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**Committee on WIPO Standards (CWS)**

**Eighth Session**

**Geneva, November 30 to December 4, 2020**

Proposal for a new standard on Web API

*Document prepared by the International Bureau*

## INTRODUCTION

 At the fifth session of the Committee of WIPO Standards (CWS), held from May 29 to June 2, 2017, one of the important areas for standardization identified was web services (see paragraph 2 of document CWS/5/15). The CWS agreed at this meeting to create Task No. 56, so that the XML4IP Task Force could conduct development of this draft standard (see paragraph 92 of document CWS/5/22).

 At its sixth session, held in October 2018, the CWS agreed that the draft standard should include the Application Programming Interface (API) specification of two example models: the first inspired by one of the four One Portal Dossier (OPD) APIs developed by the IP5 Offices[[1]](#footnote-2) and the second to provide a web service to retrieve patent legal status event information, compliant with WIPO Standard ST.27.

 During the XML4IP Task Force Meeting, held in Seoul, Republic of Korea, in March 2019, the XML4IP Task Force decided that the new API standard was outside the scope of the of the XML4IP Task Force, and proposed that a new Task Force should be established in order to capture API development practices in the intellectual property (IP) domain.

 At its seventh session, held in July 2019, the CWS agreed to reassign Task No. 56 to a new Task Force established to manage development of this new standard, namely the API Task Force (see paragraph 51 of document CWS/7/29). As a result, the following new description of Task No. 56 was also approved by the CWS (see paragraph 50 of document CWS/7/29):

 “Prepare recommendations for data exchange supporting machine to machine

communications focusing on: (i) facilitation of the development of web services

which access IP resources; (ii) provision of business vocabulary and appropriate

data structures; (iii) naming conventions for Uniform Resource Identifier (URI) of

resources; and (iv) provision of business cases for implementing web services.”

 At its seventh session, the CWS considered a working draft of the API Standard presented by the API Task Force and identified the following items as requiring improvement before a final draft could be provided (see paragraphs 11-15 of document CWS/7/4):

* Inclusion of both XML and JSON examples for Web API responses throughout the Main body;
* Recommendation within the Main Body of the preference for a RESTful architecture when designing web services;
* Finalization of Annex I, once the design rules provided are stable after the CWS agreed to the new approach to providing compliance-levels;
* Finalization of Annex II, the example business area and technical vocabularies for RESTful APIs;
* Finalization or removal of Annex III, which is the example vocabularies for SOAP APIs;
* Finalization of the two example models which form Annex IV and selection of an example which would form Annex V; and
* Establishment of criteria for determining whether API development should conducted code-first or contract (specification)-first and whether this information should form part of the Standard itself.

In addition, the CWS requested the Task Force to provide the final draft of the new standard for consideration at its eighth session (see paragraph 53 of document CWS/7/29).

 The Canadian Intellectual Property Office (CIPO) and the United Kingdom Intellectual Property Office (UK IPO) were designated as co-leaders for the new API Task Force. This Task Force has approximately 50 participants and has met six times virtually since its introduction, with the purpose of reviewing the draft of the newly proposed Standard and proposing improvements. As a result of these discussions, undertaken on the wiki and through online meetings, several changes to the draft have been made which are discussed below in further detail in paragraphs 12, 13 and 14 of this document. This document was prepared by the International Bureau in close collaboration with the co-leaders of the API Task Force.

## PROPOSed NEW WIPO STANDARD

 Within the framework of Task No. 56, the API Task Force, and previously the XML4IP Task Force, prepared a proposed set of recommended guidelines for the development of Web APIs that process, exchange and disseminate Intellectual Property (IP) Data and present the final proposal for the new WIPO standard, which is reproduced in the Annex to this document, for consideration by the CWS.

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

 “WIPO Standard ST.90 – Recommendation for processing and communicating intellectual property data using Web APIs (Application Programming Interfaces)”

### Objective

 This proposed Standard is intended to provide recommendations on the development of APIs to facilitate the processing and exchange of IP data in a harmonized way over the Web. The main objectives of this Standard are to provide the following benefits:

* Ensure consistency by establishing uniform web service design principles;
* Improve data interoperability among web service partners;
* Encourage reusability through unified design;
* Promote data naming flexibility across business units through a clearly defined namespace policy in associated XML resources;
* Promote secure information exchange;
* Offer appropriate internal business processes as value-added services that can be used by other organizations; and
* Integrate its internal business processes and dynamically link them with business partners.

