



WIPO Sequence Validator

Operation Manual

Version 2.3.0

The purpose of this document is to support Intellectual Property Offices to deploy the WIPOSequence Validator web service and also to support configuration of the Validator.

Contents

1. Introduction.....	3
1.1. Validator Workflow Overview	3
1.2. Definition of the Validator file system structure.....	5
2. Deployment of the WIPO Sequence Validator	6
2.1. Starting the Validator as a Spring Boot JAR.....	6
2.1.1. Deploying Validator as an executable application	7
2.2. Deployment as a WAR web service	8
3. Verification Report	9
4. Callback Endpoint request.....	10
4.2. Verification Report	14
5. Configuration	15
5.1. Default settings	15
5.2. Configuring verification rule VXQV_49	17
5.3. Check health of the endpoint	17
5.4. Localized messages	18
5.5. Custom Organism Names.....	18
5.6. Referencing ST.26 DTD files	18
5.6.1. How to indicate an alternative DTD version for the validation.....	19
6. Validator REST API	20
6.1. Validate WIPO ST.26 file	20
6.2. Request Validation Status.....	22
Annex I: Example XML Verification Report.....	23
Annex II: Complete API specification (YAML).....	24
Annex III: Property Names (JSON)	24
Annex IV: Example HTML Verification Report.....	24

1. Introduction

The main purpose of the WIPO Sequence Validator (hereinafter referred to as 'Validator' or 'the tool') is to provide IP Offices (IPOs) with a web service to validate XML files in WIPO ST.26 format to ensure they are compliant with WIPO Standard ST.26. Although a sequence listing which has been drafted using the WIPO Sequence desktop application will be WIPO ST.26-compliant, users may use whatever tool they deem most suitable.

The objective of this document is to explain the build, deployment, settings and file consumer system of the tool that is detailed in the following sections. For any trouble-shooting questions, please refer to the wiki at: <https://www3.wipo.int/confluence/display/WSVAL/Troubleshooting>

1.1. Validator Workflow Overview

The tool provides the following four use cases:

- Validation of a WIPO ST.26 file;
- Request the status of a running validation;
- Update configuration files (only the IPO Admin); and
- Call a callback endpoint with the result of the validation process once the process is completed.

Note: this callback endpoint¹ is outside the scope of the Validator. It is up to the Offices developing and setting up this service to establish the endpoint.

The tool is composed of a JAR file that can be executed as a web service or a WAR file that can be deployed on a Tomcat server.

In both cases, for validation of the WIPO ST.26 sequence listing, the tool consumes files from a local file system and generates a verification report with validation results and, optionally, returns the results of the validation process, i.e., verification report, by calling a callback endpoint.

The main workflow of the Validator is as follows:

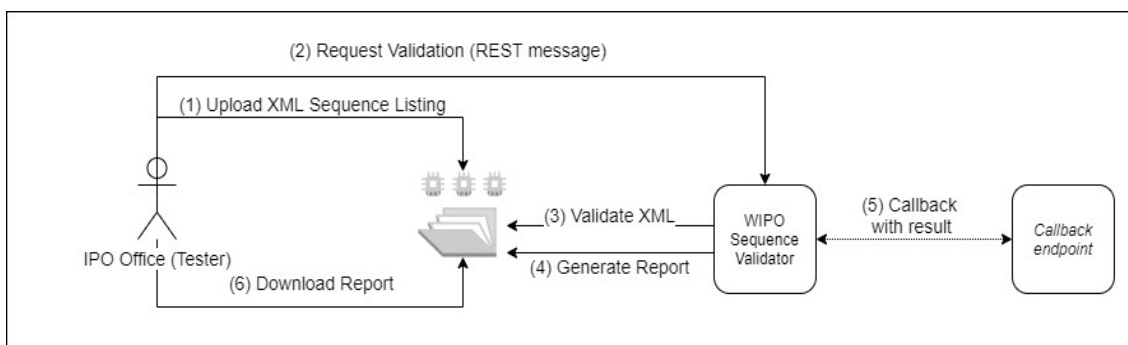
- a) The respective IPO IT system saves a WIPO ST.26 XML file in a default "Inbox" folder or the specified one within the request.
- b) The IPO system initiates an HTTP Post requesting the validation of the file. Depending on the configuration, the IPO system can request a "full" or a "formality" validation of the file. The "formality" validation process will check whether the ST.26 file is an XML file and validates the file against the ST.26 DTD. The "full" validation process will validate the ST.26 file against the business verification rules, derived from the content of ST.26 as well as conducting the "formality" validation process.

