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# **TM FORM XML SCHEMA STANDARD (Architecture)**

## **Trademarks System TM FORM XML SCHEMA STANDARD FOR Intellectual Property Office of Singapore**

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# 1. GENERAL

## Glossary

DTD	Data Type Definition format. An older format for specifying the structure of an XML File. An XML parser can validate the XML File against a DTD.
eTrademarks	<p>eTrademarks is an online internet services sub-system (part of the TMS project) initiated by the <u>Intellectual Property Office of Singapore</u> (IPOS), Ministry of Law. It is maintained by NEC Solutions Asia Pacific Pte. Ltd.</p> <p>The objectives of eTrademarks are as follows:</p> <ul style="list-style-type: none"> <li>• To provide a one-stop information services infrastructure to allow the public to file trademark forms via Internet.</li> <li>• To provide electronic payment facilities over the Internet for the services provided.</li> </ul>
Trademark agents	A law firm engaging and registered as an agent for representing their clients to register trademark filing. In this document this term also refers to other third parties or organizations which function as such an agent. For brevity, the term “trademark agents” will be used to denote such entities.
TM Form	Denotes a Trademark Application Form used for processing by IPOS.
TM Form XML Schema Standard	A TM Form with its structures represented / specified in an XML Schema Format.
TM Form XML Instance	A TM Form specified in XML complying to the TM Form XML Schema Standard.
XSD	The XML Schema language is also referred to as XML Schema Definition (XSD).
XML	Extensible Markup Language
XML Parser	A generic Parser which implements the XML and XML Schema Specification. Example is MSXML which is installed by Microsoft as part of Internet Explorer 5.0 and above.
XML Schema	XML Schema is an XML based alternative to DTD. An XML schema describes the structure of an XML document. The XML Schema language is also referred to as XML Schema Definition (XSD).

## 2. INTRODUCTION

This document describes the Overall Architecture of the TM Form XML Schema Standard for use by external parties using the services of eTrademarks (such as trademark agents). This standard facilitates the submission of TM Forms to eTrademarks in the XML format. The standard itself is specified in the XML Schema.

The TM Form XML Schema Standard is described in its entirety in four documents, which must be read in conjunction, as follows.

- a. "TM Form XML Schema Standard (Architecture)" describes the overall architecture and components of the standard.
- b. "TM Form XML Schema Standard" contains the detailed TM Form XML Schema.
- c. "TM Form XML Instance Examples" contains samples of the TM Form XML Instance.
- d. "TM Form XML Schema Standard (Annexure)" explains the tags of the TM Form XML Instance.

### Overview

#### Objective

- a. The objective of implementing TM Forms in XML Schema is to provide a set of standards that enable external parties, such as trademark agents, to implement a programmatic interface which can generate XML files (TM Form XML Instances) to be used for online filing through eTrademarks.
- b. The standard is based on the XML Schema Standard.
- c. Through the programmatic interface, the agent will be able to extract data from their existing database into XML files (TM Form XML Instances) which comply to the TM Form XML Schema Standard.
- d. These generated XML files (TM Form XML Instances) can then be used for filling up the online forms automatically by uploading it onto eTrademarks.
- e. On uploading the XML files (TM Form XML Instances), eTrademarks server can check the validity of these files with the corresponding TM Form XML Schema Standard.
- f. After successful validation, the XML files (TM Form XML Instances) will be parsed for auto fill-up of the fields in the online TM Forms.

#### Background

- g. Some trademark agents may already have all their data in their local database. However, they need to re-key in the data online for submission to eTrademarks.
- h. To ease the reusability of the data from the trademark agents' database for online submission, a facility in eTrademarks has been developed to allow the trademark agents to upload TM Form XML Instances.
- i. The trademark agents can develop their own software (either by engaging their Information System Department, or an independent contractor) to extract the relevant information from their database to generate the TM Form XML Instances. The TM Form XML Instances have to comply with the TM Form XML Schema Standard.
- j. The TM Form XML Instances can then be used to auto-fill the online forms at eTrademarks by simply uploading them instead of having to manually key in the information.

