

Committee on WIPO Standards (CWS)

Thirteenth Session
Geneva, November 10 to 14, 2025

REPORT ON TASK NO. 61 BY THE 3D TASK FORCE

Document prepared by the 3D Task Force Leader

SUMMARY

1. The 3D Task Force presents a progress report on Task No. 61, describing the work carried out by the Task Force since the last session of the Committee on WIPO Standards (CWS). As part of the ongoing work, a draft of Annex II (3D Model Search) of WIPO Standard ST.91 has been prepared by the Task Force Leader in collaboration with the CWS Secretariat. This draft is currently under discussion within the Task Force, and is hereby submitted to the CWS for consultation and feedback.

BACKGROUND

2. At its sixth session, the CWS noted a proposal from the Russian Federation to promote broader acceptance of three-dimensional (3D) formats by intellectual property (IP) offices. The proposal stated that the use of 3D formats could allow more efficient methods of search and comparative analysis. As a result, Task No.61 was established with the following description:

"Prepare a proposal for recommendations on three-dimensional (3D) models and images".

3. At the same session, the CWS approved the creation of the 3D Task Force to perform this Task, with the Russian Federation designated as the Task Force Leader (see paragraphs 141 to 142 of document CWS/6/34).

4. At its ninth session, the CWS adopted WIPO Standard ST.91, entitled *"Recommendations on Digital Three-Dimensional (3D) Models and 3D Images"* (see paragraph 31 of CWS/9/25). This Standard provides recommendations for IP offices and other interested parties that manage, store, process, exchange or disseminate IP data using digital 3D models and 3D images. At the same session, following the adoption of the WIPO Standard ST.91, the CWS approved the revised description of Task No. 61, which reads:

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

5. At its tenth session, the CWS noted that the Task Force planned to develop search and comparison methods for 3D visual representations in line with the updated Task description. The Task Force Leader noted that IP offices need more time to work on 3D search methods, given their ongoing investigations, as well as limited experience that many IP offices currently have with the subject (see paragraph 122 of document CWS/10/22). As a result, the Task Force postponed presenting a proposal for recommended search and comparison methods until a future session of the CWS.

6. At its eleventh session, the CWS approved a draft questionnaire, which was presented by the Task Force. This questionnaire was intended to collect information on IP offices' practice of WIPO Standard ST.91 implementation and to raise the visibility of this Standard with Member States which may wish to participate in the Task Force in the future, as well as to inform potential future revisions of WIPO Standard ST.91.

7. The results of the survey on the implementation of WIPO Standard ST.91 were presented at the twelfth session of the CWS (see document CWS/12/26) and published in Part 7.17.2 of the WIPO Handbook on Intellectual Property Information and Documentation. The CWS noted the analysis of the survey results and supported organizing a workshop on 3D models and 3D images, where all interested parties were to be invited. (See paragraphs 116 and 117 of document CWS/12/29.)

8. At the same session, the CWS approved the revision to WIPO Standard ST.91, including addition of a new Annex on "Criteria for selecting 3D formats" and the removal of the definition of X3D (see paragraph 106 of document CWS/12/29). In addition, the CWS noted the work plan of the 3D Task Force, as presented in document CWS/12/12. The main activity outlined in the work plan was to research 3D search methods.

PROGRESS REPORT ON TASK NO. 61

Objective

9. The objective of the 3D Task Force is to ensure necessary revisions and updates of WIPO Standard ST.91. In order to understand the need for revision to the Standard, the Task Force has researched whether any recommendations on methods for searching 3D models and 3D images would be beneficial and prepared a draft Annex II to the Standard accordingly.

Progress evaluation

10. The 3D Task Force held three meetings in April, May and June 2025 to prepare revisions to WIPO Standard ST.91 and discuss other relevant topics. Following the decision of the twelfth session of the CWS, the International Bureau, in cooperation with the Task Force, organized the Workshop on IP Data in 3D Models and Images in a hybrid format, on May 14, 2025, at WIPO headquarters in Geneva and via an online platform. The Workshop brought together IP offices and other stakeholders to discuss the practical implementation of 3D models and 3D images in IP systems. Participants shared their experiences and focused on legal issues, such as the scope of protection and the need for harmonized publications of 3D models and 3D images. The event underscored the significant interest in effectively integrating 3D models into IP processes.

11. The Workshop concluded that 3D models and 3D images are a rapidly growing and important area for the IP community. While confirming that WIPO Standard ST.91 is a solid foundation for incorporating 3D data into IP systems, discussions emphasized the need for ongoing international collaboration to address technical, legal and procedural challenges. Future efforts will focus on revising the Standard to improve 3D search capabilities, promote global harmonization, and advance discussions within the Hague System to support the practical application of 3D models in industrial design protection. Key issues raised at the Workshop included the legal scope of protection and appropriate publication formats of 3D models and 3D images. The Workshop program, presentations and summary of the discussion are available on the meeting page at:

https://www.wipo.int/meetings/en/details.jsp?meeting_id=86489 .