Note: It is recommended to use the "formality" validation process for online filing acceptance system only as this can be performed synchronously while the "full" validation is recommended for batch processing as it will take much longer.

- c) Once the validation is complete, a response will be provided indicating whether or not the file has passed the "formality" validation and, in the instance where the IPO IT system

¹ A callback endpoint here is a unique address identified by a URI to which request messages can be sent

- d) has selected “full” validation, additionally whether or not the business rule validation process has started correctly.
- e) If the Validator is conducting a “full” validation, it retrieves the XML file from the “Inbox” folder and starts the business rule validation process, and then conducts the following:
 - f) The Validator generates an XML report file (“report_<filename>.xml”) based on XSD Schema in a specified “Input” folder and moves the validated WIPO ST.26 XML file to an “Outbox” folder. Optionally, the Validator also produces a HTML version of this verification report at the same time.
 - g) As soon as the XML report file has been created and checked for compliance with the XSD schema, the Validator creates an HTML report file under a specified folder named “Reports”.
 - h) After the business rule validation process has completed, the callback endpoint, if configured, is called from the Validator, and the request is populated with additional information related to the validation process. The structure of the request and some sampled data is provided in section 4 below.
 - i) The callback endpoint should either return an empty or a success code in the response (no errors). [Note: this step is only executed if the external web service has been made available and the call has been configured in the Validator.] Connectivity between the Validator and the callback endpoint is also required. As mentioned above, the external web service does not form part of the Validator and it should be developed and configured by Offices according to the contract defined below.
- j) The IPO system can retrieve the verification report from the “Reports” folder.



Note: the WIPO Sequence Validator complies with the WIPO Standard for processing and communicating intellectual property data using Web APIs: [WIPO ST.90](#).

1.2. Definition of the Validator file system structure

The structure of the file system used by the Validator consists of five folders:

- **“Inbox” folder:** This is the local folder where WIPO ST.26 files are provided by an IPO for validation.
- **“Process” folder:** This is the local folder through which the files in the “Inbox” temporarily pass during processing. This folder contains two subfolders:
 - **“Full validation” folder:** Stores the files pending a full validation.
 - **“Formality validation” folder:** Stores the files pending a formality validation.
- **“Outbox” folder:** Once the validation is complete, the application stores the source of the WIPO ST.26 file in this local folder.
- **“Reports” folder:** This is the local folder where the results of the validation are saved in a verification report file/s.
- **“Params” folder:** This is the local folder where a JSON (.json) file with all the validation parameters from the validation request are located in order to provide parameters for the asynchronous deep validation process.

An example file system structure is provided below:

```
/temp/ST26
/temp/ST26/inbox
/temp/ST26/process/full
/temp/ST26/process/formality
/temp/ST26/outbox
/temp/ST26/reports
/temp/ST26/params
```

[IMPORTANT: By default, the /temp/ST26 directory should be located in the parent directory to where the tool is located. For example, if the JAR or WAR file is located in C:/dev then the folder structure should be created as C:/temp/ST26/...]

2. Deployment of the WIPO Sequence Validator

As indicated previously, the Validator is provided as one of two binary formats, listed below. Depending on the type of infrastructure in which the Office wants to deploy the Validator, the IPO will have a preference for selecting one type of binary over the other.

The two binaries that the Validator are provided as are:

- **Binary SpringBoot JAR:** This binary is an executable JAR file. This requires [Java 8](#) to be installed.
- **War Package Binary:** This binary is intended to be deployed on a Servlet container. An application server compatible with Spring Boot 2 and Servlet Spec 3.1+ is required, such as [Tomcat 8.5](#).

The following sections detail the deployment of the Validator as a [Spring Boot](#) app or as a WAR within a Java Application Server.

2.1. Starting the Validator as a Spring Boot JAR

The Spring Boot JAR contains an embedded server, which allows the deployment of the Validator API without requiring a separate server. This greatly simplifies the configuration and deployment at the infrastructure level.

In order to run the embedded server, the following command should be executed.

Note: Java 8 must already be installed on the server: Since Java does not guarantee the use of UTF-8, the system property "file.encoding" must be set to "UTF-8". This can be done by including the following:

```
java -D -jar wipo-sequence-validator.jar
```

The Validator API can be accessed through a [Swagger UI](#):
[http://\[host-name\]:8080/swagger-ui.html](http://[host-name]:8080/swagger-ui.html)

The Validator API is accessible in the following endpoints:
[http://\[host-name\]:8080/api/\[version\]/status](http://[host-name]:8080/api/[version]/status)
[http://\[host-name\]:8080/api/\[version\]/validate](http://[host-name]:8080/api/[version]/validate)

where the IPO must make the following changes:

- [host-name] must be replaced by the server host name; and
- [version] should be replaced by the version of the Validator API (e.g., v1.0).

