

Committee on WIPO Standards (CWS)

Twelfth Session
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PROPOSAL FOR THE REVISION OF WIPO STANDARD ST.91

Document prepared by the 3D Task Force Leader

SUMMARY

1. The 3D Task Force is proposing revision to WIPO Standard ST.91. This proposed revision includes the addition of a new Annex and the removal of the definition of X3D.

BACKGROUND

2. The 3D Task Force is responsible for revising WIPO Standard ST.91, under the framework of Task No. 61 whose description reads:

"Ensure the necessary revisions and updates of WIPO Standard ST.91, including methods of search for 3D models and 3D images."

3. While the definition of file format X3D is provided within WIPO Standard ST.91, it is not one of the file formats recommended by the Standard. The exclusion of X3D is because it is not considered to be widely used, and so does not comply with the selection criteria used to determine whether to include a file format or not. For the transparency, some members of the Task Force suggested providing the full list of selection criteria that is used to assess file formats and the result of this is the newly proposed Annex to WIPO Standard ST.91. In addition, the definition of the X3D file format is considered redundant.

PROPOSED REVISION OF WIPO STANDARD ST.91

4. The 3D Task Force has prepared a proposal for revision of WIPO ST.91 for consideration and where appropriate approval by the CWS, and all changes are indicated in full in the Annex to the present document using tracked changes. In the Annex, strike-through text indicates a deletion and underlined text indicates an addition.

5. The proposed changes to the WIPO Standard ST.91 can be summarized as follows:
- Remove the X3D definition in paragraph 3(n): “X3D – *Successor of Virtual Reality Modeling Language (VRML), an Open ISO Standard XML format.*”;
 - Add links within the document to relevant Standards in the References section;
 - Add a reference to the new Annex in paragraph 6; and
 - Add the new Annex: a list of the criteria used to select recommended 3D file formats.
6. As this Standard does not have a version number, there is no need to propose a new version number and the date of publication is considered sufficient as a unique reference.

7. *The CWS is invited to:*

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

(b) consider and approve the proposed revisions to WIPO Standard ST.91 as referred to in paragraph 5 above and reproduced in the Annex to the present document.

[Annex follows]

STANDARD ST. 91

RECOMMENDATIONS ON DIGITAL THREE-DIMENSIONAL (3D) MODELS AND 3D IMAGES

*Proposal presented for approval by the Committee on WIPO Standards (CWS)
at its twelfth session*

INTRODUCTION

1. This Standard provides recommendations for Intellectual Property Offices (IPOs) and other interested parties that manage, store, process, exchange or disseminate IP data using digital three-dimensional (3D) models and 3D images.
2. This Standard has the following objectives:
 - (a) determination of formats that are available, compatible or interoperable with different software used by applicants in order to facilitate their efforts to prepare application materials before filing;
 - (b) reducing the time of IP application processing by IPOs;
 - (c) facilitating IP application filing to different IPOs due to adoption of recommended formats among IPOs;
 - (d) harmonization of requirements for data exchange on subjects for IP rights protection with digital 3D visual representations among IPOs and other organizations; and
 - (e) set of requirements for the publication of information on subjects for IP rights protection with digital 3D visual representations.

DEFINITIONS

3. For the purposes of this Standard, unless otherwise specified:
 - (a) 3D model – 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 Images – Digital images that represent objects displayed in three dimensions such as 3D photos and stereoscopy;
 - (c) CAD – Computer Aided Design;
 - (d) 3D PDF – A PDF document that contains 3D models;
 - (e) IGES – Initial Graphics Exchange Specification;
 - (f) OBJ – An open geometry vertex file format used for CAD and 3D printing;
 - (g) MOL/CDX – A text-based chemical file format that describes molecules and chemical reactions;
 - (h) PDF – The Portable Document Format is a file format developed by Adobe;
 - (i) Raster image – 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;
 - (j) STL – Standard Tessellation Language – a file format native to the stereolithography CAD software created by 3D Systems;
 - (k) STEP – Standard for the Exchange of Product model data – an open ISO Standard which can represent 3D objects in Computer-aided design (CAD) and related information;
 - (l) U3D – Universal 3D (U3D) is a compressed file format standard for 3D computer graphics data;
 - (m) Vector graphics – 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

~~(n) X3D—Successor of Virtual Reality Modeling Language (VRML), an Open ISO Standard XML format.~~

