ST.96 - ANNEX V

IMPLEMENTATION RULES AND GUIDELINES

Version 2.2

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1. INTRODUCTION

1.1 Overview

1. WIPO Standard ST.96 provides a collection of extensible markup language (XML) resources that, for many cases, can be used "as is". However, Intellectual Property Offices (IPOs) may need to address use cases whose requirements are not met by the XML Schemas defined in ST.96. This document is intended to guide IPOs to develop their XML schemas based on ST.96 Schemas and other XML resources.

2. One of the goals of the ST.96 Implementation Guidelines is to promote the implementation of ST.96 Schemas in a common way by IPOs and to maintain a consistent usage of element and attribute names between specific implementations.

1.2 Scope

3. The scope of this document is to provide a comprehensive set of rules and guidelines for the customization and implementation of ST.96 Schemas.

1.3 How to use this document

4. This document is intended for use by IPOs which want to implement and customize ST.96 Schemas. This document refers to the main body of ST.96 and its Annexes I, II and III as prerequisites.

1.4 Terminology

5. In this document:

- the term "Customization" refers to the alteration of ST.96 Schemas in order to better fit specific requirements.
- the term "ST.96 compatible schema" refers to a schema consistent with the ST.96 Schema Components and the XML Design Rules and Conventions for Industrial Property (DRCs), i.e. Annex I of ST.96. XML instances valid for the ST.96 compatible schema are not guaranteed to successfully validate against ST.96 Schemas.
- the term "ST.96 conformant schema" refers to a compatible schema that has not been extended and that sustains constraints expressed by an ST.96 Schema. XML instances valid for an ST.96 conformant schema will validate against ST.96 Schemas.
- the term "Basic Component" refers to W3C Built-in Datatype or simple Type or complex Type with `xsd:simpleContent` definition.
- the term "Aggregate Component" refers to the collection of related Basic Components and/or other Aggregate Components that together convey a distinct business meaning, independent or not of any specific business context.

1.5 Rule identifiers

6. All Office Implementation rules are informative and are identified through a prefix of [OI nn]. The value "nn" indicates the sequential number of the rule. For example, the rule identifier [OI-06] identifies the 6th rule of the Office Implementation rules.

1.6 Overview of ST.96 Schema Development Procedure

7. The ST.96 Component Schemas have been expressed in W3C XML Schema (XSD), based on the ST.96 DRCs. The ST.96 Component Schemas are used to both specify and validate ST.96 conformance. The following steps are presented as the procedure for developing ST.96 Schema components and a possible procedure for developing Office implementation schema.

- Step 1: Analyze the business processes; identify information to be exchanged, used and stored in the processes and define data for the information;
- Step 2: Model the data defined in Step 1;
- Step 3: Look for previously developed XML schema components that can be reused;

- Step 4: Create the ST.96 compliant name and definition for each component following XML Design Rules and Conventions (DRCs, ST.96 Annex I);
- Step 5: Identify any common business terms that are associated with the components;
- Step 6: Build schema components; and
- Step 7: Validate schema component using Schematron.

2. DESIGNING FOR ST.96 CUSTOMIZATION

8. The design of the conceptual models for ST.96 and its customizations are not affected by the syntactical issues of XML, schema languages, or validation tools. Once the need to customize the ST.96 Schema has been determined, IPOs SHOULD decide whether the result will be ST.96 *conformant* or ST.96 *compatible* schema. It should be noted that the ST.96 Schemas and conformant schemas are acceptable for data exchange.

9. Schematron can be used to validate whether an IPO's implementation schema follows the XML Design Rules and Conventions of ST.96. The *ST96XSDValidator*, which is a tool that uses Schematron to validate XML schema against the ST.96 Design Rules and Conventions, is available in WIPO website at: http://www.wipo.int/standards/en/st96/v2-2/

10. Designing a customization may involve:

- adding components to meet the requirements of a specific business context;
- omitting optional components not needed in a specific context;
- modifying constraints on possible values for basic components such as code lists; and
- combining (or recombining) and assembling components into new aggregate components or document components.

2.1 Designing for conformance

11. ST.96 conformance at the instance and schema level means that there are no constraint violations when validating the instance against the ST.96 Schema. When designing an XML schema for ST.96 conformance, the key objective is to create custom models that can be used to specify and validate ST.96 conformant instances. An ST.96 conformant instance is an instance that validates against an ST.96 Schema. An ST.96 conformant schema is a schema that validates only ST.96 conformant instances. An ST.96 conformant schema is a subset of an ST.96 Schema. Consequently, designing for conformance applies primarily to restrictions:

- subsets of the Schema model — restricting the number of elements in a Schema; and
- constraints on content — restricting the possible values a component can have.

12. There are no changes to the element references which import or include the conformant schemas.

2.1.1 Subsets of the Schema model

13. The use of subsets allows for the removal from a component of any optional components that are not needed to satisfy the specific business requirements of an implementation.

14. It must be noted that sub-setting can only be used to remove optional elements or change cardinality in ways that do not reduce the required minimum number of occurrences or extend the permitted maximum number of occurrences of an element. The resulting range must be a subset of the original range. Thus, where $1 < m < n$,

- 0..1 can become 1..1 or the element can be removed (but not, for example, 1..2);
- 0..n can become 0..1, 1..m, 1..n, m..n, or the element can be removed;
- 1..n can become 1..1, m..n, or 1..m; and
- 1..1 cannot be changed.

2.1.2 Enumeration list constraints on content

15. Constraining the values for a component to a fixed set is a common customization requirement. For example, "the Currency Code must be expressed using ISO 4217 codes" is a constraint on the possible values for Currency Code in an instance.

[OI-01] Office Implementation Schemas must not use `xsd:list` or `xsd:union` to derive simple Types defined in WIPO Standard ST.96.

2.1.3 Other constraints on content

16. There are other cases in which the treatment of ST.96 instances may require customization in order to limit or restrict content values. For example, "The length of an Address Line cannot exceed 40 characters."

17. There are many business rules a customization may require that constrain the values used in the documents including co-occurrence. For example, the value of one or more components is affected by the value of one or more other components in the document content. Some of these constraints cannot be specified using schema validation semantics. Using Schematron, a customization can specify such assertions in a declarative fashion independent of how the assertions are actually implemented.

2.2 Designing for compatibility

18. While ST.96 conformance cannot be guaranteed, some degree of familiarity can be expected through the re-use of XML schema components defined in ST.96 (Annex III) and ST.96 Design Rules and Conventions (DRCs, Annex I). When creating new components or extending existing ST.96 Schema Components, the DRCs MUST be followed to ensure compatibility.

2.2.1 Re-use of ST.96 Schema Components

19. Re-using ST.96 Schema Components keeps customization as closely aligned with ST.96 as possible and prevents an unnecessary proliferation of Components requiring maintenance. Do not recreate aggregate Components that already exist in ST.96.

2.2.2 Compatible extension of ST.96

20. If re-use of existing ST.96 Schema Components is not feasible, customization can be made to add additional Components to the ST.96 Schema to satisfy business requirements. In these situations, it is possible to extend ST.96 Components in a compatible manner.

21. Extension means to add to, or associate with, existing Components additional information that may be required for a particular context, for example, an extension creates a superset of the original Component. It is recommended that such an extension includes the original Component as an association from the Component that extends it. For example, `CitedIPDocumentType` defined in ST.96 is an extension of `CitedDocumentType` in ST.96 because it contains additional information required if the cited document is an IP document. Structurally, `CitedIPDocumentType` has an association to `CitedDocumentType`, making `CitedIPDocumentType` a superset of `CitedDocumentType`.

22. Compatible extensions can be implemented in parts of a schema. This allows validation checks to be built into the compatible schema that cannot be enforced in the extension area of a conformant schema.

23. The compatible schema does not share the same namespace as ST.96 Schemas. It allows the Office Implementation Schemas to use the default namespace. They should import ST.96 Schemas. To avoid confusion with ST.96 Schemas, it is not recommended to redefine them. If redefined, the namespace prefix for an Office's Implementation Schema should follow the two-letter codes (in lower case only) listed in WIPO Standard ST.3.

[OI-02] Compatible Schemas should use `xsd:import` construct to refer to ST.96 Schemas.

[OI-03] In Compatible Schemas, redefinition of any types, elements and attributes defined in the WIPO Standard ST.96 using `xsd:redefine` construct should be avoided.

[OI-04] Compatible Schemas may use a default namespace for efficient operations.

[OI-05] Compatible Schemas must use the two-letter codes defined in WIPO Standard ST.3 for the office namespace prefix.

2.2.2.1 Using qualified names

24. Besides namespace qualification, IPOs may also qualify the property term of a component specified as its Dictionary Entry Name in the IP Data Dictionary, i.e. Annex II of ST.96, to indicate that the customized component is based on an ST.96 Schema Component. For example, "`Address. Geographic Region`" in ST.96 can be qualified for the Canadian office as "`Address. CA Geographic Region`", indicating that the use of the geographic region value is restricted to the context of Canadian provinces. The element name would be `CAGeographicRegion` which uses `GeographicRegionType` defined in ST.96. For example, `ruImageContentCategory` is an office implementation attribute name which is based on the ST.96 attribute `ImageContentCategory`.

[OI-06] Compatible Schemas may use the two-letter codes defined in WIPO Standard ST.3 as a qualifier for customized components based on the ST.96 Schema.

2.2.2.2 Re-using Aggregate Components

25. The principle applied is that if a required aggregate component has the same structure as a standard ST.96 component, then it should not be a redefinition but a re-use by association. The qualifying terms used to name the new associated component then describe the role it plays. For example, if an `AddressBook` is required for an Applicant, and this uses the normal `AddressBookType` structure, it could be defined as `ApplicantAddressBook`.

26. If the new aggregate component does not have the same structure as a standard ST.96 Component, then the required component MUST have a new name, not a qualified name. If possible, the new aggregate component may then be associated with the ST.96 Component being extended. For example, if an Address has additional components when the address is in Korea, then a new aggregate component called `KRAddress` would be created. This is not a qualification, but a new name. Ideally this should contain the original Address structure by association plus the new Korean components.

2.2.2.3 New Basic components

27. A customization may require new basic components; these should be based on an existing ST.96 or W3C built-in data type (or a refinement thereof). Note that, where the new basic component is included in an aggregate component, it will result in a new aggregate component being defined as well.

28. When establishing a new basic component, it is necessary to associate it with a data type. This is determined by the Representation Term part of component's Dictionary Entry Name. For example, a Korean Address may have an additional component called "`Dong. Text`". This new basic information entity would use the standard Text data type.

29. Changing or specializing a component's definition changes the component. Therefore, a new basic component must be defined. For example, in ST.96, "`Person. Other Name. Name`" is defined as "Person name other than first name, middle name, last name, first last name, second last name, suffix and prefix". If a component is required to specify the Login name as a specific other name, then a new component (perhaps called "`Person. Login Name. Name`") should be defined.

30. In cases where the required component's representation does not fit an existing data type, a new data type may be required. New data types can be based on either ST.96 data types or W3C built-in data types. The following operations are allowed on ST.96 simple Types and examples of XML schema codes are available in Appendix A:

- add a character length restriction;
- add/change an enumeration list; and
- add a pattern restriction.

2.2.2.4 New associations

31. Aggregate components are included in a schema model by associating them with a parent aggregate. If the required aggregation has the same structure as an existing aggregate a new association should be created with the existing aggregate (as in 2.2.2.2). This new association represents a new use of the aggregate, so qualifying terms can be used to describe the new role. For example, in ST.96, `AddressBook` is re-used in contexts such as `ClaimantAddressBook, ApplicantAddressBook` and `LicenseeAddressBook`. They all share the same structure as `AddressBookType` with the terms "*`Claimant`*", "*`Applicant`*", and "*`Licensee`*" providing the qualification.