By default the server will run on port 8080, to change the port the "--server.port" command line option should be added as shown here:

```
java -D"file.encoding=UTF-8" -jar wipo-sequence-validator.jar --server.port=<port-number>
```

By default the Validator will use the Java Virtual Machine (JVM) default memory settings. The default maximum heap size is one fourth of the physical memory available.

In order to modify the maximum heap size, the “-Xmx” option must be used when executing using the command line²:

```
java -D"file.encoding=UTF-8" -Xmx[size]-jar wipo-sequence-validator.jar
```

2.1.1. Deploying Validator as an executable application

The Validator can also be installed as a service managed by the operating system to support its execution with the start-up of the operating system, for instance.

It is possible to configure a Spring Boot JAR file in this manner for all platforms supported by WIPO Sequence: Windows, Linux and Mac OS.

The following guide provides detail on how to create a system service that executes the JAR file for each operating system. It also provides information on how to configure the different options of the service and the execution of the application:

<https://docs.spring.io/spring-boot/docs/current/reference/html/deployment-install.html>

² <https://docs.oracle.com/javase/8/docs/technotes/tools/windows/java.html#BABHDAB>

2.2. Deployment as a WAR web service

For the second type of binary provided, the WAR package can be deployed in an existing Java application server such as Apache Tomcat 8.5.

Note: a container compatible with Servlet 3.1 is required.

The following instructions are for a Tomcat application server. Here, “\$TOMCAT_ROOT” refers to the root folder of the Tomcat server, and this value should be replaced with the relevant value for the file path:

- a. Stop server: \$TOMCAT_ROOT\bin\catalina.bat stop
- b. Copy war to \$TOMCAT_ROOT\webapps\wipo-sequence-validator.war
- c. Start server: \$TOMCAT_ROOT\bin\catalina.bat start

Note: since Java does not guarantee the use of UTF-8, the system property “file.encoding” must be set to “UTF-8” in the start-up of the application server. This can be done by including the following:

-D“file.encoding=UTF-8”

The Validator API can be accessed through a Swagger UI, as indicated above:

<http://host-name:8080/wipo-sequence-validator/swagger-ui.html>

The Validator API is accessible in the following endpoints:

[http://\[host-name\]:8080/wipo-sequence-validator/api/\[version\]/status](http://[host-name]:8080/wipo-sequence-validator/api/[version]/status)

[http://\[host-name\]:8080/wipo-sequence-validator/api/\[version\]/validate](http://[host-name]:8080/wipo-sequence-validator/api/[version]/validate)

where the IPO must make the following changes:

- [host-name] must be replaced by the server host name, and
- [version] should be replaced by the version of the API (e.g., v1.0).

By default, the server will run on port 8080. To change this over to another port the Tomcat configuration file should be modified by following the instructions provided here:

https://tomcat.apache.org/tomcat-8.5-doc/config/http.html#Common_Attributes

By default, the Validator will use the JVM default memory settings. The default maximum heap size is one fourth of the physical memory available.

In order to modify the maximum heap size, the “-Xmx” option must be used when executing using the command line, as indicated above in Section 2.1.

3. Verification Report

There are two formats in which the verification report can be generated: XML and HTML (or both). The verification report generated by the tool is in XML format and the template used is provided below:

