Purpose of API TF and Walkthrough of the DRAFT WIPO API Standard

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Purpose of the API Task Force

- Forum for discussions, knowledge sharing, and initiate tasks/studies related to Intellectual Property API development.

- Eliminate the guess work, and result in common look, feel, behavior and shared practices for IP related APIs.

- Taskforce members are IP Web Service developers and related IP data technical experts elected by their organizations.

- Discussions will be held via periodically scheduled online discussions as well as potentially in-person discussions.

- Material and discussions will be recorded and made available via the TF wiki space hosted by WIPO-IB.

Background Of The Draft Standard
And Establishment of the API Taskforce

- Began as a discussion within XML4IP Task Force (TF) in October 2016.

- Early discussions focussed on REST vs SOAP, the use of JSON, URIL + URI Naming conventions, and the API practices of each IPO.

- Discussions progressed to a formal task within the XML4IP TF work plan which was agreed to during the 2017 CWS session, to "prepare recommendations for web services on IP information and documentation".

- Progressed to a documented *proposal* from the USPTO for "Web Service Design Rules" in 2017.

- The XML4IP TF proposed the creation of this new taskforce during the work session of 2019.

- WIPO-IB prepared the first 'formal' *draft* of the API standard, and approved the establishment of this new API Task Force at CWS/7 2019.

- The API TF and wiki-space became active November 2019, with CIPO and the UK IPO volunteering to co-chair.

- The new API TF has carried out two rounds of review and feedback of the *draft* API standard. Much wording has been adjusted, rules adjusted and renumbered, and annexes have been completed.

Draft Standard Overview – Introduction

- WIPO Standards are 'recommendations'.

- This section covers the intentions of the draft standard, Terminology used within the standard. Design Rules which are also used in ST.96 such as Must, Should, Must Not, Should Not, May (RFC 2119).

- Design Rules are named with 'XX-nn' or 'XXY-nn'.

- The Prefix 'WS' is for SOAP WS, 'RS' for RESTFful Web APIs, and 'CS' for both. Next are rule types 'G' General 'J' JSON, 'X' XML.

- The 'nn' is the next available rule number.

- NOTE – The draft standard <u>excludes</u> binding to specific technology stacks or COTS, binding to specific architectural designs such as SOA, MOA etc, binding to specific algorithms for the purpose of ETag for unique identifiers for resource versions such as caching.

Draft Standard Overview – Web APIs

- REST and SOAP are both permitted however SOAP has been deemed to be 'legacy' by the API TF.

- Note: SOAP has WS-Security while REST does not specify any security patterns.

- Design Principle Guidance is provided under this section such as : Standard Service Contract, Service Loose Coupling, Abstraction, Statelessness and more.

- Web APIs are to follow HTTP semantics such as methods and errors.

Draft Standard Overview – RESTful APIs (1)

- RFC (Remote Function Call) 3986 syntax for URIs, with endpoints complying with IETF (Internet Engineering Taskforce) standards.

- Matrix parameters must not be used. Standard HTTP status codes must be used.

- Resource Models such as Domain Driven Design, Hierarchical Resource Models, Endpoints, CRUD APIs with sample syntax.

- Multiple formats (XML and JSON) must be supported, and must follow the WIPO ST.96 standard.

- Note – A JSON schema and vocabulary based on WIPO ST.96 is not yet available. Follow lowerCamelCase of elements from ST.96.

- HTTP Methods: GET, HEAD, POST, PUT, PATCH, DELETE, TRACE, OPTIONS. Sample syntax is provided.

Draft Standard Overview – RESTful APIs (2)

- Pagination, Sorting, Expansion, Projection, return of Number of Items, Complex Search Expressions, Error Handling. Sample syntax is provided.

- Correlation IDs for when services cascade into multiple other services.

- Service Contracts, Timeouts, State management, Response versioning, Caching, and Managed File Transfer. Note: There is not yet IETF RFC guidance for large file upload, thus guidance is provided on Partial file upload.

- Security Model. Thread-resistant API management. Encryption Integrity and non-repudiation. Authentication + Authorization, and the API Maturity Model.

Draft Standard Overview – SOAP WEB APIs

- Though REST APIs are recommended, SOAP guidance is provided for completeness of the standard.

- WSDL must conform to WS-I profile 2.0 though profile 1.2 may be used.

- WSDL SOAP Binding can be Remote Procedure Call (RPC) style or Document style. The concrete WSDL should be separated from the abstract WSDL for a more flexible interface. The XML should follow the WIPO ST.96 standard.

- Guidance is provided on the definition of the WSDL.

- Naming and versioning according to UpperCamelCase, naming Request and Response Suffixes, Operations names Verb+Object and optional Qualifier. e.g. GetBibData.

- Service Providers and consumers must be able to evolve independently.

- Guidance is provided on Web Service Contract Design, attaching policies to WSDL Definitions, and SOAP Web Service Security.

Draft Standard Overview – Conformance and References

<u>CONFORMANCE</u>

- Level A – All General Design Rules (RSG) with MUST are followed

    All JSON (response) rules (RSJ) with MUST are followed = 'AJ'

    All XML (response) rules (RSX) with MUST = 'AX'

- Level AA – Conformant with Level A (All MUST rules), plus all rules defined as 'SHOULD'.

<u>REFERENCES</u>

- References to all external standards which are mentioned throughout this document. Ie: IETF, ISO, OASIS, RAML, JSON, W3C etc.

- References to specific IP Offices' REST APIs, Industry REST APIs, plus links to other guidance which was used as input to this document.

Draft Standard Overview - Annexes

- Annex I – List of RESTful Web Service Design Rules and conventions provides summary tables for rules on JSON Responses, XML Responses, Conformance to level AAJ, and conformance to level AAX.

- Annex II – Provides a table on sample REST API vocabulary, a link to the existing ST.96 XML vocabulary, plus will be updated with a link to JSON vocabulary. Both ST.96 and also JSON will evolve as IP terminology and elements will continue to evolve. Annex II also includes a table on API Technical Vocabulary such as format, limit, offset, sort etc.

- Annex III – RESTful Web API Guidance and Model Service Contract. Provides a link to the WIPO-Case Doclist Example Model, and the Patent Legal Status Example Model as samples of models which have been reviewed by the IB. As more models are developed by participants of this taskforce, they will be made available via the taskforce wiki.

- Annex IV – Provides guidance on high level security architecture best practices.

- Annex V – Provides a table of HTTP Status Codes (RFC 2616)

- Annex VI – Provides a table of Representational Terms such as Amount, Code, Identifier, Indicator etc.

Questions ?