32. By re-using the unqualified aggregate (`AddressBook`), the same XML type (`AddressBookType`) will be used for implementation of all these components.

2.2.2.5 New Aggregate Components

33. A new aggregate component should be created if the required aggregation component does not exist in ST.96 or is an extension of an existing aggregate component, making it no longer conformant. When creating new aggregate components, there are some general principles to follow:

(a) A new aggregate component may also `include` the aggregate component being extended, as a child by extension. For example, in ST.96, `CitedIPDocumentType` is a new aggregate that has a different structure to `CitedDocumentType`. The `CitedDocumentType` structure is re-used by extension in `CitedIPDocumentType`, in addition, `CitedIPDocumentType` also contains additional components. The name `CitedIPDocumentType` is not a qualification of the name `CitedDocumentType`, but an extension to the ST.96 `CitedDocumentType` to create a new aggregate.

(b) New aggregate components should attempt to re-use patterns of ST.96 structures where possible.

(c) When defining new aggregate components, different constructs and mechanisms are not allowed in ST.96 Schemas but are tolerated in Office Implementation Schemas. This is the case for the all compositor and substitution groups.

(d) The following operations can be performed to customize an existing aggregate component. Examples of XML schema codes are provided in Appendix A:

- add and/or remove an element;
- add and/or remove an attribute;
- make an element mandatory and/or change its cardinality; and
- make an attribute required.

[OI-07] Compatible Schemas may use substitution groups.

2.2.2.6 New document component schemas

34. Where existing document component schemas defined in ST.96 do not meet requirements, it is necessary to create a new document model. The key steps in assembling new document type structures are:

(a) Select/create the root aggregate for the document type;

(b) Assemble the required ST.96 Schema Components (and/or customized extensions), applying cardinality constraints;

(c) For all required associations from these Components assemble the required components (and/or customized extensions), applying cardinality constraints; and

(d) Continue step (c) above recursively through all required associations.

3. IMPLEMENTATION

3.1 Schema folder

35. It is recommended that the folder structure for implementation schemas be defined as it is in ST.96 to minimize changes of import declaration.

3.2 Customized schemas

36. At least two scenarios in particular lend themselves to XSD derivations performed on existing data types:

- an existing ST.96 data type fits the requirements for the application with modifications supported by XSD derivation. These modifications can include extension (adding new information to an existing ST.96 data type) and/or refinement (restricting the set of information allowed to a subset of that permitted by the existing data type); and
- no existing ST.96 data type is found that can be used as the basis for the new data type. Nevertheless, the base library of components that underlies ST.96 can be used to build up the new data type so as to ensure that interoperability is at least possible at the basic component level.

37. Where the requirements are for a pure subset, it is possible to prune a ST.96 schema to create a new, smaller schema defining only the subset required. ST.96 relies on a common library of re-usable data types, and therefore this approach does not support the restriction of selective data types based on context. For example, an Address when used in one part of the subset schema cannot have a different restriction to an Address in another part of the document.

38. One approach for producing subset schemas is to work with the ST.96 schemas as input and use the XML comment construct to comment out all of the Components not used by the customization. A human reader of the schema specifications can see all of the ST.96 standardized constructs, easily distinguishing those that are in the customization and those that are not.

39. Another approach for producing subset schemas is to work at an abstract model level and to synthesize the schema fragments from scratch from the subset model. This approach implies all required elements are defined as global. In the following example, the first approach is applied.

```
<xsd:complexType name="PersonNameType">
<xsd:sequence>
                <xsd:element ref="com:PersonNamePrefix"  minOccurs="0"/>
                <xsd:element ref="com:FirstName" />
                <xsd:element ref="com:MiddleName"  minOccurs="0"/>
                <xsd:element ref="com:LastName" />
                <xsd:element ref="com:FirstLastName"  minOccurs="0"/>
                <xsd:element ref="com:SecondLastName" minOccurs="0"/>
                <xsd:element ref="com:PersonNameSuffix" minOccurs="0"/>
                <xsd:element ref="com:PreferredName"  minOccurs="0"/>
                <xsd:element ref="com:PersonOtherName" minOccurs="0"/>
          </xsd:sequence>
</xsd:complexType>
```

3.3 Using the ST.96 components for non-ST.96 document types

40. Even when a completely new document type must be defined, it can prove advantageous to use as many of the ST.96 Components as possible. Figure 1 shows an approach to specifying the schema fragments defining a non-ST.96 document using both ST.96 and non-ST.96 Components.

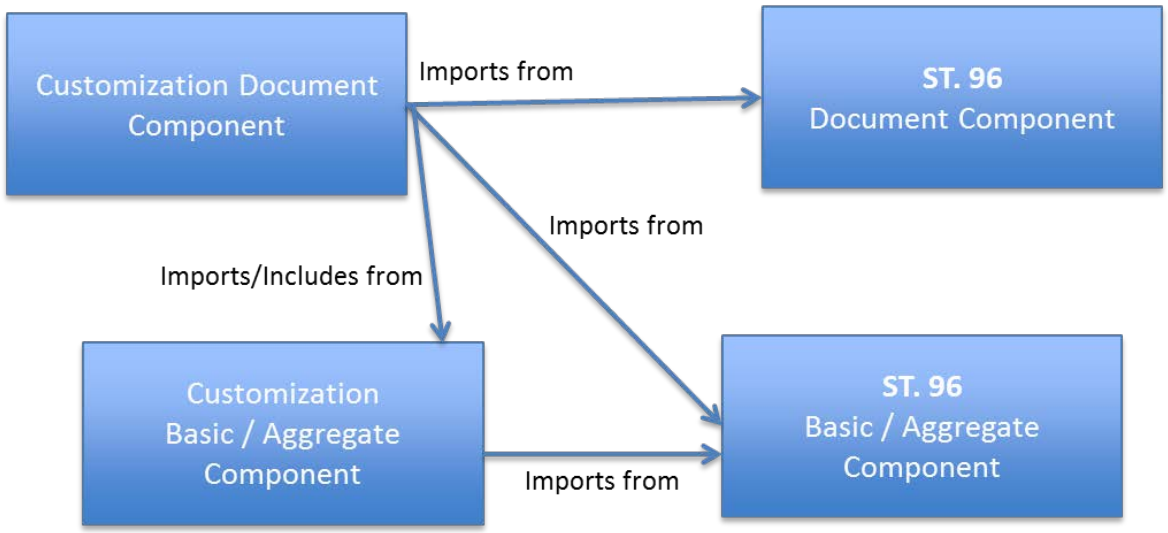


Figure 1. Using the ST.96 Components for non-ST.96 documents

3.4. Testing implementation for conformation with DRCs

41. Rule-based validation such as Schematron may be used to validate an Office's Implementation Schema for conformance with DRCs (Annex I of ST.96).

4. DESIGN-STAGE AND PRODUCTION-STAGE SCHEMAS

42. Depending on an IPO's requirements, production-stage schema can be different from the design-stage schema. The design-stage schemas may exist in two forms:

- Modular Schemas: Each element, simple type or complex type definition i.e. basic components and aggregate components reside in their own schema file. The advantage of using modular schemas is the ability to compose the larger schema (by means of `include` or `import`) and the smaller files are more manageable and reusable than the single full schema.
- Flattened Schemas: Flattened schemas contain all the dependent files that are included in a schema belonging to the same namespace into one file. In the process, the components of any included schemas are added as global components of the flattened schema. In this way, the flattened schema can be used without having to rely on a network connection or an IO process to access the required files. This could aid in reducing processing time for each instance.

43. The design-stage schema, in general, is used to produce the production-stage schema for efficiency purposes, which can be the flattened schemas in most cases. It must be ensured that the XML instances for data exchange conform to the design-stage schema, which means that the instances should contain the same namespace prefixes and schema version.

44. In a design-stage schema, all namespaces should be identified and elements and attributes fully qualified; all components should have their own version information. In the course of designing a schema based on the ST.96 Standard it is important to keep careful track of components using namespace and version information. To produce production-stage schemas it might be advisable to resolve all external references in a schema in advance and use the fully integrated schema in a production environment to reduce processing time for each instance. Such a practice is completely dependent on local circumstances and therefore no further recommendations can be given in this document.

45. Figure below shows how ST.96 Design Stage and ST.96 Production Schemas are leveraged to create Office Implementation Schemas for both Conformance and Compatibility. ST.96 Design Rules and Conventions (Annex I) apply to both ST.96 Schemas and Office Implementation Conformant and Compatible Schemas. ST.96 design-stage and production-stage schemas can be imported to develop Office Implementation Schemas. The developed schemas can be validated for adherence to ST.96 Design Rules and Conventions (Annex I) using *ST96XSDValidator*.

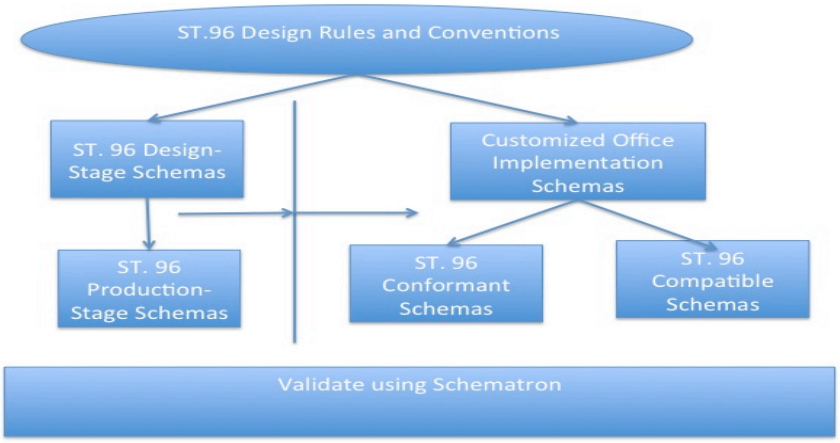


Figure2. Overview of ST.96 customization process

5. REFERENCES

- UBL 2 Guidelines for Customization, available at: http://docs.oasis-open.org/ubl/guidelines/UBL2-Customization1.0cs01.pdf
- Exchange Network shared schema components- usage guide, available at: http://www.exchangenetwork.net/dev_schema/SharedSchemaComponents-UsageGuide_v2.0.pdf
- Guidelines for Electronic Text Encoding and Interchange- the TEI Consortium, P5, Using the TEI section, available at: http://www.tei-c.org/release/doc/tei-p5-doc/en/html/USE.html
- *Rule-based validation – Schematron,* ISO/IEC 19757-3:2006

APPENDIX A - EXAMPLES OF ST.96 CONFORMANT SCHEMAS

The following examples are listed to show how developers define ST.96 conformant schemas. Designing for conformance applies primarily to restrictions which are:

- Subsets of the Schema model — restricting the number of Components in a Schema; and
- Constraints on content — restricting the possible values a Component can have.

1. SUBSET OF THE SCHEMA MODEL

1.1 Design-Stage Schemas - Modular Schemas: Remove an optional element

Patent Sample Business Case: Remove optional element `UPOVCode` from the `PlantName` Structure.

1. Create a folder called “USPatent” at the same level as “Patent”, “Trademark”, “Common” etc.
2. Under USPatent, create subfolders “Document”
3. Under “USPatent” folder, create a new W3C schema file for `Type`, `PlantNameType.xsd`.
4. Set the target Namespace to the IPO’s namespace and add new namespace entries `xmlns:xxpat`, where `xx` is the lower case ST.3 Code. Each IPO is expected to version the modified components separate from WIPO because this is the Office specific implementation. “V1_0” is shown in the following example because this is the first Office modified component.

