing video or multimedia should use one of these preferred formats: MP4 container files (.mp4) with one of the following video codecs: AVC/H.264 or MPEG-2/H.262.

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4 The Office may choose how to handle this situation, for instance, whether to reject the entire application, or to accept the application and require the applicant to replace the rejected files.
5 JPEG provides lossy compression of images to create small file sizes and is generally preferable for works such as photographs.
6 PNG provides lossless images with compression and is generally preferable for works such as drawings, figures, or graphical designs.
7 The recommended formats may be updated in the future as conditions change.
8 These formats are ISO standards and have the widest hardware and software support. There are known patent pools covering these formats from the MPEG Licensing Administration, including for video playback, but common platforms such as Windows, Mac OS, Android, and iOS include licenses for playback at this time.
19. Where supported by the Office, design applications containing video or multimedia may use one of these alternative formats instead: WebM® or MP4 container files with one of the following video codecs: VP9 or AV1.  

20. Multimedia files should not use video container or codec formats other than the preferred and alternative formats. For instance, the formats MPEG-1, VP8, and HEVC/H.265 should not be used.  

21. Offices should accept at least one of the preferred or alternative multimedia formats for filing, and should accept all of the preferred and alternative formats for data exchange with other Offices. For filing, Offices may accept formats other than preferred or alternative formats at their discretion as long as they convert the video to one of the preferred or alternative formats for data exchange and publication. However, it is preferable to avoid conversions altogether (see paragraph 23).  

22. Offices should announce what container and codec formats are accepted by the Office. Offices should also verify that submitted multimedia files use a container and codec format accepted by the Office. Such checks can be performed in software at the time of submission. Simply checking the file extension or container format is not sufficient, as some containers (particularly MP4) can use dozens of different codecs. If a submitted file does not use an accepted format, the file should be rejected.  

23. It is recommended that Offices do not convert multimedia files to a different format, as this can introduce errors, artifacts, or reduction in quality. Conversions may introduce artifacts in the video or audio data and may not match the original electronic representation. Conversion may be required in certain instances for publication or data exchange, such as where an Office accepts formats for filing not recommended by this Standard. In these cases, Offices should verify that the converted format faithfully reproduces the relevant features of the original format covered by the IP right. Offices should preserve the multimedia files originally submitted by the applicant for the duration of the IP right. If format conversions are done for publication or data exchange, the original format should also be made available online or on request.  

--- When publishing video files, it is recommended that Offices provide information (including by linking to other websites) about the video formats it accepts and how to play them on various platforms. This information should be linked as near as possible to the published video so users can easily find it.  

RECOMMENDATIONS FOR HOLOGRAM REPRESENTATION  
24. If the hologram is submitted as a series of 2D images, then it should follow the recommendations for 2D images above.  

25. If the hologram is submitted as a 3D image or 3D model, then it should follow the recommendations for 3D images and 3D models above.  

26. If the hologram is submitted as a video object, then it should follow the recommendations for video formats above.  

27. It is not recommended that Offices accept physical holograms in applicant submissions at this time, as there does not appear to be a general way to transform them into digital specimens. If Offices do accept physical holograms, it is recommended that they only use it as a visual aid and that it does not form part of the specification or define the scope of protection.  

RECOMMENDATIONS FOR CAPTURING ELECTRONIC IMAGES  
28. Where Offices accept original physical or paper representations as part of an application, it is recommended that the images be a minimum of 3 cm by 3 cm in size, and a maximum of 21 cm by 27 cm (reflecting shared dimensions of A4 and ANSI Letter size paper).  

29. It is recommended that Offices convert original paper representations to digital images for publication and management. The conversion is recommended using one of the preferred formats for 2D raster images above. Alternatively, Offices may convert the paper image to one of the alternative 2D image formats as long as they convert to a preferred format for data exchange. The resolution of captured images can be as high as the Office deems appropriate, but in all cases should be high enough to accurately capture the details of the source image.  

30. Offices should scan images for capture with at least 300 DPI to accurately represent the image. Offices should not scan images with lower than 200 DPI or higher than 600 DPI.  

31. Captured images should be in color unless the original paper representation is black and white. The captured image should have the same legal authenticity as the original paper representation.  

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3 WebM is supported by most web browsers, though other platforms may require installing software to play.  
10 These codecs are designed for royalty-free use and supported by most web browsers. Both codecs are also supported within MP4 containers. At this time industry use of AV1 appears limited, however major platforms are planning to adopt it in the near future.  
11 Superseded by newer formats and not supported by MP4 containers.  
12 Not widely supported at this time, covered by multiple competing patent pools.  
13 The Office may choose how to handle this situation, for instance, whether to reject the entire application, or to accept the application and require the applicant to replace the rejected files.
32. The original paper representation should be stored for archival purposes for at least one year longer than the
duration of the IP right.