## 3. Architecture Overview

### Architecture Overview

#### Purpose

- a. There are three major components involved in the XML based TM Form submission , as follows.
  - TM Form XML Schema Standard
  - Client-Side XML Generation
  - Server-Side XML Upload

#### TM Form XML Schema Standard

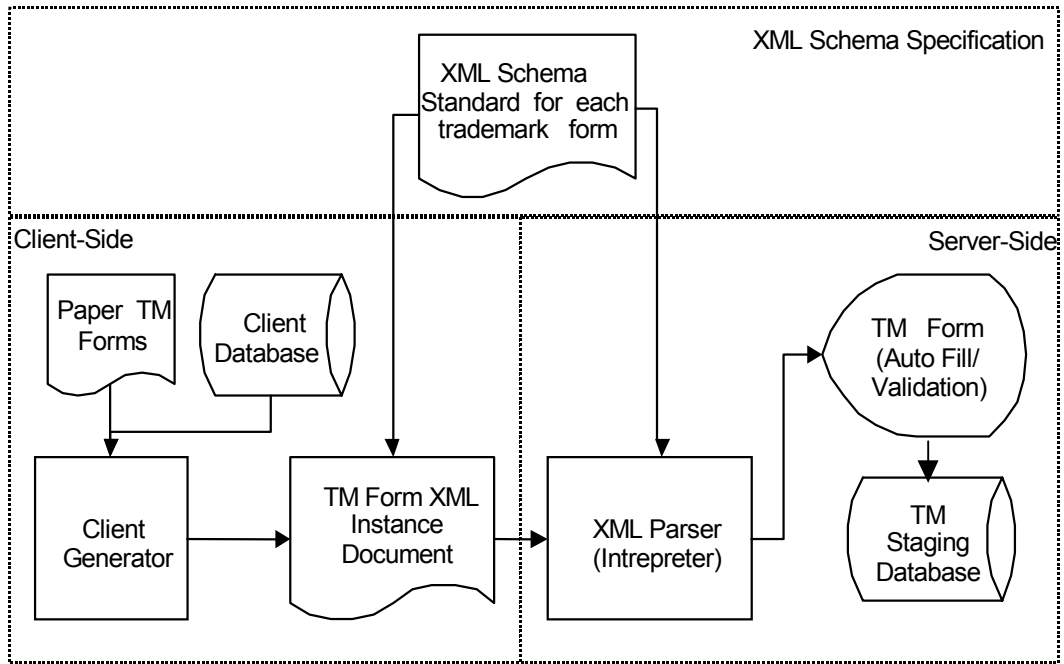
- b. The standard contains a specification of the structures of TM Form XML Instances. This current document is one of the four documents that form the standard. The documents are available for trademark agents that are interested to implement their own programmatic interface to generate the TM Form XML Instances.

#### Client-Side XML Generation

- c. External parties can generate TM Form XML Instances using their own software (programmatic interface). The TM Form XML Instances should comply with the TM Form XML Schema Standard.
- d. External parties can generate the TM Form XML Instances manually or through a custom-built software (programmatic interface).

#### Server-Side XML Upload

- e. A XML upload facility is provided on eTrademarks for each TM Form XML Instance, so that the corresponding online form can be automatically filled up by using data from the TM Form XML Instance.
- f. The eTrademarks server will validate the TM Form XML Instance with TM Form XML Schema Standard during the upload. If the XML File (TM Form XML Instance) does not comply with the TM Form XML Schema Standard then the system will display the Invalid XML File (TM Form XML Instance) Error Page. During the upload, the eTrademarks Server conducts minimum validation on the data content of the XML File (TM Form XML Instance). It then fills the data into the online TM Form.
- g. The data for each field in the online TM Form will be validated when user navigates from screens to screens and finally updated into the database on submission.



## 4. TM Form XML Schema Standard

<b>TM Form XML Schema Standard Specification</b>	
<i>Description</i>	
a.	XML Schema is a W3C Standard. The current version of the XML Schema is 1.0.
b.	XML Schema has facilities for describing the structure and constraining the contents of XML 1.0 documents, including those which exploit the XML namespace facility.
c.	XML Schema language, which is itself represented in XML 1.0 and uses namespaces, substantially reconstructs and extends considerably the capabilities found in XML 1.0 DTDs.
<b>Example of TM Form XML Schema Standard</b>	
d.	Below is one example: segment from TM Form XML Schema Standard for TM 4.