   Please note that the examples in the Appendix use URN for IPO namespace as approved at USPTO. Other IPO’s can use either URN or URL namespace based on their internal practice.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:pat="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:uspat="urn:us:gov:doc:uspto:patent"
targetNamespace="urn:us:gov:doc:uspto:patent" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
```

5. Import ST.96 Components which are needed to define a new `Type PlantNameType`.

```
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/id.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../Patent/BotanicalName.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../Patent/PlantCommonName.xsd"/>
```

6. Declare the new Complex Type `PlantNameType` as shown below, which refers to existing elements with the exception of `UPOVCode`.

```
<xsd:complexType name="PlantNameType">
           <xsd:choice maxOccurs="unbounded">
                <xsd:element ref="pat:BotanicalName"/>
                <xsd:element ref="pat:PlantCommonName"/>
           </xsd:choice>
           <xsd:attribute ref="com:id"/>
</xsd:complexType>
</xsd:schema>
```

7. Update ST.96 schema file, `PlantName.xsd` in the Patent folder.

8. Declare IPO namespace. Each IPO is expected to version the modified components separate from WIPO because this is the Office specific implementation. "V1_0" is shown in the following example because this is the first Office modified component.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:pat="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:uspat="urn:us:gov:doc:uspto:patent"
targetNamespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
```

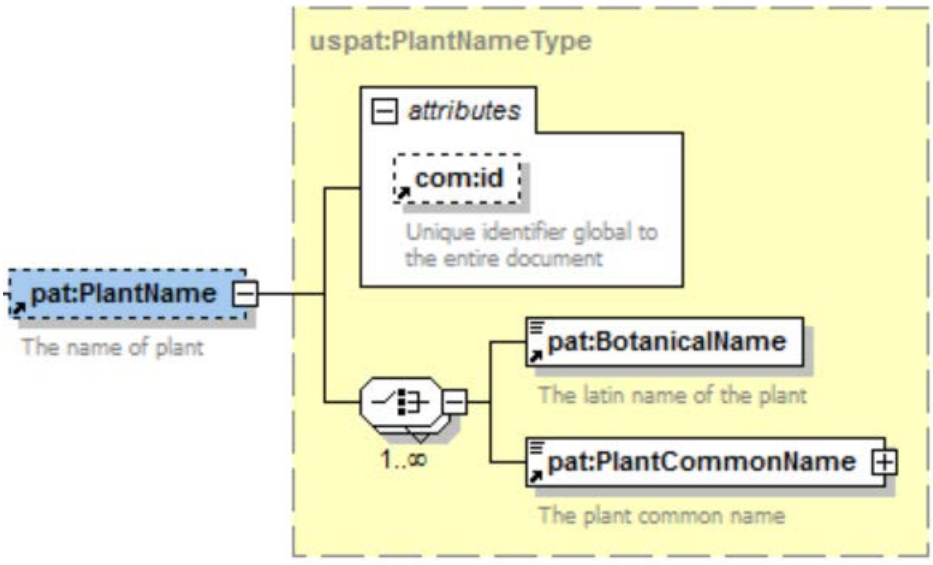
9. Import the schema file in which the new IPO Type was defined, `PlantNameType.xsd`.

```
<xsd:import namespace="urn:us:gov:doc:uspto:patent"
schemaLocation="..\USPatent\PlantNameType.xsd"/>
```

10. Update new IPO namespace reference to corresponding Type above.

```
<xsd:element name="PlantName" type="uspat:PlantNameType">
          <xsd:annotation>
               <xsd:documentation>The name of plant</xsd:documentation>
          </xsd:annotation>
</xsd:element>
</xsd:schema>
```

11. The final content model design is shown below:



1.2 Design-Stage Schemas - Modular Schemas: Make an element required

Patent Sample Business Case: Make `ClaimTotalQuantity` required in the `BibliographicData` Structure.

1. Create a folder called “USPatent” at the same level as “Patent”, “Trademark”, “Common” etc.
2. Create a new W3C schema file for Type called `BibliographicDataType.xsd` in folder “USPatent” --> “Document”.
3. Set the target Namespace to the IPO’s namespace and add the new namespace `xmlns:xxpat`, where `xx` is an ST.3 Code.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:pat="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:uspat="urn:us:gov:doc:uspto:patent"
targetNamespace="urn:us:gov:doc:uspto:patent" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
```

4. Import the ST.96 Components which are needed to define a new Type `BibliographicDataType`.

```
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PatentPublicationIdentification.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/ApplicationIdentification.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PatentGrantIdentification.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PriorityClaimBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/GrantTerm.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PreClassificationText.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PatentClassificationBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/InventionTitleBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PlantName.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/ReferenceCitationBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/ClaimTotalQuantity.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/SearchField.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/FigureBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/RelatedDocumentBag.xsd"/>
```

```
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/ProvisionalGrantPublicationDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/GrantPublicationDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/ExemplaryClaimBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PartyBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/InternationalFilingData.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/RegionalFilingData.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/InternationalPublishingData.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/RegionalPublishingData.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PatentFamily.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/BioDeposit.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PlainLanguageDesignationText.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/FilingLanguageCode.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/PublicationLanguageCode.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/HagueAgreementData.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/StateDesignation.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/LicenceDataBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/EarliestPriorityApplication.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/CompleteSpecificationFilingDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PublicAvailabilityDateBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/RightsEffectiveDateBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PatentDocumentRepublication.xsd"/>
```

```
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/ExhibitionFilingDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/RightsReestablishedDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/ApplicationWithdrawnDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/ApplicationDeemedWithdrawnDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PatentRevocationDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/PCTNationalPhaseEntryDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/ApplicationPartiallyWithdrawnDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/OppositionData.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/id.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/officeCode.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/st96Version.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/ipoVersion.xsd"/>
```

5. Declare the new Complex Type `BibliographicDataType` which refers to existing elements and remove the `minOccurs="0"` attribute for the element `ClaimTotalQuantity`.

```
      <xsd:complexType name="BibliographicDataType">
            <xsd:sequence>
                  <xsd:element ref="pat:PatentPublicationIdentification"
minOccurs="0"/>
                  <xsd:element ref="pat:ApplicationIdentification"/>
                  <xsd:element ref="pat:PatentGrantIdentification"
minOccurs="0"/>
                  <xsd:element ref="pat:PriorityClaimBag" minOccurs="0"/>
                  <xsd:element ref="pat:GrantTerm" minOccurs="0"/>
                  <xsd:element ref="pat:PreClassificationText" minOccurs="0"/>
                  <xsd:element ref="pat:PatentClassificationBag"
minOccurs="0"/>
                  <xsd:element ref="pat:InventionTitleBag"/>
                  <xsd:element ref="pat:PlantName" minOccurs="0"/>
                  <xsd:element ref="pat:ReferenceCitationBag" minOccurs="0"/>
                  <xsd:element ref="pat:ClaimTotalQuantity"/>
                  <xsd:element ref="pat:SearchField" minOccurs="0"/>
                  <xsd:element ref="pat:FigureBag" minOccurs="0"/>
                  <xsd:element ref="pat:RelatedDocumentBag" minOccurs="0"/>
                  <xsd:element ref="pat:ProvisionalGrantPublicationDate"
minOccurs="0"/>
                  <xsd:element ref="pat:GrantPublicationDate" minOccurs="0"/>
                  <xsd:element ref="pat:ExemplaryClaimBag" minOccurs="0"/>
                  <xsd:element ref="com:HagueAgreementData" minOccurs="0"/>
                  <xsd:element ref="pat:PartyBag"/>
```

```
                <xsd:element ref="pat:InternationalFilingData"
minOccurs="0"/>
                <xsd:element ref="pat:RegionalFilingData" minOccurs="0"/>
                <xsd:element ref="pat:InternationalPublishingData"
minOccurs="0"/>
                <xsd:element ref="pat:RegionalPublishingData" minOccurs="0"/>
                <xsd:element ref="pat:PatentFamily" minOccurs="0"/>
                <xsd:element ref="com:BioDeposit" minOccurs="0"/>
                <xsd:element ref="pat:PlainLanguageDesignationText"
minOccurs="0"/>
                <xsd:element ref="com:FilingLanguageCode" minOccurs="0"/>
                <xsd:element ref="com:PublicationLanguageCode"
minOccurs="0"/>
                <xsd:element ref="pat:StateDesignation" minOccurs="0"/>
                <xsd:element ref="pat:LicenceDataBag" minOccurs="0"/>
                <xsd:element ref="pat:EarliestPriorityApplication"
minOccurs="0"/>
                <xsd:element ref="pat:CompleteSpecificationFilingDate"
minOccurs="0"/>
                <xsd:element ref="pat:PublicAvailabilityDateBag"
minOccurs="0"/>
                <xsd:element ref="pat:RightsEffectiveDateBag" minOccurs="0"/>
                <xsd:element ref="pat:PatentDocumentRepublication"
minOccurs="0"/>
                <xsd:element ref="pat:ExhibitionFilingDate" minOccurs="0"/>
                <xsd:element ref="pat:RightsReestablishedDate"
minOccurs="0"/>
                <xsd:element ref="pat:ApplicationWithdrawnDate"
minOccurs="0"/>
                <xsd:element ref="pat:ApplicationDeemedWithdrawnDate"
minOccurs="0"/>
                <xsd:element ref="pat:PatentRevocationDate" minOccurs="0"/>
                <xsd:element ref="pat:PCTNationalPhaseEntryDate"
minOccurs="0"/>
                <xsd:element ref="pat:ApplicationPartiallyWithdrawnDate"
minOccurs="0"/>
                <xsd:element ref="pat:OppositionData" minOccurs="0"/>
            </xsd:sequence>
            <xsd:attribute ref="com:id"/>
            <xsd:attribute ref="com:officeCode"/>
            <xsd:attribute ref="com:st96Version" use="required"/>
            <xsd:attribute ref="com:ipoVersion"/>
     </xsd:complexType>
</xsd:schema>
```

6. Update ST.96 schema file, `BibliographicData.xsd`, in the Paten->Document folder.

7. Declare new IPO namespace.

```
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:pat="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:uspat="urn:us:gov:doc:uspto:patent"
targetNamespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
```

8. Update ST.96 `BibliographicDataType.xsd` to import statement with the new IPO declared Type, `BibliographicDataType.xsd`.

```
<xsd:import namespace="urn:us:gov:doc:uspto:patent"
schemaLocation="../../USPatent/Document/BibliographicDataType.xsd"/>
```

9. Update BibliographicDataType reference with new IPO namespace.

