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# Committee on WIPO Standards (CWS)

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Proposal for a new WIPO Standard on JSON

*Document prepared by the International Bureau*

## Summary

On behalf of the XML4IP Task Force, the International Bureau presents a final draft for a new WIPO standard on JavaScript Object Notation (JSON), for consideration at the tenth session of the Committee on WIPO Standards (CWS). The final draft includes a series of design rules as well as a set of JSON schemas, which are based on WIPO Standard ST.96 XML schemas, and examples of JSON instances.

## Background

At its fifth session in 2017, the CWS approved the addition of the new Task No. 56, to provide the framework for the XML4IP Task Force to commence work on a new WIPO Standard which provides a set of recommendations for processing and communicating Intellectual Property (IP) data using Application Programing Interfaces (APIs). This Task description indicates that the JSON may be used as the payload.

At its seventh session, the CWS created the new Task No. 64, the description of which is reproduced below and assigned the Task to the XML4IP Task Force (see paragraphs 58-59 of document CWS/7/29):

“*Prepare a proposal for recommendations for JavaScript Object Notation (JSON) resources compatible with WIPO Standard ST.96 to be used for filing, processing, publication and/or exchange intellectual property information.”*

At its eighth session held in 2020, the CWS adopted the new WIPO Standard ST.90 “Recommendation for processing and communicating intellectual property data using Web APIs (Application Programming Interfaces)”. WIPO Standard ST.90 includes examples in both XML and JSON formats. While WIPO ST.90 refers to WIPO ST.96 as a reference for XML schemas, there is no referenced Standard for JSON as no WIPO Standard on JSON existed at the time. WIPO ST.90 includes a footnote saying “*WIPO JSON Standard is currently under discussion but will be based on WIPO Standard ST.96*”.

At its ninth session held in 2021, the CWS noted that a final draft of the new Standard on JSON would be available for its consideration and adoption at the tenth session (see paragraph 20 of document CWS/9/25). Since the ninth session of the CWS, under the framework of Task No. 64, the XML4IP Task Force has been successful in finalizing the draft standard after a series of discussions on the topic through meetings, emails and the wiki.

## Proposed new WIPO Standard

JSON has been gradually adopted and used by Intellectual Property Offices (IPOs) and the IP industry while XML (eXtensible Markup Language), based on WIPO XML Standards is still widely used. WIPO Standard ST.96 defines a recommendation for how XML resources should be captured during filing, publication, processing, and exchange of information for various types of IP, i.e., patents, trademarks, industrial designs, geographical indications and copyright. WIPO Standard ST.96 is implemented by IPOs as published or customized as required.

The XML4IP Task Force developed the draft JSON standard taking into account the need for data consistency and compatibility between XML and JSON formats, to facilitate data exchange among IPOs and data dissemination by IPOs in these two formats. This data consistency and compatibility can be achieved using the compatible XML Schemas and JSON Schemas which will be used to validate XML instances and JSON instances respectively.

At the time of preparation of this document, there is not yet an international JSON Standard approved by industry. Only draft specifications exist and the JSON format continues to evolve. [Draft 2020-12](https://json-schema.org/specification-links.html#2020-12) is the latest version of the draft JSON schema specification and the version 5.0 is the latest WIPO ST.96. Therefore, the proposed JSON Standard is based on these draft JSON schema specification and WIPO ST.96 version 5.0. It should be noted that the new ST.96 version 6.0 will be published in October 2022.

### Objectives

This proposed Standard is intended to provide a set of recommendations for the presentation of intellectual property data in JSON format. The main objectives of this Standard are to~~provide the following benefits~~:

* Provide guidance on designing and developing IP JSON data best practices~~Provide guidance on data mark-up in JSON format~~;
* Ensure consistency by providing JSON Schemas and Instances based on WIPO Standard ST.96 for exchanging IP data;
* Recommend design principles for extending the provided JSON Schemas or creating new conformant JSON Schemas; and
* Improve data exchange efficiency by promoting the reuse of JSON resources among IPOs, as well as data provided to the public.

### Scope

This proposed Standard aims to provide guidance to IPOs and other organizations which create or modify IP data as JSON resources. Compliance with this Standard is required for data exchange between IPOs using JSON resources such as Schemas, instances, messages and payloads for APIs.

The proposed Standard is structured as follows:

* **Main Body:** definition of general design rules, JSON schema and schema construct design rules, JSON schema identifiers and JSON instance design rules;
* **Annex I:** transformation Rules from ST.96 XML Schemas to JSON schemas, which contains the Appendix ‘Transformation Tool which transforms ST.96 XSDs to JSON Schemas’;
* **Annex II:** JSON Schemas which were transformed from WIPO Standard ST.96 XML schemas, version 5.0;
* **Annex III:** JSON example instances corresponding to the Example XML instances provided in Annex VII of WIPO ST.96;
* **Annex IV:** acronyms and abbreviations based on WIPO ST.96; and
* **Annex V:** representational terms based on WIPO ST.96.

The International Bureau proposes the following name for the new WIPO Standard:

“*WIPO Standard ST.97 - Recommendation for processing of intellectual property data using JSON (JavaScript Object Notation)”*

The CWS should note that this proposed JSON Standard excludes software architectural concerns; and implementation languages. The proposed Standard, including all of the Annexes defined above, are reproduced as the Annex to the present document.