The attributes indicated at the root level are as follows:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<VerificationReport applicationNumberText = "123" productionDate = "YYYY-MM-DD"
filingDate = "YYYY-MM-DD" softwareBuildVersion = "2.3.0.-SNAPSHOT" softwareVersion
="2.3.0" sourceFileName="[ST.26 filename]" xsi:noNamespaceSchemaLocation = "st26-
seq1-verification-report-2.0.0.xsd" xmlns:xsi= "http://www.w3.org/2001/XMLSchema-
instance" >
  <VerificationMessageBag
    >
    <VerificationMessage>
      <Severity>[ERROR | WARN | XML_WARN | XML_ERROR]</Severity>
      <DataElement>[ST.26 element]</DataElement>
      <DetectedSequence>[Sequence ID]</DetectedSequence>
      <DetectedValue>[value]</DetectedValue>
      <MessageKey>[Message key]</MessageKey>
      <ParameterBag>
        <Parameter key="param key">Param value</Parameter>
      <ParameterBag>
      <LocalizedMessage> [Localized message] </LocalizedMessage>
    </VerificationMessage>
  ...
```

- 'applicationNumberText': the application associated with this sequence listing;
- 'productionDate': the date that the validation was conducted;
- 'filingDate': the date of filing of the application;
- 'softwareBuildVersion': the version of the Validator used for validation;
- 'softwareVersion': the version of WIPO Sequence used to generate the sequence listing;
and
- 'sourceFileName': the name of the sequence listing XML instance.

An example of this verification report is provided as Annex I to this manual with the allowable values for these components provided in Annex III.

In terms of the severity indicated, please note the following categorization:

- ERROR - an error returned during the 'full' check
- WARNING - a warning returned during the 'full' check
- XML_ERROR - an error returned during the 'formality' check
- XML_WARN - a warning returned during the 'formality' check

The verification report is also produced in HTML format, using the same stylesheet that is used in WIPO Sequence. An example of the HTML verification report is provided as Annex IV to this manual.

4. Callback Endpoint request

The request made by the callback endpoint to the Validator should include the following parameters, detailing the file locations and the validation process:

```
{
  "currentApplicationNumber": "string",
  "currentSEQVersionNumber": "string",
  "parentApplicationNumber": "string",
  "parentSEQVersionNumber": "string",
  "seqInputLocation": "C:/temp/valid2Warning.xml",
  "verificationReportOutputPath": "C:/temp/report.xml",
  "nameFile": "valid2Warning.xml",
  "type": "full"
}
```

The “seqInputLocation” field of the validation request should be set to indicate the path of the XML sequence listing to be validated. If the Office leaves this field empty, the tool will try to validate the XML file with the filename “nameFile” located at the default “Inbox” folder. The “nameFile” parameter identifies the sequence listing file to be validated.

The “verificationReportOutputPath” within the request will provide the file location of the verification report (.xml and/or .html) depending on the setting of the application.property file generated by the tool. If the user leaves the field in blank or introduces an invalid file path, the verification report will be stored in the default “Reports” folder.

4.1. Callback Endpoint Request Format

If the property “api.URL” is configured, the Validator will try to send the results of the validation to an endpoint with the URL specified.

In order to communicate with the Validator, the callback endpoint must comply with the following web service contract (YAML):

https://www.wipo.int/standards/en/sequence/callback_end_point_web_service_contract.yml

Furthermore, the request should be a JSON object with this structure:

```
{
  "currentApplicationNumber":
  "string",
  "currentSQLVersionNumber":
  "string", "elapsedTime": 0,
  "endTime":
  "string",
  "errorSummary":
  [
    {
      "dataElement": "string",
      "detectedSequence": "string", "index":
      0,
      "key": "string",
      "locmessage": "string",
      "params": {
        "additionalProp1":
        "string",
        "additionalProp2":
        "string",
        "additionalProp3":
        "string"
      },
      "paramsForXML": [
        {
          "key": "string",
          "value": "string"
        }
      ],
      "reportValue": "string",
      "sequenceIDNumber":
      "string",
      "type": "string"
    }
  ],
  "httpStatus": "string",
  "parentApplicationNumber":
  "string",
  "parentSQLVersionNumber":
  "string", "processID": "string",
  "seqIDQuantity": 0,
  "seqInputQuantity": 0, "seqType": "string", "startTime": "string",
  "totalErrorQuantity": 0,
  "totalWarningQuantity": 0,
  "verificationReportOutputPath":
  "string"
}
```

This is an example JSON object that will be sent to the external endpoint which made the call to the Validator:

```
{
  "processID": "1608194222169dvVE",
  "seqType": "ST.26",
  "httpStatus": "SUCCESS",
  "currentApplicationNumber": "string",
  "currentSEQLVersionNumber": "string",
  "parentApplicationNumber": "string",
  "parentSEQLVersionNumber": "string",
  "verificationReportOutputPath":
  "C:/temp/report.xml", "startTime": "2020-12-
  17 09:36:54.000000",
  "endTime": "2020-12-17 09:37:26.000607",
  "elapsedTime": 32607,
  "totalWarningQuantity": 1,
  "totalErrorQuantity": 2,
  "seqInputQuantity": 3,
  "seqIDQuantity":
  3,
  "errorSummary":
  [
    {
      "index": 0, "reportValue": "",
      "type": "WARNING",
      "params": "com.wipo.st26.ipotool.models.ServiceRequest@58
      87858, "key": "X_EARLIEST_PRIO_APPLICATION_ID_MISSING",
      "locmessage": "Earliest priority application information is absent. It must be
      provided when a priority claim is made to an earlier application.",
      "detectedSequence": "",
      "dataElement": "PROPERTY_NAMES.EARLIEST_PRIORITY_APPLICATION"
    },
  ],
}
```