```
<xsd:element name="BibliographicData" type="uspat:BibliographicDataType">
           <xsd:annotation>
                <xsd:documentation>Bibliographic information included on the
first page of a patent
                     document. Contains document identification, domestic
filing data, foreign priority
                     data, public availability dates or term of protection,
technical information,
                     related patent or application
information</xsd:documentation>
           </xsd:annotation>
           <xsd:unique name="BibComponentKey">
                <xsd:selector xpath=".//*"/>
                <xsd:field xpath="@com:id"/>
           </xsd:unique>
</xsd:element>
```

10. The final content model design is shown below:

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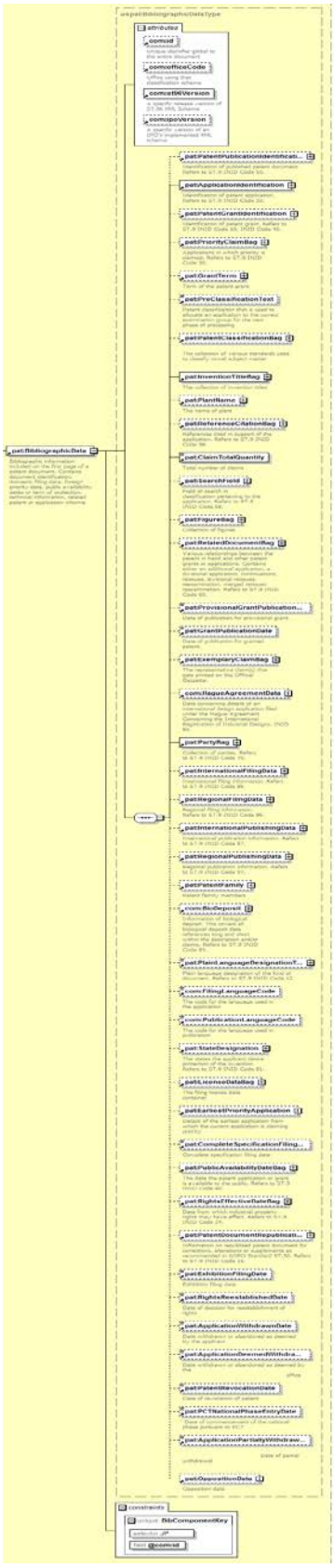


1.3 Design-Stage Schemas - Flattened Schemas: Remove an optional element

Patent Sample Business Case: Remove optional element `UPOVCode` from the `PlantName` Structure.

1. Create a new W3C schema file, USBibliographicData_V1_0.xsd in the same folder as BibliographicData_V2_0.xsd.

2. Set the target Namespace to the IPO's namespace and add new namespace entries `xmlns:xxpat`, where xx is the lower case ST.3 Code. Each IPO is expected to version the modified components separate from WIPO because this is the Office specific implementation. "V1_0" is shown in the following example because this is the first Office modified component.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:pat="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:uspat="urn:us:gov:doc:uspto:patent"
targetNamespace="urn:us:gov:doc:uspto:patent" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
```

3. Import ST.96 Components which are needed to define a new Type `PlantNameType`.

```
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="Common_V2_0.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="BibliographicData_V2_0.xsd"/>
```

4. Create the new Complex Type `PlantNameType` as shown below, which refers to existing elements with the exception of `UPOVCode`.

```
<xsd:complexType name="PlantNameType">
           <xsd:choice maxOccurs="unbounded">
                <xsd:element ref="pat:BotanicalName"/>
                <xsd:element ref="pat:PlantCommonName"/>
           </xsd:choice>
           <xsd:attribute ref="com:id"/>
      </xsd:complexType>
</xsd:schema>
```

5. In the existing BibliographicData_V2_0.xsd file, declare the new schema file created above USBibliographicData_V1_0.xsd namespace. Each IPO is expected to version the modified components separate from WIPO because this is the Office specific implementation. "V1_0" is shown in the below example because this is the first Office modified component.

```
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:pat="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:uspat="urn:us:gov:doc:uspto:patent"
targetNamespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
```

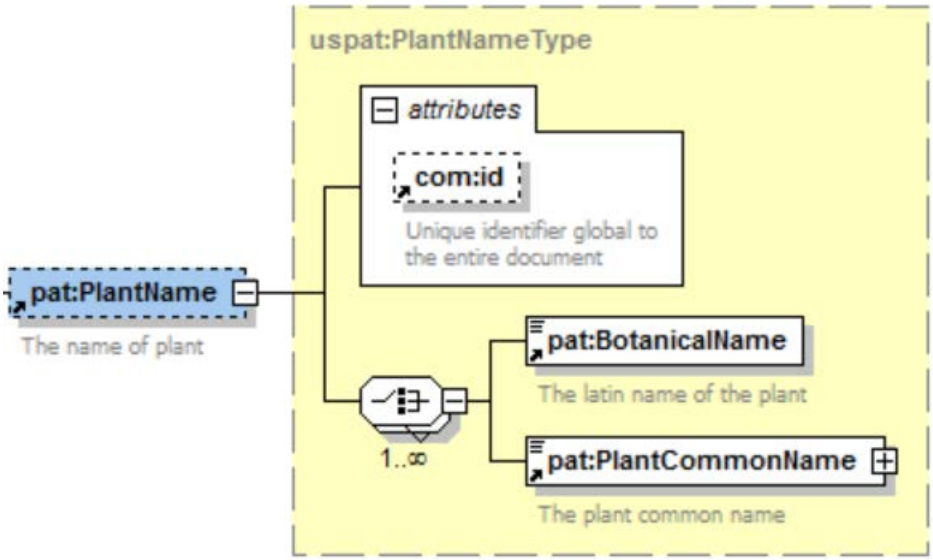
6. Import the new schema file USBibliographicData_V1_0.xsd in which the new IPO Type was defined, USBibliographicData_V1_0.xsd.

```
<xsd:import namespace="urn:us:gov:doc:uspto:patent"
schemaLocation="USBibliographicData_V1_0.xsd"/>
```

7. Update the element `PlantName` based on the corresponding new Type above with new namespace reference.

```
<xsd:element name="PlantName" type="uspat:PlantNameType">
          <xsd:annotation>
               <xsd:documentation>The name of plant</xsd:documentation>
          </xsd:annotation>
</xsd:element>
```

8. The final content model design for `PlantName` is shown below:



1.4 Design-Stage Schemas - Flattened Schemas: Make an element required

Patent Sample Business Case: Make `ClaimTotalQuantity` required in the `BibliographicData` Structure.

1. Create a new W3C schema file, USBibliographicData_V1_0.xsd in the same folder as BibliographicData_V2_0.xsd.

2. Set the target Namespace to the IPO's namespace and add new namespace entries xmlns:xxpat, where xx is the lower case ST.3 Code. Each IPO is expected to version the modified components separate from WIPO because this is the Office specific implementation. "V1_0" is shown in the following example because this is the first Office modified component.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:pat="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:uspat="urn:us:gov:doc:uspto:patent"
targetNamespace="urn:us:gov:doc:uspto:patent" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
```

3. Import ST.96 Components which are needed to define a new Type `BibliographicDataType`.

```
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="Common_V2_0.xsd"/>
     <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="BibliographicData_V2_0.xsd"/>
```

4. Create the new Complex Type `BibliographicDataType` which refers to existing elements and remove the `minOccurs="0"` attribute for the element `ClaimTotalQuantity`.

```
<xsd:complexType name="BibliographicDataType">
           <xsd:sequence>
                  <xsd:element ref="pat:PatentPublicationIdentification"
minOccurs="0"/>
                  <xsd:element ref="pat:ApplicationIdentification"/>
                  <xsd:element ref="pat:PatentGrantIdentification"
minOccurs="0"/>
                  <xsd:element ref="pat:PriorityClaimBag" minOccurs="0"/>
                  <xsd:element ref="pat:GrantTerm" minOccurs="0"/>
                  <xsd:element ref="pat:PreClassificationText" minOccurs="0"/>
                  <xsd:element ref="pat:PatentClassificationBag"
minOccurs="0"/>
                  <xsd:element ref="pat:InventionTitleBag"/>
                  <xsd:element ref="pat:PlantName" minOccurs="0"/>
                  <xsd:element ref="pat:ReferenceCitationBag" minOccurs="0"/>
                  <xsd:element ref="pat:ClaimTotalQuantity"/>
                  <xsd:element ref="pat:SearchField" minOccurs="0"/>
                  <xsd:element ref="pat:FigureBag" minOccurs="0"/>
                  <xsd:element ref="pat:RelatedDocumentBag" minOccurs="0"/>
                  <xsd:element ref="pat:ProvisionalGrantPublicationDate"
minOccurs="0"/>
                  <xsd:element ref="pat:GrantPublicationDate" minOccurs="0"/>
                  <xsd:element ref="pat:ExemplaryClaimBag" minOccurs="0"/>
                  <xsd:element ref="com:HagueAgreementData" minOccurs="0"/>
                  <xsd:element ref="pat:PartyBag"/>
                  <xsd:element ref="pat:InternationalFilingData"
minOccurs="0"/>
                  <xsd:element ref="pat:RegionalFilingData" minOccurs="0"/>
                  <xsd:element ref="pat:InternationalPublishingData"
minOccurs="0"/>
                  <xsd:element ref="pat:RegionalPublishingData" minOccurs="0"/>
                  <xsd:element ref="pat:PatentFamily" minOccurs="0"/>
                  <xsd:element ref="com:BioDeposit" minOccurs="0"/>
                  <xsd:element ref="pat:PlainLanguageDesignationText"
minOccurs="0"/>
                  <xsd:element ref="com:FilingLanguageCode" minOccurs="0"/>
                  <xsd:element ref="com:PublicationLanguageCode"
minOccurs="0"/>
                  <xsd:element ref="pat:StateDesignation" minOccurs="0"/>
                  <xsd:element ref="pat:LicenceDataBag" minOccurs="0"/>
                  <xsd:element ref="pat:EarliestPriorityApplication"
minOccurs="0"/>
                  <xsd:element ref="pat:CompleteSpecificationFilingDate"
minOccurs="0"/>
                  <xsd:element ref="pat:PublicAvailabilityDateBag"
minOccurs="0"/>
                  <xsd:element ref="pat:RightsEffectiveDateBag" minOccurs="0"/>
                  <xsd:element ref="pat:PatentDocumentRepublication"
minOccurs="0"/>
                  <xsd:element ref="pat:ExhibitionFilingDate" minOccurs="0"/>
                  <xsd:element ref="pat:RightsReestablishedDate"
minOccurs="0"/>
                  <xsd:element ref="pat:ApplicationWithdrawnDate"
minOccurs="0"/>
                  <xsd:element ref="pat:ApplicationDeemedWithdrawnDate"
minOccurs="0"/>
                  <xsd:element ref="pat:PatentRevocationDate" minOccurs="0"/>
                  <xsd:element ref="pat:PCTNationalPhaseEntryDate"
minOccurs="0"/>
                  <xsd:element ref="pat:ApplicationPartiallyWithdrawnDate"
minOccurs="0"/>
                  <xsd:element ref="pat:OppositionData" minOccurs="0"/>
```

```
            </xsd:sequence>
            <xsd:attribute ref="com:id"/>
            <xsd:attribute ref="com:officeCode"/>
            <xsd:attribute ref="com:st96Version" use="required"/>
            <xsd:attribute ref="com:ipoVersion"/>
      </xsd:complexType>
</xsd:schema>
```

5. In the existing `BibliographicData_V2_0.xsd` file, declare new IPO namespace and import the new schema file created above `USBibliographicData_V1_0.xsd`. Each IPO is expected to version the modified components separate from WIPO because this is the Office specific implementation. "V1_0" is shown in the following example because this is the first Office modified component.

```
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:pat="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:uspat="urn:us:gov:doc:uspto:patent"
targetNamespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
<xsd:import namespace="urn:us:gov:doc:uspto:patent"
schemaLocation="USBibliographicData_V1_0.xsd"/>
```

6. Update the existing element `BibliographicData` type namespace reference based on the corresponding Type above.