### Future Development

In preparing the proposed JSON Standard, many issues were identified and resolved by the XML4IP Task Force. However several issues remain outstanding which should be resolved along with any changes necessary due to the evolution of JSON schema specification, including:

* Simplifying the structure of JSON schemas in line with JSON industry practice, for example by removing unnecessary nesting in JSON Schema which was the result of the transformation from the ST.96 XML Schemas;
* Improving data design for more precise data validation, which will require business expert analysis;
* Updating the set of JSON Schemas in line with the changes made to ST.96 version 6.0, which was~~will be~~ published in October 2022;
* Adding transformation rules and relevant tools for instances of ~~between~~ XML to~~and~~ JSON; and
* Revising the new standard, if required, to take account of any changes to the JSON schema specification, either next draft or official release.

## Revised Task No. 64

Once the proposed new Standard on JSON has been adopted by the CWS, Task No. 64 should be considered complete and the XML4IP Task Force will have successfully concluded work on this Task. However, as indicated above, this Standard should be maintained for future revisions. In this regard it is proposed to revise the description of Task No. 64 as follows:

“*Ensure the necessary revisions and updates of WIPO Standard ST.97*"

## Maintenance of the NEW WIPO Standard

While the XML4IP Task Force was successful in completing Task No. 64 and producing this first version of the WIPO JSON Standard based on WIPO Standard ST.96 on XML, the International Bureau proposes to assign the API Task Force the revised Task No. 64, as it also manages WIPO Standard ST.90. This is due to the fact that JSON is so often used as the payload for RESTful APIs.

Taking into account the continuous revising and updating of WIPO Standard ST.96, the CWS established the “fast track” procedure for the consideration and/or adoption of the revisions of the Standard by the XML4IP Task Force. As the new Standard on JSON is expected to be continuously revised alongside the revisions of WIPO ST.96 and the evolution of [JSON schema specification](https://json-schema.org/specification.html), it is proposed to set up another “fast track” procedure for the consideration and/or adoption of the revisions of the new JSON standard as follows:

(a) any proposal to revise WIPO Standard ST.97 shall be presented directly or through the Secretariat to the designated Task Force for consideration and approval;

(b) the designated Task Force is temporarily authorized to adopt revisions of WIPO Standard ST.97;

(c) if a proposal to revise WIPO Standard ST.97 becomes controversial then it will be presented to the CWS for its consideration, for example when it is not possible to reach consensus among the designated Task Force members; and

(d) the designated Task Force Leader will inform the CWS of any revision of WIPO Standard ST.97 adopted by the Task Force at the next session of the CWS.

## Editorial Amendments to WIPO Standard ST.90

As there is no document being presented by the API Task Force at this session, the International Bureau has noted several editorial amendments that are required to WIPO Standard ST.90 if the proposed Standard ST.97 is adopted. These proposed editorial amendments provided for consideration by the CWS include:

* Adding to the References section a reference to the new WIPO Standard ST.97;
* Amending paragraph 33 of WIPO Standard ST.90 to introduce a reference to WIPO ST.97 by adding the underlined phrase so that the paragraph would read:

“APIs must support XML and JSON requests and responses. For XML, responses must be compliant with WIPO Standards using XML such as ST.96 and for JSON, responses must be compliant with WIPO Standard ST.97. A consistent mapping between these two formats should be used.” ; and

* Removing the current footnote 7 under paragraph 33 of Standard ST.90, which is reproduced below.

*“A JSON specification and JSON schema based on ST.96 are currently under discussion by the XML4IP TF aiming to present them for consideration at CWS/8 in November 2020 for consideration/adoption as a new WIPO Standard. Meanwhile, this standard recommends the BadgerFish convention due to its simplicity until the JSON schema is provided. Some IPOs, such as EPO, also refer to it,* [*www.epo.org/searching-for-patents/data/web-services/ops.html*](http://www.epo.org/searching-for-patents/data/web-services/ops.html)*.”*

The proposed editorial amendments in paragraph 18 above are not exhaustive. Therefore, it is suggested that the Secretariat introduce necessary editorial amendments, as required, before republishing revised new version of WIPO ST.90.

*The CWS is invited to:*

1. *note the content of this document and the Annex to this document (the final draft JSON standard);*
2. *consider and approve the name of the proposed Standard “WIPO Standard ST.97 - Recommendation for processing of intellectual property data using JSON”, as indicated in paragraph 12;*
3. *consider and adopt the new WIPO Standard ST.97 as reproduced in the Annex to the present document;*
4. *consider and approve the revision of the description of Task No. 64, as indicated in paragraph 15;*
5. *designate the API Task Force to deal with the revised Task No. 64, as indicated in paragraph 16;*
6. *consider and approve the fast track to revise WIPO Standard ST.97, as indicated in paragraph 17; and*
7. *approve to amend WIPO Standard ST.90 to refer to the adopted Standard ST.97 and request the Secretariat to introduce other necessary editorial amendments and publish the revised ST.90, as indicated in paragraphs 18 and 19.*

[Annex (draft JSON standard) follows]