### Scope

 While there are many existing recommendations that provide guidance for developers producing APIs, the purpose of the WIPO Web API Standard, is to provide specific guidance when these APIs are being produced by Intellectual Property Offices (IPOs), and/or by developers working with these IPOs and Organizations, where these web services process or communicate IP data.

 It is hoped that by using this proposed Standard, the development of Web APIs can be simplified and accelerated in a harmonized manner and interoperability among Web APIs can be enhanced.

### Improvement of the draft standard

 Since the [last working draft](https://www.wipo.int/edocs/mdocs/classifications/en/cws_7/cws_7_4-annex1.docx) provided for consideration at the seventh session of the CWS, the following improvements have been made to the Main Body of the draft standard, with new text underlined:

1. Basic editorial changes have been made to the Main Body of the Standard, such as improving formatting and correcting numbering of the rules provided;
2. An editorial note was provided as new paragraph 6 to further clarify the purpose of the Standard. The paragraph reads as follows:

“The URLs provided within this Standard document are provided for example purposes only and are not live.”;

1. Design rules [RSG-73] and [RSG-148] have been downgraded from MUST implement to SHOULD implement after IPO feedback;
2. New paragraph 50 and design rule [RSG-67] have been added to recommend that Offices publish their API lifecycle management strategy. Design rule [RSG-67] reads as follows:

“API lifecycle strategies SHOULD be published by the developers to assist users in understanding how long a version will be maintained.”;

1. Design rule [RSG-64] has been amended to recommend both Header versioning and to provide an example, where the rule now reads as follows:

“A Web API SHOULD support a single method of service versioning using URI versioning, for example /api/v1/inventors or Header versioning, for example Accept-version: v1 or Media type versioning, for example Accept: application/vnd.v1+json. Query string versioning SHOULD NOT be used.”;

1. Design rule [RSG-91] has been amended to provide a recommended name for the correlation-ID header. The new text for this rule reads as follows:

“Every logged error SHOULD have a unique Correlation ID. A custom HTTP header SHOULD be used and SHOULD be named Correlation-ID.”;

1. Paragraph 98 has been added to the Main Body to specifically indicate the preference for the REST architectural style when developing APIs has been added. The SOAP chapter has only been provided for completeness; and
2. Paragraph 3 of the Main Body has been updated to provide a definition for RMM, which reads as follows:

“The term “RMM” refers to the Richardson Maturity Model a measure of REST API maturity using a scale ranging from 0-3.”.

 In addition to the improvements in the Main Body of the proposed Standard explained in paragraph 12 above, the following amendments have been made to the Annexes to the Main Body of the proposed Standard:

1. Annex I has been finalized: Annex I is a set of four tables which sets out the conditions which must be satisfied in order to achieve a particular level of compliance with this Standard;
2. Annex II has been finalized: Annex II provides selected examples of business and technical vocabulary when developing a RESTful API, including example parameters taken from the example models of Annex III (previously Annex IV). An editorial note has also been provided by the International Bureau which reads as follows:

“The API Task Force will be providing in a future revision a link to a more comprehensive list of REST IP ST.96 and JSON vocabulary which will be dynamically maintained on an ongoing basis as IP elements and vocabulary continue to evolve.”;

1. Annex III has been deleted: the Task Force determined that this Annex should not form part of this Standard;
2. Annex IV has been finalized, and has been renumbered as Annex III: the existing basic example within Annex IV was removed and replaced with both of the two example model API specifications indicated above and expanded upon below in paragraph 12;
3. Annex V has been deleted: the Task Force determined that this Annex should not form part of this Standard;
4. Annex VI, Annex VII and Annex VIII have been renumbered as Annex IV, Annex V and Annex VI respectively;
5. New Annex VII has been added to provide a description of the API lifecycle to assist Offices in publishing their lifecycle management plan; and
6. In Annex II, business vocabulary examples for ‘receivingOfficeCode’ and ‘receivingOfficeDate ’ have been reclassified as relating to ‘ALL’ of the business domains.