12. At its meeting on May 15, 2025, the 3D Task Force reviewed the outcomes of the Workshop. Recognizing the varying practices among IP offices and the involvement of multiple stakeholders, the Task Force agreed to continue its work by developing a dedicated survey and analyzing the responses to gain deeper insights and guide future actions. The Task Force members also shared preliminary views on the scope of protection while emphasizing the need for further internal consultations with relevant teams, including legal and IT departments at their Offices.

13. Following the agreement made at the May meeting mentioned above, the Task Force Leader prepared a survey questionnaire on the legal framework and publication of 3D models and 3D images for patents, industrial designs and trademarks and invited the Task Force members to respond to the survey.

14. Responses were provided by four IP offices, from the following Member States: Japan (JP), Republic of Korea (KR), Russian Federation (RU) and United States of America (US). The Task Force Leader, in cooperation with the Secretariat, analyzed the responses received.

15. In addition to the survey responses, the Secretariat also reported that the Digital Transformation Task Force has been discussing the exchange of 3D models and 3D images as a part of priority documents. Several IP offices, including the European Union Intellectual Property Office (EUIPO), plan to publish and exchange 3D models and 3D images as filed without converting them into 2D images. Furthermore, the forthcoming European Union (EU) Design Regulation, taking effect on July 1, 2026, represents a significant advancement in formally recognizing and accepting 3D models and 3D images with the EUIPO and its member states. It is expected that this regulatory change will enhance the integration or utilization of 3D models and 3D images within the EU design system.

16. The analysis of these responses reveals a divergence in the adoption and integration of 3D models and 3D images among those respondent IP offices. The Federal Service for Intellectual Property of Russian Federation (Rospatent) has comprehensively integrated 3D models into its procedures for trademarks, industrial designs and patents, implementing WIPO Standard ST.91 and featuring 3D search capabilities in its internal tools, while the United States Patent and Trademark Office (USPTO) and the Japan Patent Office (JPO) currently do not accept 3D representations for any of these IP rights and have reported no plans to do so in the foreseeable future. The Ministry of Intellectual Property (MOIP) – the former Korean Intellectual Property Office (KIPO) represents an intermediate position, accepting 3D models for both trademarks and industrial designs but without plans to implement WIPO ST.91 for trademarks. This roughly equal split in the acceptance of 3D models for trademarks and industrial designs among respondents highlights the evolving and uneven landscape of 3D model usage in IP protection globally.

17. Survey responses identify different approaches to key procedural aspects. Both MOIP and Rospatent accept 3D models for trademarks and require additional 2D images from the applicants, but use different approaches to electronic publication: MOIP publishes the original

3D model files for trademarks, while Rospatent uses 3D PDF; both Offices publish 2D images as filed by the applicant. Of the IP offices that responded, MOIP is the only one that issues paper publications for applications containing 3D models, reproducing them in the form of the 2D images originally filed by the applicant.

18. As for industrial designs, IP offices' requirements differ: MOIP allows a 3D model to be the only visual representation, whereas Rospatent also mandates supplementary 2D images for the applications that contain 3D models. The practices regarding the generation of 2D images from 3D models also vary: MOIP generates additional 2D images from 3D models with the applicant's approval; Rospatent generates them without requiring the applicant's approval. For electronic publication, both IP offices use 3D PDF for 3D models; at the same time, MOIP also publishes Office-generated 2D images approved by the applicant, while Rospatent publishes 2D images as they were filed by the applicant. For the publication on paper for industrial designs containing 3D models, MOIP also publishes Office-generated 2D images approved by the applicant.

19. Notably, the scope of legal protection afforded by 3D models diverges. This matter was also discussed at both the Workshop and the Task Force meeting in May 2025. While all the respondent Offices that accept 3D models include them in the scope of protection for trademarks and industrial designs, the only Office that accepts 3D models for patents reported that those are not included in the scope of protection, but are used only as a supplementary information to assist for interpreting claims.

20. The findings from this survey identify both the common ground and the challenges that need to be addressed to foster greater international harmonization. Given that the number of respondents was limited, a potential next step could be to refine the questionnaire and initiate a broader survey, inviting all CWS members. The results, reflecting the varied stages of technical and legal development among participating Offices, will directly inform future discussions of the 3D Task Force. This will guide the development of best practices, improvement of the Standard or its annexes to support the effective and consistent use of 3D models in the global IP ecosystem, thereby aiding Offices at all stages of their digital modernization journey.

21. The 3D Task Force has continued its work as well on revising WIPO Standard ST.91. This work aims to prepare recommendations for IP offices regarding 3D model search. A working draft of Annex II (3D Model Search) to WIPO Standard ST.91 has been prepared and is currently under discussion within the Task Force. The working draft is presented to the CWS for consideration and comments as the Annex to the present document.

Challenges

22. The Task Force Leader notes the following challenges experienced in undertaking their work:

- lack of practice on search and comparison methods for 3D objects;
- lack of implementation practice within IP offices; and
- legal challenges for the implementation of 3D models and 3D images within IP offices.