```
    "reportValue": "",
    "type": "WARNING",
    "params": com.wipo.st26.ipotool.models.ServiceRequest@5887
    858, "key": "X_EARLIEST_PRIO_APPLICATION_ID_MISSING",
    "locmessage": "Earliest priority application information is absent. It must be
provided when a priority claim is made to an earlier application.",
    "detectedSequence": "",
    "dataElement": "PROPERTY_NAMES.EARLIEST_PRIORITY_APPLICATION"
  },
  {
    "index": 0,
    "reportValue": "-
",
    "type": "ERROR",
    "params": {},
    "key": "INVENTION_TITLE_MISSING",
    "locmessage": "The invention title is missing. At least one invention title
must be entered.", "detectedSequence": "",
    "dataElement": "PROPERTY_NAMES.INVENTION_TITLE_BAG"
  },
  {
    "index": 1,
    "reportValue": "-
",
    "type": "ERROR",
    "params": {},
    "key": "INVENTION_TITLE_MISSING",
    "locmessage": "The invention title is missing. At least one invention title
must be entered.", "detectedSequence": "",
    "dataElement": "PROPERTY_NAMES.INVENTION_TITLE_BAG"
  }
]
}
```

4.2. Verification Report

As mentioned in section 3, after validation, the verification report generated is located at the `verificationReportOutputPath`, which by default for the XML Report file is at: `"/temp/st26/reports/[verificationID]/report.xml"` and for HTML Report file is at: `"/temp/st26/reports/[verificationID]/report.html"`.

In the `application.properties` file, you can enable or disable HTML report generation. A value of "true" to enable report generation and a value of "false" to disable it.

```
#turning on/of printing HTML Report  
app.property.html=true
```

The content of this report is sent to the callback endpoint within the `errorSummary` field of the `ServiceRequest`. An example of this field is provided in the example requests provided above in section 4.

5. Configuration

5.1. Default settings

The Validator is configured by using a properties file. The default `application.properties` file has the following values³:

```
##### WIPO Sequence Validator properties

## -- FOLDERS --
#Base path to be used by the rest of folders
app.basePath=/temp/st26/
#Folder to put the files to be processed\
app.inboxPath=${app.basePath}inbox/

#Folder to store the ST26 files once validated
app.outboxPath=${app.basePath}outbox/
#Folder to store the validation reports
app.reportsPath=${app.basePath}reports/

#Folder to store the parameters
app.paramsPath=${app.basePath}params/

#Parent folder for full and formality folders
app.processPath=${app.basePath}process/

#Files in process for a full validation are stored in this folder
app.process.fullPath=${app.processPath}full/
#Files in process for a formality validation are stored in this folder
app.process.formalityPath=${app.processPath}formality/

alternativeResourceBasePath=${app.basePath}alt_resources

## --PREFERENCES --
#To enable the rule VXQV49 set this value to true, default value is false.
app.preferences.optionalEnglishQualifierValue=false
# Please enter either: ERROR or WARNING to specify the type of the verification message
for the rule VXQV_49, default value is "WARNING".
app.preferences.optionalRuleType=WARNING

#locale used for the localized messages from the verification report
validator_locale=en
#Setting the location of the endpoint
api.URL=
#turning on/of printing HTML Report
app.property.html=true
#software version from pom.xml
```

³ Valid at February 2023

```
app.version=@project.version@
```

```
## -- WATCHER --

# These properties control the process looking for files in the folders to be processed
# (see: https://docs.spring.io/spring-framework/docs/current/javadoc-api/org/springframework/scheduling/concurrent/ThreadPoolTaskExecutor.html)

processing.delay=10000
processing.corePoolSize=5
#Max number of files being validated concurrently
processing.maxPoolSize=10
processing.queueCapacity=1000 processing.enabled=true

##-- LOGGING (see https://logback.qos.ch/manual/configuration.html)

logging.level.root=info
logging.level.org.wipo=info
logging.pattern.console=%d{yyyy-MM-dd HH:mm:ss} [%thread] %-5level %logger{36} - %msg%n