```
<xsd:element name="BibliographicData" type="uspat:BibliographicDataType">
            <xsd:annotation>
                  <xsd:documentation>Bibliographic information included on the
first page of a patent
                        document. Contains document identification, domestic
filing data, foreign priority
                        data, public availability dates or term of protection,
technical information,
                        related patent or application
informa</xsd:documentation>
            </xsd:annotation>
            <xsd:unique name="BibComponentKey">
                  <xsd:selector xpath=".//*"/>
                  <xsd:field xpath="@com:id"/>
            </xsd:unique>
      </xsd:element>
```

7. The final content model design is shown below:

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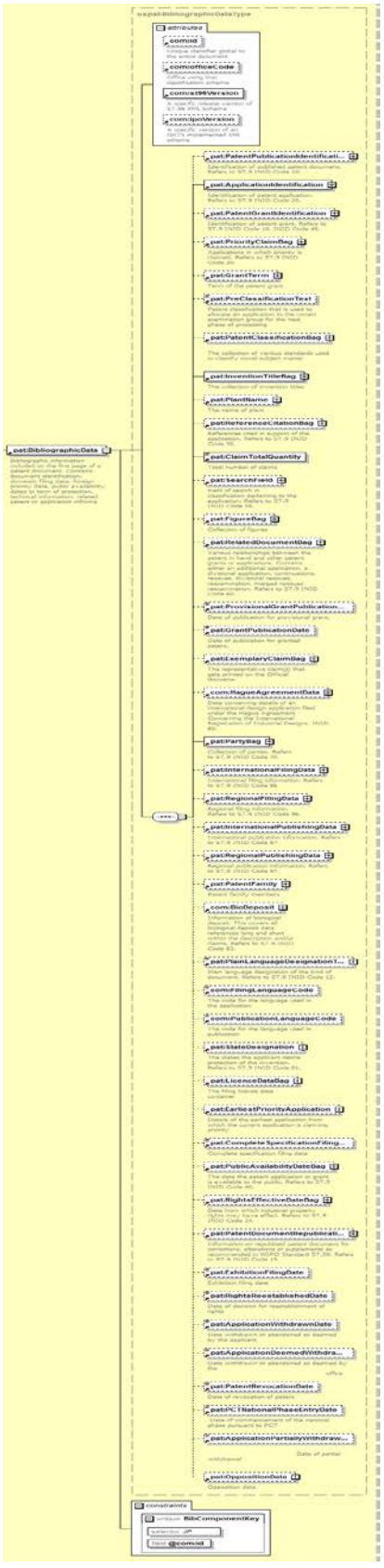

APPENDIX B - EXAMPLES OF ST.96 COMPATIBLE SCHEMAS

The following examples are listed to show how developers can reuse ST.96 Components in their implementation schemas to make them compatible with ST.96 Schemas. Note that the target Namespace for compatible schemas MUST be the IPO namespace.

1. COMPLEX TYPES SCHEMAS

1.1 Design-Stage Schemas - Modular Schemas: Add a new element

Trademark Sample Business Case: Add new `InternationalRegistrationExpirationDate` date element to `TrademarkApplication` Structure.

1. Create a folder called “USTrademark” at the same level as “Patent”, “Trademark”, “Common”.
2. Under USTrademark create new subfolder called “Document”.
3. Create a new W3C schema file called `InternationalRegistrationExpirationDate.xsd` in the folder “`USTrademark`”.
4. Set the target Namespace to the IPO’s namespace and add the new namespace `xmlns:xxtmk`, where `xx` is an ST.3 Code. Define new element `InternationalRegistrationExpirationDate` as indicated below.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/DateType.xsd"/>
      <xsd:element name="InternationalRegistrationExpirationDate"
type="com:DateType">
            <xsd:annotation>
                  <xsd:documentation>International Registration Expiration
Date</xsd:documentation>
            </xsd:annotation>
      </xsd:element>
</xsd:schema>
```

5. Create a new W3C schema file called PreviousRegistrationType.xsd in the folder “USTrademark”.
6. Set the target Namespace to the IPO’s namespace and add the new namespace `xmlns:xxtmk`, where `xx` is an ST.3 Code. Define new element `PreviousRegistrationType` as indicated below.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:tmk="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/RegistrationOfficeCode.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/PreviousRegistrationNumber.xsd"/>
```

```
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/PreviousRegistrationDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/DomesticNotificationDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/AutomaticProtectionDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/PreviousRegistrationBasisCategory.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/PreviousRegistrationCancellationDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/PreviousRegistrationPriorityDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/PreviousRegistrationStatusBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/PriorityClaimIndicator.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/FirstRefusalIssueIndicator.xsd"/>
      <xsd:include
schemaLocation="InternationalRegistrationExpirationDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/CommentText.xsd"/>
      <xsd:complexType name="PreviousRegistrationType">
            <xsd:sequence>
                  <xsd:element ref="com:RegistrationOfficeCode" minOccurs="0"/>
                  <xsd:element ref="tmk:PreviousRegistrationNumber"/>
                  <xsd:element ref="tmk:PreviousRegistrationDate"
minOccurs="0"/>
                  <xsd:element ref="tmk:DomesticNotificationDate"
minOccurs="0"/>
                  <xsd:element ref="tmk:AutomaticProtectionDate"
minOccurs="0"/>
                  <xsd:element ref="tmk:PreviousRegistrationBasisCategory"
minOccurs="0"/>
                  <xsd:element ref="tmk:PreviousRegistrationCancellationDate"
minOccurs="0"/>
                  <xsd:element ref="tmk:PreviousRegistrationPriorityDate"
minOccurs="0"/>
                  <xsd:element ref="tmk:PreviousRegistrationStatusBag"
minOccurs="0"/>
                  <xsd:element ref="tmk:PriorityClaimIndicator" minOccurs="0"/>
                  <xsd:element ref="tmk:FirstRefusalIssueIndicator"
minOccurs="0"/>
                  <xsd:element
ref="ustmk:InternationalRegistrationExpirationDate" minOccurs="0"/>
                  <xsd:element ref="com:CommentText" minOccurs="0"/>
            </xsd:sequence>
      </xsd:complexType>
</xsd:schema>
```

7. Create a new W3C schema file called PreviousRegistration.xsd in the folder “USTrademark”.

8. Set the target Namespace to the IPO's namespace and add the new namespace `xmlns:xxtmk`, where xx is an ST.3 Code. Element `PreviousRegistration` refers to the `PreviousRegistrationType` defined above.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:tmk="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
      <xsd:include schemaLocation="PreviousRegistrationType.xsd"/>
      <xsd:element name="PreviousRegistration"
type="ustmk:PreviousRegistrationType">
            <xsd:annotation>
                  <xsd:documentation>Data regarding a previous
registration</xsd:documentation>
            </xsd:annotation>
      </xsd:element>
</xsd:schema>
```

9. Create a new W3C schema file called PreviousRegistrationBagType.xsd in the folder "USTrademark".

10. Set the target Namespace to the IPO's namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code. Define new complex type `PreviousRegistrationBagType` as indicated below.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
      <xsd:include schemaLocation="PreviousRegistration.xsd"/>
      <xsd:complexType name="PreviousRegistrationBagType">
            <xsd:sequence>
                  <xsd:element ref="ustmk:PreviousRegistration"
maxOccurs="unbounded"/>
            </xsd:sequence>
      </xsd:complexType>
</xsd:schema>
```

11. Create a new W3C schema file called PreviousRegistrationBag.xsd in the folder "USTrademark".

12. Set the target Namespace to the IPO's namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code. Element `PreviousRegistrationBag` refers to the `PreviousRegistrationBagType` defined above.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
      <xsd:include schemaLocation="PreviousRegistrationBagType.xsd"/>
      <xsd:element name="PreviousRegistrationBag"
type="ustmk:PreviousRegistrationBagType">
            <xsd:annotation>
                  <xsd:documentation>Collection of previous
registrations</xsd:documentation>
            </xsd:annotation>
      </xsd:element>
</xsd:schema>
```

13. Create a new W3C schema file called TrademarkType.xsd in the folder “USTrademark”.

14. Set the target Namespace to the IPO’s namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code. Define new complex type `TrademarkType` as indicated below.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:tmk="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/RegistrationOfficeCode.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/ReceivingOfficeCode.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/ReceivingOfficeDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/ApplicationNumber.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/RegistrationNumber.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/ApplicationDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/ApplicationDateTime.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/RegistrationDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/OtherDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/FilingPlace.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/ApplicantFileReference.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/ApplicantSideCaseIdentifier.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/ApplicationLanguageCode.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/SecondLanguageCode.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/CorrespondenceLanguageCode.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/ExaminedApplicationNumber.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/ExpiryDate.xsd"/>
```

```
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/TerminationDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/MarkCurrentStatusCode.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/MarkCurrentStatusDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/DesignatedCountryBag.xsd"/>
      <xsd:include schemaLocation="PreviousRegistrationBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/AssociatedMark.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/DivisionalApplicationBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/ConversionApplicationBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/BasicRegistrationApplicationBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/InternationalMarkIdentifierBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/MarkCategory.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/MarkRepresentation.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/MarkDisclaimerBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/NonUseCancelledIndicator.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/SpecialCircumstanceText.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/MarkSeriesTotalQuantity.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/TradeDistinctivenessIndicator.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/TradeDistinctivenessText.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/UseRight.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/AsItIsProtectionIndicator.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/UseRequirementText.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/UseLimitationText.xsd"/>
```

```
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/CommentText.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/OppositionPeriodStartDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/OppositionPeriodEndDate.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/GoodsServicesBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/PriorityBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/ExhibitionPriorityBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/SeniorityBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/PublicationBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/ApplicantBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/RepresentativeBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/NationalRepresentative.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/NationalCorrespondent.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/RecordAttorney.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/StaffBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Authorization.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/OppositionBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/MarkRecordBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/MarkEventBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/TrademarkDocumentBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/MarkUserBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/MarkFeatureDescription.xsd"/>
```

```
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Version.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/AssignmentBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/LegalProceedingsBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/NationalTrademarkInformation.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/NationalGoodsServices.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/NationalFilingBasis.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../Trademark/NationalCaseLocation.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/CorrespondenceAddress.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/operationCategory.xsd"/>
      <xsd:complexType name="TrademarkType">
            <xsd:sequence>
                  <xsd:element ref="com:RegistrationOfficeCode" minOccurs="0"/>
                  <xsd:element ref="com:ReceivingOfficeCode" minOccurs="0"/>
                  <xsd:element ref="com:ReceivingOfficeDate" minOccurs="0"/>
                  <xsd:choice maxOccurs="unbounded">
                        <xsd:element ref="com:ApplicationNumber"/>
                        <xsd:element ref="com:RegistrationNumber"/>
                  </xsd:choice>
                  <xsd:choice minOccurs="0">
                        <xsd:element ref="tmk:ApplicationDate"/>
                        <xsd:element ref="tmk:ApplicationDateTime"/>
                  </xsd:choice>
                  <xsd:element ref="com:RegistrationDate" minOccurs="0"/>
                  <xsd:element ref="tmk:OtherDate" minOccurs="0"
maxOccurs="unbounded"/>
                  <xsd:element ref="com:FilingPlace" minOccurs="0"/>
                  <xsd:element ref="com:ApplicantFileReference" minOccurs="0"/>
                  <xsd:element ref="tmk:ApplicantSideCaseIdentifier"
minOccurs="0"/>
                  <xsd:element ref="tmk:ApplicationLanguageCode"
minOccurs="0"/>
                  <xsd:element ref="com:SecondLanguageCode" minOccurs="0"/>
                  <xsd:element ref="com:CorrespondenceLanguageCode"
minOccurs="0"/>
                  <xsd:element ref="tmk:ExaminedApplicationNumber"
minOccurs="0"/>
                  <xsd:element ref="com:ExpiryDate" minOccurs="0"/>
                  <xsd:element ref="tmk:TerminationDate" minOccurs="0"/>
                  <xsd:element ref="tmk:MarkCurrentStatusCode" minOccurs="0"/>
                  <xsd:element ref="tmk:MarkCurrentStatusDate" minOccurs="0"/>
                  <xsd:element ref="tmk:DesignatedCountryBag" minOccurs="0"/>
                  <xsd:element ref="ustmk:PreviousRegistrationBag"
minOccurs="0"/>
                  <xsd:element ref="tmk:AssociatedMark" minOccurs="0"/>
                  <xsd:element ref="tmk:DivisionalApplicationBag"
minOccurs="0"/>
```