<b>TM Form XML Schema Standard Specification</b>	
e.	<pre> &lt;?xml version="1.0" encoding="UTF-8"?&gt; &lt;xs:schema          xmlns:xs="http://www.w3.org/2001/XMLSchema"          elementFormDefault="unqualified" attributeFormDefault="unqualified"&gt;   &lt;xs:element name="Form"&gt;     &lt;xs:annotation&gt;       &lt;xs:documentation&gt;Application to register a trade mark&lt;/xs:documentation&gt;     &lt;/xs:annotation&gt;     &lt;xs:complexType&gt;       &lt;xs:sequence&gt;         &lt;xs:attribute name = "Name" fixed = "TM 4" type = "xs:string"/&gt;         &lt;xs:attribute name = "Version" fixed = "1.0" type = "xs:string"/&gt;         &lt;xs:element name="Applicant_Reference_Number" type="xs:string" minOccurs="0"/&gt;         &lt;xs:element name="Mark_Type"&gt;           &lt;xs:simpleType&gt;             &lt;xs:restriction base="xs:string"&gt;               &lt;xs:enumeration value="Trade Mark"/&gt;k"/&gt;             &lt;/xs:restriction&gt;           &lt;/xs:simpleType&gt;         &lt;/xs:element&gt;         ...         &lt;xs:element name="Device_Description" type="xs:string" minOccurs="0"/&gt;         &lt;xs:element name="Number_Of_Marks_In_Series" type="xs:integer" minOccurs="0"/&gt;         &lt;xs:element name="Priority_Claim" minOccurs="0"&gt;           &lt;xs:complexType&gt;             &lt;xs:sequence&gt;               &lt;xs:element name="Priority_Country" type="xs:string"/&gt;               &lt;xs:element name="Priority_Date" type="xs:date"/&gt;             &lt;/xs:sequence&gt;           &lt;/xs:complexType&gt;         &lt;/xs:element&gt;         &lt;xs:element name="Specification_Of_Goods_Services"&gt;           &lt;xs:complexType&gt;             &lt;xs:sequence&gt;               &lt;xs:element name="Class_Number"&gt;                 &lt;xs:simpleType&gt;                   &lt;xs:restriction base="xs:integer"&gt;                     &lt;xs:minInclusive value="1"/&gt;                     &lt;xs:maxInclusive value="45"/&gt;                   &lt;/xs:restriction&gt;                 &lt;/xs:simpleType&gt;               &lt;/xs:element&gt;               &lt;xs:element name="Goods_Services"&gt;                 &lt;xs:simpleType&gt;                   &lt;xs:restriction base="xs:string"&gt;                     &lt;xs:maxLength value="15000"/&gt;                   &lt;/xs:restriction&gt;                 &lt;/xs:simpleType&gt;               &lt;/xs:element&gt;             &lt;/xs:sequence&gt;           &lt;/xs:complexType&gt;         &lt;/xs:element&gt;       &lt;/xs:sequence&gt;     &lt;/xs:complexType&gt;   &lt;/xs:element&gt; &lt;/xs:schema&gt; </pre>
f.	<p>In the above schema, the element “Applicant_Reference_Number” is declared as a string. Other tags are defined in a similar manner.</p>
<b>Rules</b>	
g.	<p>Every element in a TM Form XML Instance is defined by a set of corresponding rules in the corresponding TM Form XML schema. Some of the common rules of TM Form XML Instance document are element structures, data type checking, format checking and optional/mandatory tags.</p>

<b>TM Form XML Schema Standard Specification</b>	
h.	Any TM Form XML Instance can be easily validated against its corresponding TM Form XML Schema. External parties (such as trademark agents) can study the TM Form XML Schema Standard and generate corresponding TM Form XML Instances through a custom-built program.
<b>Example of TM Form XML Instance</b>	
a.	Below is an example of an XML file for TM 4 complying to the XML Schema of TM 4
b.	<pre> &lt;?xml version="1.0" encoding="UTF-8"?&gt; &lt;Form xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="TM4.xsd" Name="TM 4" Version="1.0"&gt;   &lt;Applicant_Reference_Number&gt;App/XML/007&lt;/Applicant_Reference_Number&gt;   &lt;Mark_Type&gt;Trade Mark&lt;/Mark_Type&gt;   ...   &lt;Device_Description&gt;Description of the device &lt;/Device_Description&gt;   &lt;Number_Of_Marks_In_Series&gt;3&lt;/Number_Of_Marks_In_Series&gt;   &lt;Priority_Claim&gt;     &lt;Priority_Country&gt;Japan&lt;/Priority_Country&gt;     &lt;Priority_Date&gt;2003-01-07&lt;/Priority_Date&gt;   &lt;/Priority_Claim&gt;   &lt;Specification_Of_Goods_Services&gt;     &lt;Class_Number&gt;03&lt;/Class_Number&gt;     &lt;Goods_Services&gt;Tinted, metalized, sputtered, laminated, coated, printed, embossed and colouring of reflective or no-reflective polyester films, PVC (polyvinyl chloride) films, PE (polyethylene) films and POP (polypropylene) films for rejecting near infrared and ultra violet light, saving energy, controlling glare fade, improving privacy and protecting against bomb blasts, natural disaster and vandalism; and for use on commercial and residential building glass and automobile glass.&lt;/Goods_Services&gt;   &lt;/Specification_Of_Goods_Services&gt;   ... &lt;/Form&gt; </pre>