# HEALTH ENDPOINT
management.endpoints.jmx.exposure.include=health#
Show details of health endpoint
management.endpoint.health.show-details=always
```

In order to modify the value of the parameters provided here an alternative “application.properties” file should be used. There are several options as detailed in the Spring Boot documentation: <https://docs.spring.io/spring-boot/docs/2.0.6.RELEASE/reference/html/boot-features-external-config.html#boot-features-external-config-application-property-files>

The simplest option would be to provide a new `application.properties` file that will be searched for in the following locations, by order of operation:

- a) A “/config” folder within the current directory *[Note: if the Validator is deployed as a WAR file in Tomcat, this folder would be under “lib” folder, e.g., “/opt/apache-tomcat/lib/config”];*
- b) The current directory *[Note: if the Validator is deployed as a WAR file in Tomcat, this folder would be under “lib” folder, e.g., “/opt/apache-tomcat/lib”];*
- c) A `$classpath` or `config` package; then
- d) The `$classpath` root.

Also, the path and name of the configuration file can be specified by establishing the parameter on the command line when starting the tool:

For a JAR deployment:

- `java -jar -Dspring.config.location= <PATH_TO_FILE> wipo-sequence-validator.jar`

For a WAR deployment on Tomcat, the following entry to `CATALINA_OPTS` should be added:

- `export CATALINA_OPTS="-Dspring.config.location=<PATH_TO_FILE>`

When using the WAR deployment, the new `application.properties` file can also be copied into the `WEB-INF/classes` folder of the web application, or the existing one is edited.

5.2. Configuring verification rule VXQV_49

```
app.preferences.optionalEnglishQualifierValue=false
app.preferences.optionalRuleType=WARNING
```

The `optionalEnglishQualifierValue` value in the `application.properties` file can be set to 'true' if the user wants to enable the rule VXQV_49, and can set the rule's severity by updating `optionalRuleType` value to 'ERROR' or 'WARNING'. The default values for these two properties are shown above.

5.3. Check health of the endpoint

```
# HEALTH ENDPOINT
management.endpoints.jmx.exposure.include=health
```

The Validator service has implemented a `/health` endpoint that provides basic information about the application's 'health'.

To explore the `/health` endpoint, the URL is <http://localhost:8080/wipo-sequence-validator/actuator/health> URL. The endpoint should display the following:

- The status will be 'UP' as long as the application is healthy.
- It will show 'DOWN' if the application gets unhealthy due to any issue like connectivity with the database or lack of disk space etc.

The `/health` endpoint only shows a simple 'UP' or 'DOWN' status. The following property in the `application.properties` file provides the complete details including the status of every health indicator that was checked as part of the health check-up process.

```
# Show details of health endpoint
management.endpoint.health.show-
```

The `/health` endpoint now includes the details of the `DiskSpaceHealthIndicator` which is run as part of the health check-up process.

The `/health` endpoint will display like this as a series of key-value pairs and include further details. An example is shown below:

```
{"status": "UP", "details": {"diskSpace": {"status": "UP", "details": {"total": 511123124224, "free": 373225091072, "threshold": 10485760}}}}
```

5.4. Localized messages

The Validator can provide a localized message, for instance in the Verification Report, in each of the official ten PCT languages (Arabic, Chinese, English, French, German, Portuguese, Japanese, Korean, Russian, and Spanish).

By default, these messages are provided in English. In order to configure the Validator to provide these messages in other languages, the `validator_locale` parameter of the `application.properties` file must be set to the appropriate language code.

```
#Local used for the localized messages from the verification report
validator_locale=en
```

Note: The Validator should be restarted in order for the properties set out in the new “application.properties” file to be applied.

5.5. Custom Organism Names

In order for Offices to provide their own custom organism names, which do not form part of the original pre-defined list of organism names, a list of custom organisms can be provided by creating a new file, called “`custom_organism.json`”, in the “`alternativeResourceBasePath`” folder. This file should have the following structure:

```
[
  {"value":"Custom Organism Sample"},
  {"value":"Custom Organism Sample 2"}
]
```

Note: unlike the pre-defined list of organism names, all organisms are contained within a singleJSON file, rather than be separated out into a JSON file for each letter of the alphabet.

5.6. Referencing ST.26 DTD files

By default, the Validator references the latest version of ST.26 DTD. The current version of WIPO Sequence Validator is based on version 1.3 of WIPO ST.26 DTD³.

This copy of the latest version of the ST.26 DTD is included in the Validator library located in the “`/src/main/resources`” folder of the source code (this is the defined file path referenced within the JAR or WAR file). It is referenced in the “`catalog.xml`” file in the same folder, as shown below:

```
<?xml version="1.0" encoding="UTF-8"?>
<catalog xmlns="urn:oasis:names:tc:entity:xmlns:xml:catalog">
  <public publicId="-//WIPO//DTD Sequence Listing 1.3//EN"
    uri="ST26SequenceListing_V1_3.dtd"/>
</catalog>
```

Instructions on how to include a new DTD are detailed below. During the validation, the version of the DTD set in the DOCTYPE declaration of the XML file will be used. Firstly, the `publicId` will be used to identify the location of the DTD file to be used. If the `publicId` is not included in the catalog, the system will try to locate the DTD file in the root folder where the Java process is being executed

³ Valid as of February 2023

5.6.1. How to indicate an alternative DTD version for the validation

In order to be able to validate WIPO ST.26 files that reference an older version of the ST.26 DTD, this ST.26 DTD file must be made available to the Validator to allow the appropriate validation.

In order to achieve this, there are two alternative approaches:

- Uncompress the JAR file and include a reference to the additional or alternative ST.26 DTD file in the “src/main/resources” folder.
- Modify the `catalog.xml` file and add a new entry for the additional ST.26 DTD or edit the existing one.

For example:

```
<?xml version="1.0" encoding="UTF-8"?>
<catalog xmlns="urn:oasis:names:tc:entity:xmlns:xml:catalog">
<public publicId="-//WIPO//DTD Sequence Listing 1.2//EN"
uri="ST26SequenceListing_V1_2.dtd"/>
<public publicId="-//WIPO//DTD Sequence Listing 1.3//EN"
uri="ST26SequenceListing_V1_3.dtd"/>
</catalog>
```

Instead of modifying the JAR file, the following steps should be followed:

- a. Copy `catalog.xml` and all the DTDs into a local folder;
- b. Modify `catalog.xml` to include a reference to the additional ST.26 DTD; and
- c. Set this Java system property on launch: `xml.catalog.files=<path_to_catalog.xml>`

Note: In Tomcat for Windows can be done by adding this environment variable:

```
set "JAVA_OPTS=%JAVA_OPTS%
-Dxml.catalog.files=C:\temp\tomcat\sharedclasspath\catalog.xml"
```

[IMPORTANT: the inclusion of a different version of the ST.26 DTD will allow the ‘formality’ validation of the XML file against the referenced ST.26 DTD but the ‘full’ validation will likely require a change to the source code in order to implement the verification rules. Therefore it is recommended that the use of multiple DTDs only be used when conducting a ‘formality’ validation.]

6. Validator REST API

In this section, the use cases of the Validator API are specified. There are three services or use cases:

- Validate a file in the “Inbox” folder; (section 6.1)
- Validate a file as part of the request (section 6.1); and
- Request the status of a validation (section 6.2).

The API specification for this (written in OAS 3.0 [YAML File]) service is provided in full as Annex II.

6.1. Validate WIPO ST.26 file

Request Mapping	/api/v1/validate
Method	POST
Consumes	application/json
Produces	application/json
Operation	Request the validation of an existing WIPO ST.26 file in the “Inbox” folder. Returns a unique “verificationID” for retrieving the status of the validation request.
Request	<pre>{ "currentApplicationNumber": "string", "currentSQLVersionNumber": "string", "parentApplicationNumber": "string", "parentSQLVersionNumber": "string", "sqlInputLocation": "string" (Location of Input.xml file), "verificationReportOutputPath": "string" (Destination of report.xml), "nameFile": "file.xml", "type": "string" (Possible values: full formality), }</pre>
Responses	<ul style="list-style-type: none"> • '202': “Accepted”. The WIPO ST.26 file passed the formality validation, and the business rule verification has started. This code will also include a response message indicating a unique code for retrieving the verification report (“verificationID”). The WIPO ST.26 file is moved to the “Process” folder for processing. • '400': “Bad request”. The REST request was not well formed or the WIPO ST.26 file did not pass the XML validation. This code will

	<p>be complemented with a response message indicating the detail of the error</p> <ul style="list-style-type: none"> • '400': "Bad request" - "FILENAME_NOT_VALID". The filename includes invalid characters. While the filename may include non Latin characters, certain punctuation marks are considered invalid • '404': "Not Found". The WIPO ST.26 file was not found in the "Inbox" Folder • '500': "Internal Server Error". An internal error occurred. This code will be complemented with a response message indicating the detail of the error
Precondition	The WIPO ST.26 file must be provided in the "Inbox" folder, specified by theuser.
Postcondition	<p>The WIPO ST.26 file is moved to the location provided in verificationReportOutputPath or to the "Outbox" folder at the followinglocation:</p> <p>"/[outbox]/[verificationID]/[file.xml]"</p> <p>The verification report is generated at:</p> <p>"/[reports]/ [verificationID]/report_[file.xml or file.html]"</p>

Note: The validated filename may include non-Latin characters but will not accept any reserved characters.

6.2. Request Validation Status

Request Mapping	/api/v1/status
Method	POST
Consumes	application/json
Produces	application/json
Operation	Request the validation status for a specific WIPO ST.26 File.
Request	<pre>{ verificationID: {type: string} }</pre>
Responses	<ul style="list-style-type: none"> • '200': Success. This code will also include a response message indicating a unique ID with the status of the verification process, selected from: <ul style="list-style-type: none"> ○ "RUNNING": the file is being processed ○ "FINISHED-VALID": the file successfully passed the formality validation and the result of the validation is available in the reports folder ○ "FINISHED-INVALID": the process is complete but the file did not pass the formality validation. The result of the validation is available in the reports folder ○ "NOT_FOUND": the "verificationID" has not been found ○ "VERIFICATION_ID_ERROR": the "verificationID" has not been included in the request • '400': Bad request. The REST request was not well formed • '500': Server Error. An internal error happened. This code will also include a response message indicating the detail of the error
Postcondition	The Validator provides status of validation.
Assumptions	-

[Annex I follows]

Annex I: Example XML Verification Report

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<VerificationReport productionDate="2020-12-17" sourceFileName="valid2Warning.xml">
  <VerificationMessageBag>
    <VerificationMessage>
      <Severity>WARNING</Severity>
      <DataElement>PROPERTY_NAMES.EARLIEST_PRIORITY_APPLICATION</DataElement>
      <DetectedSequence/>
      <DetectedValue/>
      <MessageKey>X_EARLIEST_PRIO_APPLICATION_ID_MISSING</MessageKey>
      <ParameterBag/>
      <LocalizedMessage>Earliest priority application information is absent.It must be provided when a priority claim is made to an earlier application.
    </LocalizedMessage>
    </VerificationMessage>
    <VerificationMessage>
      <Severity>ERROR</Severity>
      <DataElement>PROPERTY_NAMES.INVENTION_TITLE_BAG</DataElement>
      <DetectedSequence/>
      <DetectedValue>-</DetectedValue>
      <MessageKey>INVENTION_TITLE_MISSING</MessageKey>
      <ParameterBag/>
      <LocalizedMessage>The invention title is missing. At least one invention title must be entered.</LocalizedMessage>
    </VerificationMessage>
    <VerificationMessage>
      <Severity>ERROR</Severity>
      <DataElement>PROPERTY_NAMES.INVENTION_TITLE_BAG</DataElement>
      <DetectedSequence/>
      <DetectedValue>-</DetectedValue>
      <MessageKey>INVENTION_TITLE_MISSING</MessageKey>
      <ParameterBag/>
      <LocalizedMessage>The invention title is missing. At least one invention title must be entered.</LocalizedMessage>
    </VerificationMessage>
  </VerificationMessageBag>
</VerificationReport>
```

This XML instance can also be downloaded from here:

https://www.wipo.int/standards/en/sequence/example_verification_report.xml

[Annex II follows]

Annex II: Complete API specification (YAML)

The complete API specification can be downloaded from here:

https://www.wipo.int/standards/en/sequence/complete_validator_api_specification.yml

[Annex III follows]

Annex III: Property Names (JSON)

The property names used within the tool can be downloaded from here:

<https://www.wipo.int/standards/en/sequence/propertynames.json>

Note that this is a part of the source code and is updated as necessary alongside the implementation.

[Annex IV follows]

Annex IV: Example HTML Verification Report

Verification report

Verification Report Information

Production Date	2023-01-25
Application Number	123456
Sequence listing dated	2021-02-13
Software Version	2.2.0-SNAPSHOT
Validator Version	0.1

Verification Messages

Severity	Data Element	Message Text	Detected Value	Detected Sequence
ERROR	Feature Location	The feature location includes a residue number greater than the length of the sequence, which is invalid.	14219	1
WARNING	Project	A non English free text language code has been entered, but there are no qualifiers with a non-English free text value.	en	

[End of document]