```
                <xsd:element ref="tmk:ConversionApplicationBag"
minOccurs="0"/>
                <xsd:element ref="tmk:BasicRegistrationApplicationBag"
minOccurs="0"/>
                <xsd:element ref="tmk:InternationalMarkIdentifierBag"
minOccurs="0" maxOccurs="unbounded"/>
                <xsd:element ref="tmk:MarkCategory" minOccurs="0"
maxOccurs="unbounded"/>
                <xsd:element ref="tmk:MarkRepresentation" minOccurs="0"/>
                <xsd:element ref="tmk:MarkDisclaimerBag" minOccurs="0"/>
                <xsd:element ref="tmk:NonUseCancelledIndicator"
minOccurs="0"/>
                <xsd:element ref="tmk:SpecialCircumstanceText"
minOccurs="0"/>
                <xsd:element ref="tmk:MarkSeriesTotalQuantity"
minOccurs="0"/>
                <xsd:element ref="tmk:TradeDistinctivenessIndicator"
minOccurs="0"/>
                <xsd:element ref="tmk:TradeDistinctivenessText"
minOccurs="0"/>
                <xsd:element ref="tmk:UseRight" minOccurs="0"/>
                <xsd:element ref="tmk:AsItIsProtectionIndicator"
minOccurs="0"/>
                <xsd:element ref="tmk:UseRequirementText" minOccurs="0"/>
                <xsd:element ref="tmk:UseLimitationText" minOccurs="0"/>
                <xsd:element ref="com:CommentText" minOccurs="0"/>
                <xsd:element ref="tmk:OppositionPeriodStartDate"
minOccurs="0"/>
                <xsd:element ref="tmk:OppositionPeriodEndDate"
minOccurs="0"/>
                <xsd:element ref="tmk:GoodsServicesBag" minOccurs="0"/>
                <xsd:element ref="tmk:PriorityBag" minOccurs="0"/>
                <xsd:element ref="com:ExhibitionPriorityBag" minOccurs="0"/>
                <xsd:element ref="tmk:SeniorityBag" minOccurs="0"/>
                <xsd:element ref="tmk:PublicationBag" minOccurs="0"/>
                <xsd:element ref="tmk:ApplicantBag" minOccurs="0"/>
                <xsd:element ref="com:RepresentativeBag" minOccurs="0"/>
                <xsd:element ref="tmk:NationalRepresentative" minOccurs="0"/>
                <xsd:element ref="tmk:NationalCorrespondent" minOccurs="0"/>
                <xsd:element ref="tmk:RecordAttorney" minOccurs="0"/>
                <xsd:element ref="com:StaffBag" minOccurs="0"/>
                <xsd:element ref="com:Authorization" minOccurs="0"/>
                <xsd:element ref="tmk:OppositionBag" minOccurs="0"/>
                <xsd:element ref="tmk:MarkRecordBag" minOccurs="0"/>
                <xsd:element ref="tmk:MarkEventBag" minOccurs="0"/>
                <xsd:element ref="tmk:TrademarkDocumentBag" minOccurs="0"/>
                <xsd:element ref="tmk:MarkUserBag" minOccurs="0"/>
                <xsd:element ref="tmk:MarkFeatureDescription" minOccurs="0"/>
                <xsd:element ref="com:Version" minOccurs="0"/>
                <xsd:element ref="tmk:AssignmentBag" minOccurs="0"/>
                <xsd:element ref="tmk:LegalProceedingsBag" minOccurs="0"/>
                <xsd:element ref="tmk:NationalTrademarkInformation"
minOccurs="0"/>
                <xsd:element ref="tmk:NationalGoodsServices" minOccurs="0"/>
                <xsd:element ref="tmk:NationalFilingBasis" minOccurs="0"/>
                <xsd:element ref="tmk:NationalCaseLocation" minOccurs="0"/>
                <xsd:element ref="com:CorrespondenceAddress" minOccurs="0"/>
            </xsd:sequence>
            <xsd:attribute ref="com:operationCategory"/>
        </xsd:complexType>
</xsd:schema>
```

15. Create a new W3C schema file called Trademark.xsd in the folder “USTrademark”.

16. Set the target Namespace to the IPO's namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code. Element Trademark refers to the `TrademarkType` defined above.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
      <xsd:include schemaLocation="TrademarkType.xsd"/>
      <xsd:element name="Trademark" type="ustmk:TrademarkType">
            <xsd:annotation>
                  <xsd:documentation>Core data regarding the trade
mark</xsd:documentation>
            </xsd:annotation>
      </xsd:element>
</xsd:schema>
```

17. Create a new W3C schema file called TrademarkBagType.xsd in the folder "USTrademark".

18. Set the target Namespace to the IPO's namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code. Define new complex type `TrademarkBagType` as indicated below.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
      <xsd:include schemaLocation="Trademark.xsd"/>
      <xsd:complexType name="TrademarkBagType">
            <xsd:sequence>
                  <xsd:element ref="ustmk:Trademark" maxOccurs="unbounded"/>
            </xsd:sequence>
      </xsd:complexType>
</xsd:schema>
```

19. Create a new W3C schema file called TrademarkBag.xsd in the folder "USTrademark".

20. Set the target Namespace to the IPO's namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code. Element `TrademarkBag` refers to the `TrademarkBagType` defined above.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
      <xsd:include schemaLocation="TrademarkBagType.xsd"/>
      <xsd:element name="TrademarkBag" type="ustmk:TrademarkBagType">
            <xsd:annotation>
                  <xsd:documentation>Collection of
trademarks</xsd:documentation>
            </xsd:annotation>
      </xsd:element>
</xsd:schema>
```

21. Create a new W3C schema file called TrademarkApplicationType.xsd in the "USTrademark" -> "Document" folder.

22. Set the target Namespace to the IPO's namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:tmk="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
```

23. Import ST.96 Components which are needed to define a new Type `TrademarkApplicationType`.

```
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/RequestSoftware.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../../Trademark/ApplicationFormName.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../../Trademark/RequestSearch.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/RequestExamination.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/DocumentIncludedBag.xsd"/>
      <xsd:include schemaLocation="../TrademarkBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/PaymentBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/ReimbursementBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/SignatureBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/st96Version.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/ipoVersion.xsd"/>
```

24. Create the new Complex Type `TrademarkApplicationType` which refers to existing elements and the new element called `InternationalRegistrationExpirationDate` being referred through `TrademarkApplicationType` -> `TrademarkBag` -> `TrademarkBagType` -> `Trademark` -> `TrademarkType` -> `PreviousRegistrationBag` - > `PreviousRegistration` -> `InternationalRegistrationExpirationDate`.

```
      <xsd:complexType name="TrademarkApplicationType">
            <xsd:sequence>
                  <xsd:element ref="com:RequestSoftware" minOccurs="0"/>
                  <xsd:element ref="tmk:ApplicationFormName" minOccurs="0"/>
                  <xsd:element ref="tmk:RequestSearch" minOccurs="0"/>
                  <xsd:element ref="com:RequestExamination" minOccurs="0"/>
                  <xsd:element ref="com:DocumentIncludedBag" minOccurs="0"/>
                  <xsd:element ref="ustmk:TrademarkBag"/>
                  <xsd:element ref="com:PaymentBag" minOccurs="0"/>
                  <xsd:element ref="com:ReimbursementBag" minOccurs="0"/>
                  <xsd:element ref="com:SignatureBag" minOccurs="0"/>
            </xsd:sequence>
            <xsd:attribute ref="com:st96Version" use="required"/>
            <xsd:attribute ref="com:ipoVersion"/>
      </xsd:complexType>
</xsd:schema>
```

25. Create a new W3C schema file called TrademarkApplication.xsd in the folder “USTrademark ”-> “Document” folder.

26. Set the target Namespace to the IPO’s namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
```

27. Declare the new element `TrademarkApplication` which refers to `TrademarkApplicationType` defined above.

```
      <xsd:include schemaLocation="TrademarkApplicationType.xsd"/>
      <xsd:element name="TrademarkApplication"
type="ustmk:TrademarkApplicationType">
            <xsd:annotation>
                  <xsd:documentation>Details of a trademark
application</xsd:documentation>
            </xsd:annotation>
      </xsd:element>
</xsd:schema>
```

28. The final content model design is shown below.

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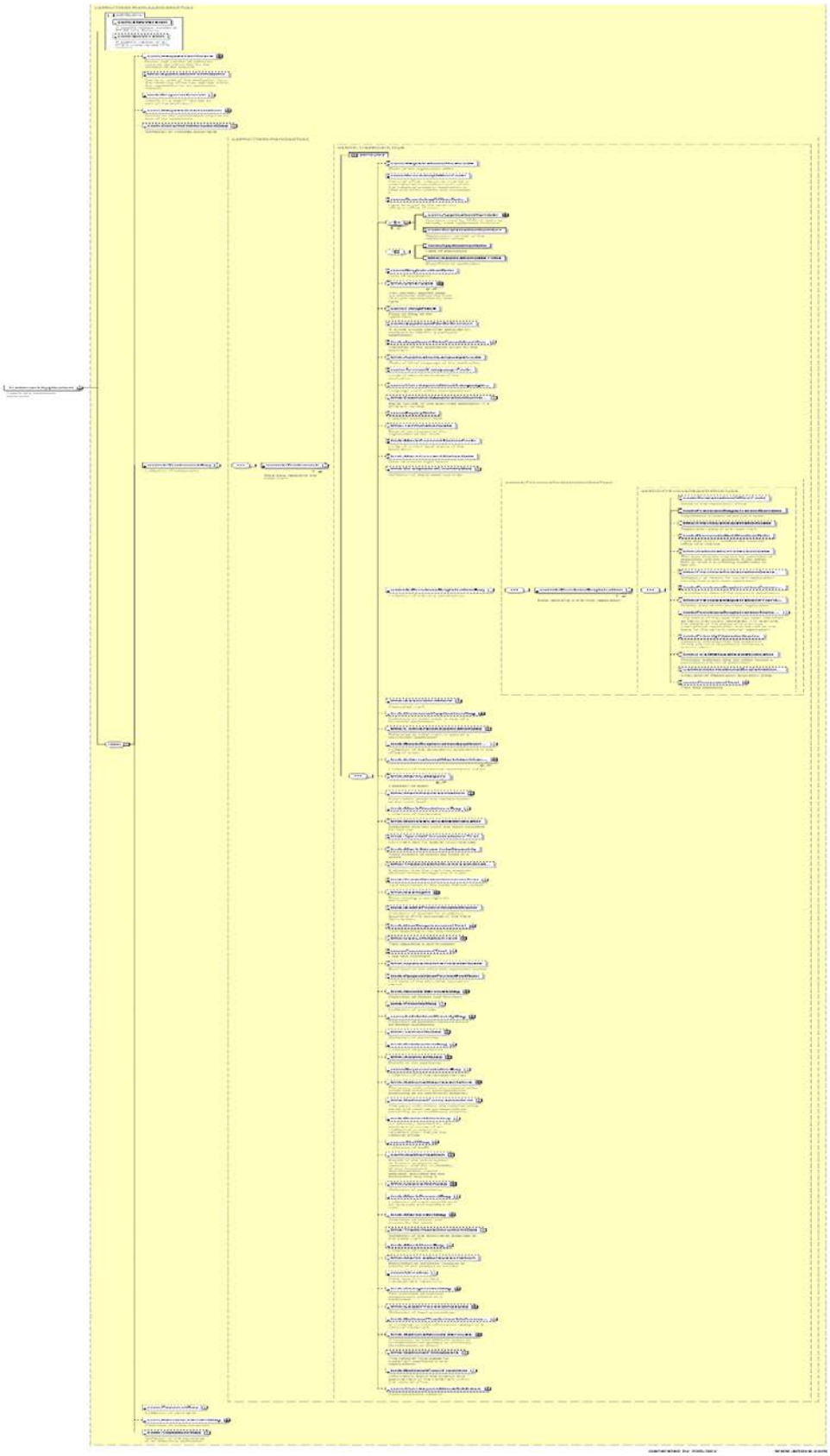