WORK PLAN

23. The Task Force informs the CWS of its work plan for 2025-2026 as follows:

Item	Description	Time frame
Discussion and further improve the draft Annex II to the WIPO Standard ST.91, including information on 3D search methods	Continue preparation of the draft Annex II to the WIPO Standard ST.91 including the research on the 3D search methods for further discussion within the Task Force	2025 - 2026
Ensure necessary revisions of WIPO Standard ST.91	Continue discussion on further necessary revisions of WIPO Standard ST.91	2025 - 2026
Discussion on the legal framework and publication of 3D models and 3D images	Analyze and discuss the results of the Survey within the Task Force regarding the legal framework and publication of 3D models and 3D images	2025 - 2026
Task Force meetings	Organize Task Force virtual or hybrid meetings to discuss the mentioned matters	2025 - 2026
Preparation for the CWS/14	Draft working documents for the next CWS session	July - September 2026
CWS/14	If agreed within the Task Force, present the draft Annex for consideration and approval by the fourteenth session of the CWS	November 2026

24. The CWS is invited to:

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

(b) note the survey analysis as outlined in the paragraphs 13 to 20 above;

(c) review and comment on the working draft of the Annex II to WIPO Standard ST.91, as outlined in paragraph 21 above and reproduced in the Annex to the present document; and

(d) note the proposed work plan of the 3D Task Force as outlined in paragraph 23 above.

[Annex follows]

Proposed ANNEX II to WIPO Standard ST.91

3D Model Search

Working Draft for Consultation

1. This Annex is to provide recommendations for developing and implementing search systems for three-dimensional (3D) models included in patent, trademark or industrial design documents. There are two main categories of 3D model search methods: text-based and content-based (shape-based).

TEXT-BASED SEARCH METHODS

2. These methods are the most common used for searching 3D models, where users enter keywords or phrases that describe the desired object. These methods are simple to implement, but at the same time, the efficiency of searching for similar models may decrease because the conceptual description of the objects does not always correlate with the visual similarity. These methods also involve manual input of object descriptions, which would not allow the complete automatization of the process. However, if an intellectual property (IP) office stores into the database the 3D model description, manually entering or using algorithm, a text-based search method may be used in addition to content-based (shape-based) method.

CONTENT-BASED (SHAPE-BASED) SEARCH METHODS

3. Content-based (shape-based) search methods compare 3D models based on their shape on the geometry rather than relying on text descriptions. This allows users to find models with similar forms, even if their keywords or tags are different. It is especially useful when a model has little or no accurate metadata but a distinctive shape.

4. To identify similarities between 3D models that visually represent digital objects protected as a part of a patent, trademark or industrial design, it is recommended to use a geometry-based search in 3D model arrays, which is a type of content-based method.

5. When a 3D model is composed of multiple distinct parts, it is recommended to process and analyze each part individually. This approach facilitates part-level indexing and retrieval. Additionally, it complements whole-model processing by supporting detailed analysis, comparison and reuse of individual components.

6. When IP offices collect 2D images or extract 2D images from 3D models, and have the capacity, they may implement 2D image search in addition to content-based (shape-based) method.

7. The geometric-based search system for 3D models processes the search query through the following steps:

Step 1: Pre-processing the search query

Extraction of geometric data

This step involves extracting geometric data from the 3D model provided as the search query.

The 3D model file formats recommended in this Standard are either mesh-based or solid-based formats.

- Mesh-based formats represent objects by describing their surfaces using interconnected polygons, forming a mesh that stores and represents the geometry of 3D models.
- Solid-based formats represent both the internal and external geometry of 3D models as solid volumes, using predefined shapes to define the model.

If the 3D model is in a mesh-based format, geometric data can be extracted directly. For solid-based formats, the 3D model must first be converted to a mesh-based representation before geometric data can be extracted.

The extracted geometric data can also be converted into a point cloud data format, which consists of a discrete set of data points in space, typically used to represent the shape or surface of a 3D object. Each point has a specific position defined by Cartesian coordinates (X, Y, Z). In addition to position, points may also store other attributes such as RGB color values, timestamps, and more.

Step 2: Descriptor creation

In this step, a geometric descriptor is generated from the 3D model's geometry. This descriptor is a compact numerical representation that captures the shape's key characteristics, enabling effective comparison.

The following mathematical and neural network techniques are recommended to be considered as a basis for creating the descriptor:

- Compute a shape descriptor from:
 - the mesh by analyzing vertex positions and/or the connectivity structure to produce a numeric representation;
or
 - from the point cloud by analyzing point positions and their local spatial relationships.
- Generate embedding vectors from mesh or point cloud data using neural network techniques.

Step 3: Descriptor comparison

Once the descriptor of the query model is created, it is compared with the descriptors of existing 3D models in the database to find the models whose descriptors are most similar to the query. As a result, the system retrieves the most relevant 3D models that closely match the shape and features of the input.

[End of Annex and of document]