 Progress on the example models provided in Annex IV of the proposed Standard was discussed previously at the seventh session of the CWS (see paragraphs 43-44 of document CWS/7/29). The specification for both of these example models have now been completed. The first example, inspired by the OPD API DocList, is provided in YAML (Yet Another Markup Language) with an XML response. The second example, is provided in RAML (RESTful API Markup Language) with an XML or JSON response. All the necessary documentation for each of these examples is downloadable using the links provided in Annex IV.

## Pilot Implementation

 The International Bureau commenced internal discussions on the draft standard after the sixth session of the CWS and plans to implement it when developing WIPO web services. The draft standard is already in-use by developers working to produce some WIPO Web APIs, including on the [WIPO Sequence](https://www.wipo.int/standards/en/sequence/) project, in the IP Portal team and in the [WIPO Case](https://www.wipo.int/case/en/) team.

 Implementation of this proposed new standard, requires reference to Annex I, an indication of the type of response format in XML or JSON, and selection of a particular compliance-level. For example, if the developer is producing an API that provides a JSON response, and wanted to select the highest level of compliance, level AAJ, they would follow the guidance set out in Table 3 of Annex I during development.

## FURTHER DEVELOPMENT AND PROMOTIONAL ACTIVITIES

 With the move of more and more Offices to adopt APIs to implement business processes and to provide services to their stakeholders, the International Bureau realized the usefulness of capturing the APIs that IPOs provide. The International Bureau had intended to request to survey IPOs directly in order to capture the extent to which IPOs are implementing their services using APIs. In order to perform this task more efficiently and provide regular updates to this information, the API Task Force instead proposes to implement a unified catalog, which provides a list of those APIs which Offices expose externally. This catalog should provide a portal for users to identify web services available to them, provided by IPOs and where possible a simple search function. It may also serve to improve the visibility of some Offices’ APIs to users and the other IPOs. To achieve this goal, the API Task Force proposes that the CWS request that the Secretariat consider and develop or customize an automatic tool in collaboration with the API Task Force to gather information on APIs provided by Offices and publish the unified catalog on the WIPO website. The Task Force also proposes that the CWS request that a progress report on this development be provided at the next session of the Committee.

 On June 17, 2020, the International Bureau, in collaboration with the API Task Force, organized the “API Day” online event, where around 200 participants from IPOs and interested commercial IP data providers who support IPOs and/or the end users attended through a virtual platform. The participants discussed the WIPO Web API draft standard, API trends, API development strategies, both at the commercial and IPO-level, and finally a case study for an IPO API implementation using the API Standard. The International Bureau intends to organize this type of collaborative forums in the future.

 The API Task Force will continue to meet to discuss future improvements to the API Standard once it is adopted including, as is indicated in the new editorial note in Annex II, how to provide a more dynamic means of providing WIPO ST.96 XML vocabulary and in the future JSON vocabulary, also compliant with WIPO ST.96.

 Once the proposed new standard on Web API has been adopted by the CWS, Task No. 56 will be considered complete. The API Task Force however recognizes the need to continue to improve this new WIPO standard due to the evolution of API related technologies as well as continue other works, including those described above in paragraph 18. The Task Force, therefore, proposes that the description of this Task should be revised as follows:

“Ensure the necessary revisions and updates of WIPO Standard ST.90; Support the International Bureau in developing a unified catalog of APIs that are made available by Offices; and Support the International Bureau in promoting and implementing WIPO Standard ST.90”.

 *The CWS is invited to:*

1. *note the contents of the present document and its Annex;*
2. *consider and approve the name of the proposed Standard “WIPO Standard ST.90 – Recommendation for processing and communicating intellectual property data using Web APIs (Application Programming Interfaces)”;*
3. *consider and adopt the new WIPO Standard ST.90 as reproduced in the Annex to the present document;*
4. *consider and approve on the revision of the description of Task No. 56, as indicated in paragraph 20 above; and*
5. *consider and approve the proposal by the API Task Force for the Secretariat to provide a unified catalog available on the WIPO website and report the progress to its next session, as outlined in paragraph 17 above.*

 [Annex follows]

1. The IP5 Offices consist of the European Patent Office (EPO), the United States Patent and Trademark Office (USPTO), Chinese National Intellectual Property Administration (CNIPA), Japanese Patent Office (JPO) and Korean Patent Office (KIPO). [↑](#footnote-ref-2)