1.2 Design-Stage Schemas - Modular Schemas: Remove existing element and add a new element

In order to add a new element and remove an existing one, developers SHOULD follow the following steps:

Trademark Sample Business Case: Remove the `RequestSoftware` element and add the `ApplicationCategory` element to the `TrademarkApplication` Structure:

1. Create a folder called “USTrademark” at the same level as “Patent”, “Trademark”, “Common”.
2. Under USTrademark create new subfolder called “Document”.
3. Create a new W3C schema file called ApplicationCategoryType.xsd in the folder “USTrademark”.
4. Set the target Namespace to the IPO’s namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code. Define `ApplicationCategoryType` as indicated below.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:tmk="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
      <xsd:annotation>
            <xsd:documentation>
Last update: 2013-01-01
Contact Point: xml.standards@uspto.gov
ReleaseNotesURL:
</xsd:documentation>
      </xsd:annotation>
      <xsd:simpleType name="ApplicationCategoryType">
            <xsd:restriction base="xsd:token">
                  <xsd:enumeration value="domestic">
                        <xsd:annotation>
                              <xsd:documentation>Domestic TM
                              </xsd:documentation>
                        </xsd:annotation>
                  </xsd:enumeration>
                  <xsd:enumeration value="international">
                        <xsd:annotation>
                              <xsd:documentation>International TM
                              </xsd:documentation>
                        </xsd:annotation>
                  </xsd:enumeration>
            </xsd:restriction>
      </xsd:simpleType>
</xsd:schema>
```

5. Create a new W3C schema file called ApplicationCategory.xsd in the folder “USTrademark”.
6. Set the target Namespace to the IPO’s namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code. `ApplicationCategory` element should refer to the `ApplicationCategoryType` simple type defined above.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:tmk="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
      <xsd:annotation>
            <xsd:documentation>
Last update: 2013-01-01
```

```
Contact Point: xml.standards@uspto.gov
ReleaseNotesURL:
</xsd:documentation>
      </xsd:annotation>
      <xsd:include schemaLocation="ApplicationCategoryType.xsd"/>
      <xsd:element name="ApplicationCategory"
type="ustmk:ApplicationCategoryType">
            <xsd:annotation>
                  <xsd:documentation>
Describes type of Trademark application
</xsd:documentation>
            </xsd:annotation>
      </xsd:element>
</xsd:schema>
```

7. Create a new W3C schema file called TrademarkApplicationType.xsd in “USTrademark” -> “Document” folder.

8. Set the target Namespace to the IPO’s namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:tmk="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
```

9. Import the ST.96 Components which are needed to define a new Type `TrademarkApplicationType`. Do not import RequestSoftware.xsd because that element needs to be removed.

```
      <xsd:include schemaLocation="../ApplicationCategory.xsd"/>
      <xsd:import
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../../Trademark/RequestSearch.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/RequestExamination.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/DocumentIncludedBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="../../Trademark/TrademarkBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/PaymentBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/ReimbursementBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/SignatureBag.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/st96Version.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/ipoVersion.xsd"/>
```

10. Create the new Complex Type `TrademarkApplicationType` which refers to the existing elements except `RequestSoftware` and add the new element called `ApplicationCategory`.

```
<xsd:complexType name="TrademarkApplicationType">
           <xsd:sequence>
                <xsd:element ref="ustmk:ApplicationCategory" minOccurs="0"/>
                <xsd:element ref="tmk:RequestSearch" minOccurs="0"/>
                <xsd:element ref="com:RequestExamination" minOccurs="0"/>
                <xsd:element ref="com:DocumentIncludedBag" minOccurs="0"/>
                <xsd:element ref="tmk:TrademarkBag"/>
                <xsd:element ref="com:PaymentBag" minOccurs="0"/>
                <xsd:element ref="com:ReimbursementBag" minOccurs="0"/>
                <xsd:element ref="com:SignatureBag" minOccurs="0"/>
           </xsd:sequence>
           <xsd:attribute ref="com:st96Version" use="required"/>
           <xsd:attribute ref="com:ipoVersion"/>
     </xsd:complexType>
```

11. Create a new W3C schema file called `TrademarkApplication.xsd` in the folder “USTrademark ”-> “Document” folder.

12. Set the target Namespace to the IPO’s namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code.

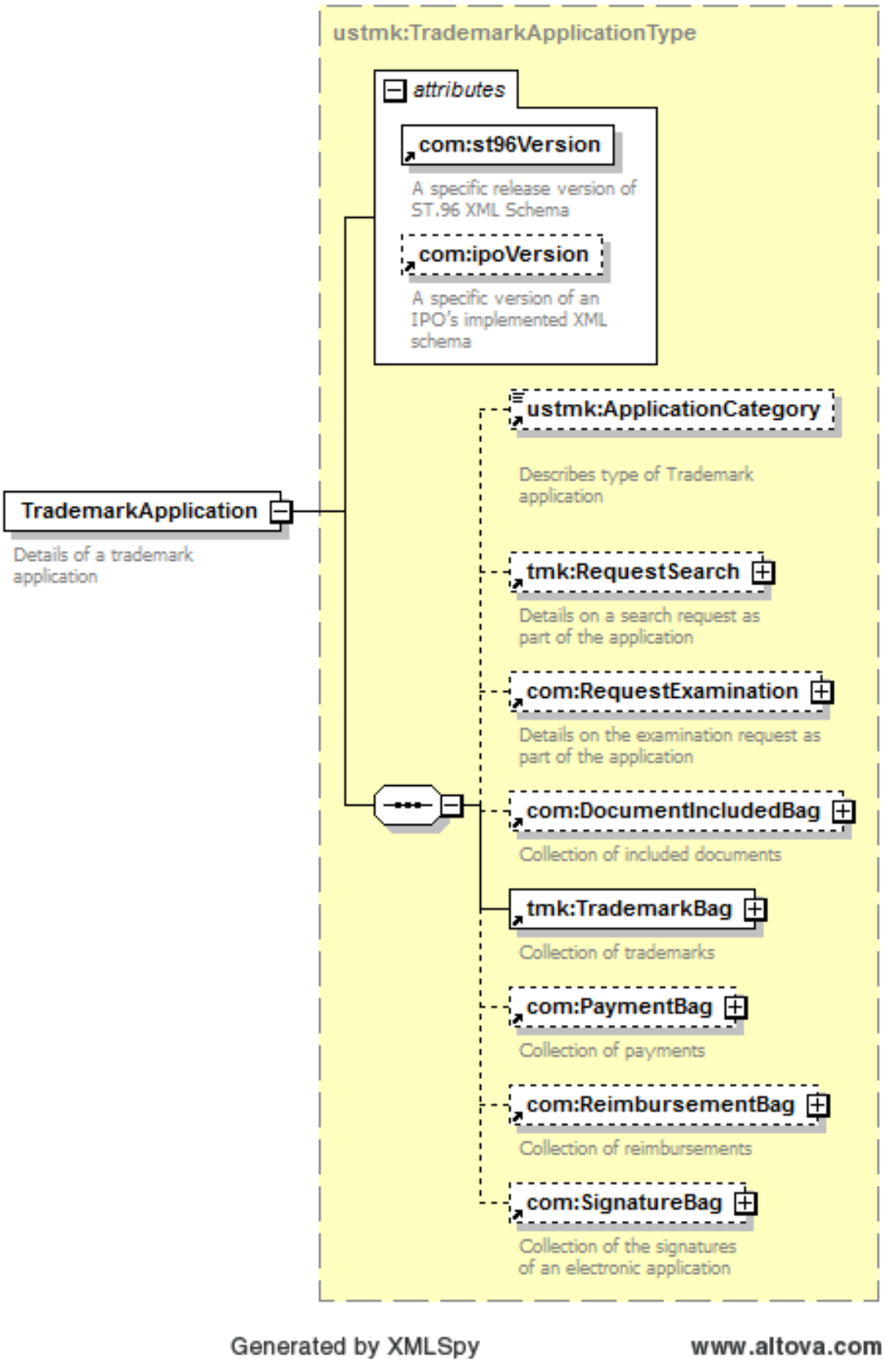
```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:tmk="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
```

13. Declare the new element `TrademarkApplication` which refers to `TrademarkApplicationType` defined above.

```
     <xsd:include schemaLocation="TrademarkApplicationType.xsd"/>
<xsd:annotation>
<xsd:appinfo>
<com:SchemaCreatedDate>2015-02-20</com:SchemaCreatedDate>
<com:SchemaLastModifiedDate>2015-03-06</com:SchemaLastModifiedDate>
<com:SchemaContactPoint>xml.standards@wipo.int</com:SchemaContactPoint>
<com:SchemaReleaseNoteURL>http://www.wipo.int/standards/XMLSchema/ST96/V2_0/R
eleaseNotes.pdf</com:SchemaReleaseNoteURL>
</xsd:appinfo>
</xsd:annotation>

     <xsd:element name="TrademarkApplication"
type="ustmk:TrademarkApplicationType">
           <xsd:annotation>
                <xsd:documentation>Details of a trademark
application</xsd:documentation>
           </xsd:annotation>
</xsd:element>
```

14. The final content model design is shown below:


ustmk:TrademarkApplicationType
attributes
com:st96Version
A specific release version of ST.96 XML Schema
com:ipoVersion
A specific version of an IPO's implemented XML schema
TrademarkApplication
Details of a trademark application
ustmk:ApplicationCategory
Describes type of Trademark application
tmk:RequestSearch
Details on a search request as part of the application
com:RequestExamination
Details on the examination request as part of the application
com:DocumentIncludedBag
Collection of included documents
tmk:TrademarkBag
Collection of trademarks
com:PaymentBag
Collection of payments
com:ReimbursementBag
Collection of reimbursements
com:SignatureBag
Collection of the signatures of an electronic application
Generated by XMLSpy
www.altova.com

1.3 Design-Stage Schemas - Flattened Schemas: Add a new element

Trademark Sample Business Case: Add new `InternationalRegistrationExpirationDate` date element to `TrademarkApplication` Structure.

1. Create a new W3C schema file, `USTrademarkApplication_V1_0.xsd` in the same folder as `TrademarkApplication_V2_0.xsd`.

2. Set the target Namespace to the IPO's namespace and add the new namespace `xmlns:xxtmk`, where xx is an ST.3 Code.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:tmk="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
```

3. Import ST.96 Components which are needed to define a new `InternationalRegistrationExpirationDate` element in `PreviousRegistration`.

```
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="Common_V2_0.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="TrademarkApplication_V2_0.xsd"/>
```

4. Define `InternationalRegistrationExpirationDate` as indicated below.

```
<xsd:element name="InternationalRegistrationExpirationDate"
type="com:DateType">
            <xsd:annotation>
                  <xsd:documentation>International Registration Expiration
Date</xsd:documentation>
            </xsd:annotation>
      </xsd:element>
```