REFERENCES

4. The following WIPO Standards and other documents are relevant to the present Standard:

WIPO Standard ST.9	Bibliographic data on and relating to patents and SPCs
WIPO Standard ST.10	Published patent documents
WIPO Standard ST.60	Bibliographic data relating to marks
WIPO Standard ST.63	Content and layout of trademark gazettes
WIPO Standard ST.67	Electronic management of the figurative elements of trademarks
WIPO Standard ST.80	Bibliographic data relating to industrial designs
WIPO Standard ST.81	Content and layout of industrial designs gazettes
WIPO Standard ST.88	Electronic representation of industrial designs
WIPO Standard ST.96	Processing of Industrial Property information using XML
ISO Standard 10303	Product data representation and exchange standard

GENERAL RECOMMENDATIONS

5. An application for IP protection may contain a 3D visual representation of an object in the form of a digital 3D model or 3D image in accordance with the requirements of the IPO receiving the application. Applicants can be encouraged to provide a 3D visual representation of the object as supplementary material to the application or as the main visual representation of the object, if specified by the requirements of the receiving IPO.

6. Formats and other characteristics of the received image files (e.g., file size) accepted by each IPO should be according to the recommendations of this Standard. These formats were selected in accordance with the criteria set out in the Annex.

7. If an IPO has previously established its preferred image formats and other characteristics, it is recommended that the IPO announce in its official publications at regular intervals and/or on its websites, the image formats, sizes and other specific characteristics that are acceptable in application filings.

RECOMMENDATIONS FOR 3D MODELS AND 3D IMAGES FORMATS AND FILE SIZE

8. The following recommendations apply to providing application materials for the indicated type of IP rights.

Patent for invention or utility model

9. 3D visual representation of an invention or utility model should preferably be formatted as at least one of the formats: STEP, IGES, U3D, OBJ or STL. Maximum file size should not exceed 50 MB. If required, at an applicant's request the receiving IPO can accept files larger than the said maximum.

10. For chemical structures that are included in patent applications, 3D visual representation should preferably be formatted as CDX or MOL. Maximum file size should not exceed 50 MB.

Industrial design

11. 3D visual representation of an industrial design should preferably be formatted as at least one of the formats: STEP, IGES, U3D, OBJ or STL. Maximum file size should not exceed 50 MB. If required, at an applicant's request the receiving IPO can accept files larger than the said maximum.

Trademark

12. 3D visual representation of a trademark should preferably be formatted as at least one of the formats: STEP, IGES, U3D, OBJ or STL. Maximum file size should not exceed 50 MB. If required, at an applicant's request the receiving IPO can accept files larger than the said maximum.

[...]

[Annex to ST.91 follows]

ANNEX

CRITERIA FOR SELECTING 3D FORMATS

Revision presented for approval by the Committee on WIPO Standards (CWS) at its twelfth session

The file formats described in this Standard were selected after assessing potential formats that may be recommended according to the five basic criteria set out below, where all criteria were considered equal.

1. Wide-spread adoption

Objective: This criterion ensures a selection of formats that are widely used by applicants.

Solution: In order to determine widely adopted 3D formats a survey¹ was conducted among IPOs and Industry, where the respondents indicated the formats currently used for processing visual representations of objects for IP right protection.

2. Openness/accessibility/standardization

Objective: This criterion ensures the format is reproducible in the long-term. For example, some unstandardized formats require the support of certain software and are not intended for long-term use.

Solution: The preference for open formats over proprietary formats was based on this objective for long term use with additionally making sure these formats are accessible to a wide range of users. The standardization is an advantage, and correlates with the long-term storage capabilities of formats, although in some cases standardized formats may be protected by patents.

3. Specific requirements/stored information

Objective: This criterion ensures the ability to store the mandatory elements of an IP right.

Solution: Various 3D formats have been analyzed to assess their comprehensiveness in storing information about an IP right, including the surface of the 3D object, textures, the possibility of containing several separate parts that can be considered separately during the examination process, etc. Some information relevant to IP right protection, such as chemical formulas and genetic sequences, was considered separately, since 3D visualisation of such objects can be useful both for examination purposes and for the publication of such data, but such objects may differ from the 3D models created using CAD systems or graphic editors.

4. Cross-platform /software accessibility

Objective: This criterion ensures that the applicant will be able to submit a visual representation in one of the recommended formats and that such published data will be viewable by the general public.

Solution: The possibility of opening and saving such formats in widely-available software that is used to create a visual representation of the objects for IP right protection (CAD, graphic editors), as well as the availability of various software for processing and displaying such formats, was also analyzed.

5. File size

Objective: This criterion ensures the performance of data processing, storage and publishing information systems.

Solution: The restrictions on file-size for storing, processing, and publishing of such objects were taken into account. For some of the purposes mentioned, formats that stored the necessary information in smaller files were preferred.

[End of Annex to ST.91 and of Standard]

[End of Annex and of document]

¹ See <https://www.wipo.int/export/sites/www/standards/en/pdf/surveys/3dmodels/analysis.pdf>