RECOMMENDATIONS FOR ONLINE PUBLICATION OF REPRESENTATIONS

33. Offices should publish images and documents containing images online. For 3D specific recommendations,
relevant recommendations in WIPO Standard ST.91 should be followed (see also WIPO Standard ST.91)

34. Images embedded in other documents, such as PDF, should reproduce the characteristics of the original image as
closely as feasible. When publishing documents with embedded images online or in another electronic medium, Offices
should also make the images available as separate files. For 3D specific recommendations, relevant recommendations in
WIPO Standard ST.91 should be followed (for 3D specific recommendations, see also WIPO Standard ST.91)

35. Images should be published in a preferred or alternative format, with a minimum resolution of 300 pixels in each
dimension (width and height). Images should be published in color unless the original image is black and white. Format
conversions or other transformations of submitted images should be avoided whenever possible as they have the potential
to introduce errors, artifacts, distortions, or other differences. If a conversion or transformation must be done, Offices should
verify that the resulting image faithfully reproduces the relevant features of the original image. For 3D specific
recommendations, relevant recommendations in WIPO Standard ST.91 should be followed (for 3D specific
recommendations, see also WIPO Standard ST.91)

36. If the published image differs from the original image submitted by the applicant in any way (file format, resolution,
color space, or other aspects), the Office should note the differences in the publication. E.g. a note such as “Original image:
300 x 400 JPEG 8-bit color” would be appropriate. An indication of how the public can access the original image is also
recommended.

37. Offices should remove metadata containing sensitive information from image files intended for publication. For
example, EXIF metadata may contain name or geographic location. However, the original file with all metadata should be
preserved for archival purposes.

38. When publishing video files, it is recommended that Offices provide information (including by linking to other
websites) about the video formats it accepts and how to play them on various platforms. This information should be linked
as near as possible to the published video so users can easily find it.

RECOMMENDATIONS FOR TRANSFORMATION OF ELECTRONIC IMAGES

39. Electronic images submitted with an application that are of insufficient quality or do not conform to the formats
specified in this Standard should be rejected by the Office and the applicant asked to resubmit the images.

40. If an Office transforms a figurative element from one storage format to another (e.g., GIF to PNG), it is recommended
that the Office retain the original format as well as the transformed format. If an Office chooses to discard the original format
then it is recommended that clear procedural guidelines be established and documented.

41. For transformation of 3D images and 3D models, including converting 3D images or 3D models to 2D views, relevant
recommendations in WIPO Standard ST.91 should be followed.

42. If an Office performs touch-ups on an electronic image either submitted by an applicant or captured by the Office, it
is recommended that the Office establish a set of procedures and guidelines for the physical process and ranges of touch-
ups that the office will carry out (e.g., removing minor background specks — no larger than 1 mm). This will ensure
consistency within the particular Office.

43. Given the variable nature of scanned images, and in particular the color rendition, Offices are recommended to use
textual descriptions and detailed color claims when performing touch-ups on an electronic image of the corresponding
figurative element. It is also recommended that records of performed touch-ups be kept for future reference.

44. If an Office performs touch-ups on an electronic image either submitted by an applicant or captured by the Office, the
Office may choose to send the touched-up image back to the applicant for approval.

45. Offices may perform limited touch-ups of electronic images captured by the industrial property office. Such touch-
ups may include:

(a) erasing dust, hair, or other blemishes in the background of the image;
(b) erasing or color correcting background elements on the periphery of the figurative elements;
(c) erasing marks from creases in the original physical representation of the image;
(d) color correcting or color balancing the electronic image so as to better capture the original physical
representation of the figurative element unless it substantially modifies the scope of the claims of the
design.
46. Given the variation in color rendition due to scanning and printing variability, it is recommended that Offices clearly indicate that the colors are only for presentation purposes and that accurate renditions of the color are dependent on the equipment used. It is recommended that a disclaimer to this extent be included whenever a color figurative element is presented.

RECOMMENDATIONS FOR SEARCH OF ELECTRONIC IMAGES

47. It is recommended that Offices make images searchable by submission data, including at least application or file number, applicant name, and date of submission or registration.

48. It is recommended that Offices make images searchable using the Locarno Classification, including classes, subclasses, and types of goods.

RECOMMENDATIONS FOR VIEWS OF DESIGNS

49. The minimum and maximum number of views established by the Office for a design application should permit accurate representation of the design. The number of views required for accurate representation depends on the nature of the product, the features to be protected, the position (perspective) of views provided by the applicant, and other features of the Office's legal requirements.

50. It is recommended that Offices designate an exemplary image for design applications, either by selecting a representative image, selecting the first image in the application, or allowing the applicant to indicate the exemplary image. The exemplary image should be displayed prominently in publications of the application or registered design, such as on the title page of publications or as an accompanying thumbnail image in electronic catalogs, indexes, or databases.

[End of Standard]

[End of Annex]