## 5. Client-Side XML Generation

<b>Client-Side XML Generation</b>	
<i>Description</i>	
c.	External parties have TM Form data already stored in their own local database
d.	Using custom developed software they can extract the TM Form data and save it as an XML file. The XML file can also be generated manually by typing the XML file into an XML Editor.
e.	The generated XML file should comply with the corresponding TM Form XML Schema Standard in structure, data type, format checking and optional/mandatory tags.
<i>Rules</i>	
f.	The structure of the XML tags should follow what is defined in the TM Form XML Schema Standard.
g.	The XML tag values should follow the data type constraint and format constraint defined in the TM Form XML Schema.
h.	Optional XML tags should be removed from the XML file and mandatory tags should be defined inside the XML.
<i>Process</i>	
i.	The generated XML file is uploaded to the eTrademarks for each TM Form.
<i>Example</i>	
j.	Below is an example of an XML file for TM 4 complying to the XML Schema of TM 4
k.	<pre> &lt;?xml version="1.0" encoding="UTF-8"?&gt; &lt;Form xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="TM4.xsd" Name="TM 4" Version="1.0"&gt;   &lt;Applicant_Reference_Number&gt;App/XML/007&lt;/Applicant_Reference_Number&gt;   &lt;Mark_Type&gt;Trade Mark&lt;/Mark_Type&gt;   ...   &lt;Device_Description&gt;Description of the device &lt;/Device_Description&gt;   &lt;Number_Of_Marks_In_Series&gt;3&lt;/Number_Of_Marks_In_Series&gt;   &lt;Priority_Claim&gt;     &lt;Priority_Country&gt;Japan&lt;/Priority_Country&gt;     &lt;Priority_Date&gt;2003-01-07&lt;/Priority_Date&gt;   &lt;/Priority_Claim&gt;   &lt;Specification_Of_Goods_Services&gt;     &lt;Class_Number&gt;03&lt;/Class_Number&gt;     &lt;Goods_Services&gt;Tinted, metalized, sputtered, laminated, coated, printed, embossed and colouring of reflective or no-reflective polyester films, PVC (polyvinyl chloride) films, PE (polyethylene) films and POP (polypropylene) films for rejecting near infrared and ultra violet light, saving energy, controlling glare fade, improving privacy and protecting against bomb blasts, natural disaster and vandalism; and for use on commercial and residential building glass and automobile glass.&lt;/Goods_Services&gt;   &lt;/Specification_Of_Goods_Services&gt;   ... &lt;/Form&gt; </pre>

## 6. Server-Side XML Upload

<b>Server-Side XML Upload</b>		
<i>Description</i>		
a.		The generated TM Form XML Instances can be uploaded to eTrademarks through the corresponding online TM Forms.
b.		eTrademarks will parse and validate the TM Form XML Instance file with the corresponding TM Form XML Schema standard. After the validation, it will automatically fill up the corresponding online TM Form.
c.		The online TM Form can then be reviewed, corrected and then submitted to eTrademarks. All validations required for successful submission of the TM Form will be done as per the normal form submission processing.
<i>Rules</i>		
d.		Each TM Form XML Instance has to be submitted through the corresponding online TM Form.
e.		eTrademarks will validate the compliance of the uploaded XML TM Form with the corresponding XML Schema of the TM Form. If the XML File (TM Form XML Instance) does not comply with the TM Form XML Schema standard then the system will display the Invalid XML File (TM Form XML Instance) Error Page.
f.		During the upload, the eTrademarks Server does not validate the data content of the XML File (TM Form XML Instance). It just fills the data into the online TM Form. The data for each field in the online TM Form will only be validated if necessary when user navigates from screens to screens.
g.		Upload of the TM Form XML Instances does not constitute submission of the TM Forms. The upload simply does automatic fill-up of the corresponding online TM Forms only. Only submission of the online TM Forms will transmit the TM Form data to the system.