5. Remove `PreviousRegistrationType` complex type from ST.96 Trademark namespace (TrademarkApplication_V2_0.xsd) and declare new complex type `PreviousRegistrationType` as defined in `USTrademarkApplication_V1_0.xsd`.

```
<xsd:complexType name="PreviousRegistrationType">
            <xsd:sequence>
                  <xsd:element ref="com:RegistrationOfficeCode" minOccurs="0"/>
                  <xsd:element ref="tmk:PreviousRegistrationNumber"/>
                  <xsd:element ref="tmk:PreviousRegistrationDate"
minOccurs="0"/>
                  <xsd:element ref="tmk:DomesticNotificationDate"
minOccurs="0"/>
                  <xsd:element ref="tmk:AutomaticProtectionDate"
minOccurs="0"/>
                  <xsd:element ref="tmk:PreviousRegistrationBasisCategory"
minOccurs="0"/>
                  <xsd:element ref="tmk:PreviousRegistrationCancellationDate"
minOccurs="0"/>
                  <xsd:element ref="tmk:PreviousRegistrationPriorityDate"
minOccurs="0"/>
                  <xsd:element ref="tmk:PreviousRegistrationStatusBag"
minOccurs="0"/>
                  <xsd:element ref="tmk:PriorityClaimIndicator" minOccurs="0"/>
```

```
                <xsd:element ref="tmk:FirstRefusalIssueIndicator"
minOccurs="0"/>
                <xsd:element
ref="ustmk:InternationalRegistrationExpirationDate" minOccurs="0"/>
                <xsd:element ref="com:CommentText" minOccurs="0"/>
           </xsd:sequence>
     </xsd:complexType>
```

6. Remove `PreviousRegistration` element from ST.96 Trademark namespace (TrademarkApplication_V2_0.xsd) and declare new element `PreviousRegistration` as defined in USTrademarkApplication_V1_0.xsd.

```
<xsd:element name="PreviousRegistration"
type="ustmk:PreviousRegistrationType">
           <xsd:annotation>
                <xsd:documentation>Data regarding a previous
registration</xsd:documentation>
           </xsd:annotation>
     </xsd:element>
```

7. Remove `PreviousRegistrationBagType` complex type from ST.96 Trademark namespace (TrademarkApplication_V2_0.xsd) and declare new complex type `PreviousRegistrationBagType` as defined in USTrademarkApplication_V1_0.xsd.

```
<xsd:complexType name="PreviousRegistrationBagType">
           <xsd:sequence>
                <xsd:element ref="ustmk:PreviousRegistration"
maxOccurs="unbounded"/>
           </xsd:sequence>
     </xsd:complexType>
```

8. Remove `PreviousRegistrationBag` element from ST.96 Trademark namespace (`TrademarkApplication_V2_0.xsd`) and declare new element `PreviousRegistrationBag` as defined in `USTrademarkApplication_V1_0.xsd`.

```
<xsd:element name="PreviousRegistrationBag"
type="ustmk:PreviousRegistrationBagType">
           <xsd:annotation>
                <xsd:documentation>Collection of previous
registrations</xsd:documentation>
           </xsd:annotation>
     </xsd:element>
```

9. Remove `TrademarkType` complex type from ST.96 Trademark namespace (TrademarkApplication_V2_0.xsd) and declare new complex type TrademarkType as defined in USTrademarkApplication_V1_0.xsd.

```
<xsd:complexType name="TrademarkType">
           <xsd:sequence>
                <xsd:element ref="com:RegistrationOfficeCode" minOccurs="0"/>
                <xsd:element ref="com:ReceivingOfficeCode" minOccurs="0"/>
                <xsd:element ref="com:ReceivingOfficeDate" minOccurs="0"/>
                <xsd:choice maxOccurs="unbounded">
                     <xsd:element ref="com:ApplicationNumber"/>
                     <xsd:element ref="com:RegistrationNumber"/>
                </xsd:choice>
                <xsd:choice minOccurs="0">
                     <xsd:element ref="tmk:ApplicationDate"/>
                     <xsd:element ref="tmk:ApplicationDateTime"/>
                </xsd:choice>
                <xsd:element ref="com:RegistrationDate" minOccurs="0"/>
```

```
                <xsd:element ref="tmk:OtherDate" minOccurs="0"
maxOccurs="unbounded"/>
                <xsd:element ref="com:FilingPlace" minOccurs="0"/>
                <xsd:element ref="com:ApplicantFileReference" minOccurs="0"/>
                <xsd:element ref="tmk:ApplicantSideCaseIdentifier"
minOccurs="0"/>
                <xsd:element ref="tmk:ApplicationLanguageCode"
minOccurs="0"/>
                <xsd:element ref="com:SecondLanguageCode" minOccurs="0"/>
                <xsd:element ref="com:CorrespondenceLanguageCode"
minOccurs="0"/>
                <xsd:element ref="tmk:ExaminedApplicationNumber"
minOccurs="0"/>
                <xsd:element ref="com:ExpiryDate" minOccurs="0"/>
                <xsd:element ref="tmk:TerminationDate" minOccurs="0"/>
                <xsd:element ref="tmk:MarkCurrentStatusCode" minOccurs="0"/>
                <xsd:element ref="tmk:MarkCurrentStatusDate" minOccurs="0"/>
                <xsd:element ref="tmk:DesignatedCountryBag" minOccurs="0"/>
                <xsd:element ref="ustmk:PreviousRegistrationBag"
minOccurs="0"/>
                <xsd:element ref="tmk:AssociatedMark" minOccurs="0"/>
                <xsd:element ref="tmk:DivisionalApplicationBag"
minOccurs="0"/>
                <xsd:element ref="tmk:ConversionApplicationBag"
minOccurs="0"/>
                <xsd:element ref="tmk:BasicRegistrationApplicationBag"
minOccurs="0"/>
                <xsd:element ref="tmk:InternationalMarkIdentifierBag"
minOccurs="0" maxOccurs="unbounded"/>
                <xsd:element ref="tmk:MarkCategory" minOccurs="0"
maxOccurs="unbounded"/>
                <xsd:element ref="tmk:MarkRepresentation" minOccurs="0"/>
                <xsd:element ref="tmk:MarkDisclaimerBag" minOccurs="0"/>
                <xsd:element ref="tmk:NonUseCancelledIndicator"
minOccurs="0"/>
                <xsd:element ref="tmk:SpecialCircumstanceText"
minOccurs="0"/>
                <xsd:element ref="tmk:MarkSeriesTotalQuantity"
minOccurs="0"/>
                <xsd:element ref="tmk:TradeDistinctivenessIndicator"
minOccurs="0"/>
                <xsd:element ref="tmk:TradeDistinctivenessText"
minOccurs="0"/>
                <xsd:element ref="tmk:UseRight" minOccurs="0"/>
                <xsd:element ref="tmk:AsItIsProtectionIndicator"
minOccurs="0"/>
                <xsd:element ref="tmk:UseRequirementText" minOccurs="0"/>
                <xsd:element ref="tmk:UseLimitationText" minOccurs="0"/>
                <xsd:element ref="com:CommentText" minOccurs="0"/>
                <xsd:element ref="tmk:OppositionPeriodStartDate"
minOccurs="0"/>
                <xsd:element ref="tmk:OppositionPeriodEndDate"
minOccurs="0"/>
                <xsd:element ref="tmk:GoodsServicesBag" minOccurs="0"/>
                <xsd:element ref="tmk:PriorityBag" minOccurs="0"/>
                <xsd:element ref="com:ExhibitionPriorityBag" minOccurs="0"/>
                <xsd:element ref="tmk:SeniorityBag" minOccurs="0"/>
                <xsd:element ref="tmk:PublicationBag" minOccurs="0"/>
                <xsd:element ref="tmk:ApplicantBag" minOccurs="0"/>
                <xsd:element ref="com:RepresentativeBag" minOccurs="0"/>
                <xsd:element ref="tmk:NationalRepresentative" minOccurs="0"/>
                <xsd:element ref="tmk:NationalCorrespondent" minOccurs="0"/>
                <xsd:element ref="tmk:RecordAttorney" minOccurs="0"/>
                <xsd:element ref="com:StaffBag" minOccurs="0"/>
                <xsd:element ref="com:Authorization" minOccurs="0"/>
```

```
                <xsd:element ref="tmk:OppositionBag" minOccurs="0"/>
                <xsd:element ref="tmk:MarkRecordBag" minOccurs="0"/>
                <xsd:element ref="tmk:MarkEventBag" minOccurs="0"/>
                <xsd:element ref="tmk:TrademarkDocumentBag" minOccurs="0"/>
                <xsd:element ref="tmk:MarkUserBag" minOccurs="0"/>
                <xsd:element ref="tmk:MarkFeatureDescription" minOccurs="0"/>
                <xsd:element ref="com:Version" minOccurs="0"/>
                <xsd:element ref="tmk:AssignmentBag" minOccurs="0"/>
                <xsd:element ref="tmk:LegalProceedingsBag" minOccurs="0"/>
                <xsd:element ref="tmk:NationalTrademarkInformation"
minOccurs="0"/>
                <xsd:element ref="tmk:NationalGoodsServices" minOccurs="0"/>
                <xsd:element ref="tmk:NationalFilingBasis" minOccurs="0"/>
                <xsd:element ref="tmk:NationalCaseLocation" minOccurs="0"/>
                <xsd:element ref="com:CorrespondenceAddress" minOccurs="0"/>
           </xsd:sequence>
           <xsd:attribute ref="com:operationCategory"/>
      </xsd:complexType>
```

10. Remove Trademark element from ST.96 Trademark namespace (TrademarkApplication_V2_0.xsd) and declare new element Trademark as defined in USTrademarkApplication_V1_0.xsd.

```
<xsd:element name="Trademark" type="ustmk:TrademarkType">
           <xsd:annotation>
                <xsd:documentation>Core data regarding the trade
mark</xsd:documentation>
           </xsd:annotation>
      </xsd:element>
```

11. Remove `TrademarkBagType` complex type from ST.96 Trademark namespace (TrademarkApplication_V2_0.xsd) and declare new complex type `TrademarkBagType` as defined in USTrademarkApplication_V1_0.xsd.

```
<xsd:complexType name="TrademarkBagType">
           <xsd:sequence>
                <xsd:element ref="ustmk:Trademark" maxOccurs="unbounded"/>
           </xsd:sequence>
      </xsd:complexType>
```

12. Remove `TrademarkBag` element from ST.96 Trademark namespace (TrademarkApplication_V2_0.xsd) and declare new element `TrademarkBag` as defined in USTrademarkApplication_V1_0.xsd.

```
<xsd:element name="TrademarkBag" type="ustmk:TrademarkBagType">
           <xsd:annotation>
                <xsd:documentation>Collection of
trademarks</xsd:documentation>
           </xsd:annotation>
      </xsd:element>
```

13. Remove `TrademarkApplicationType` complex type from ST.96 Trademark namespace (TrademarkApplication_V2_0.xsd) and declare new complex type `TrademarkApplicationType` as defined in USTrademarkApplication_V1_0.xsd.

```
<xsd:complexType name="TrademarkApplicationType">
           <xsd:sequence>
                <xsd:element ref="com:RequestSoftware" minOccurs="0"/>
                <xsd:element ref="tmk:ApplicationFormName" minOccurs="0"/>
                <xsd:element ref="tmk:RequestSearch" minOccurs="0"/>
                <xsd:element ref="com:RequestExamination" minOccurs="0"/>
                <xsd:element ref="com:DocumentIncludedBag" minOccurs="0"/>
                <xsd:element ref="ustmk:TrademarkBag"/>
                <xsd:element ref="com:PaymentBag" minOccurs="0"/>
                <xsd:element ref="com:ReimbursementBag" minOccurs="0"/>
                <xsd:element ref="com:SignatureBag" minOccurs="0"/>
           </xsd:sequence>
           <xsd:attribute ref="com:st96Version" use="required"/>
           <xsd:attribute ref="com:ipoVersion"/>
      </xsd:complexType>
```

14. Remove `TrademarkApplication` element from ST.96 Trademark namespace (TrademarkApplication_V2_0.xsd) and declare new element `TrademarkApplication` as defined in USTrademarkApplication_V1_0.xsd.

```
<xsd:element name="TrademarkApplication"
type="ustmk:TrademarkApplicationType">
           <xsd:annotation>
                <xsd:documentation>Details of a trademark
application</xsd:documentation>
           </xsd:annotation>
      </xsd:element>
```

15. The final content model design is shown below.

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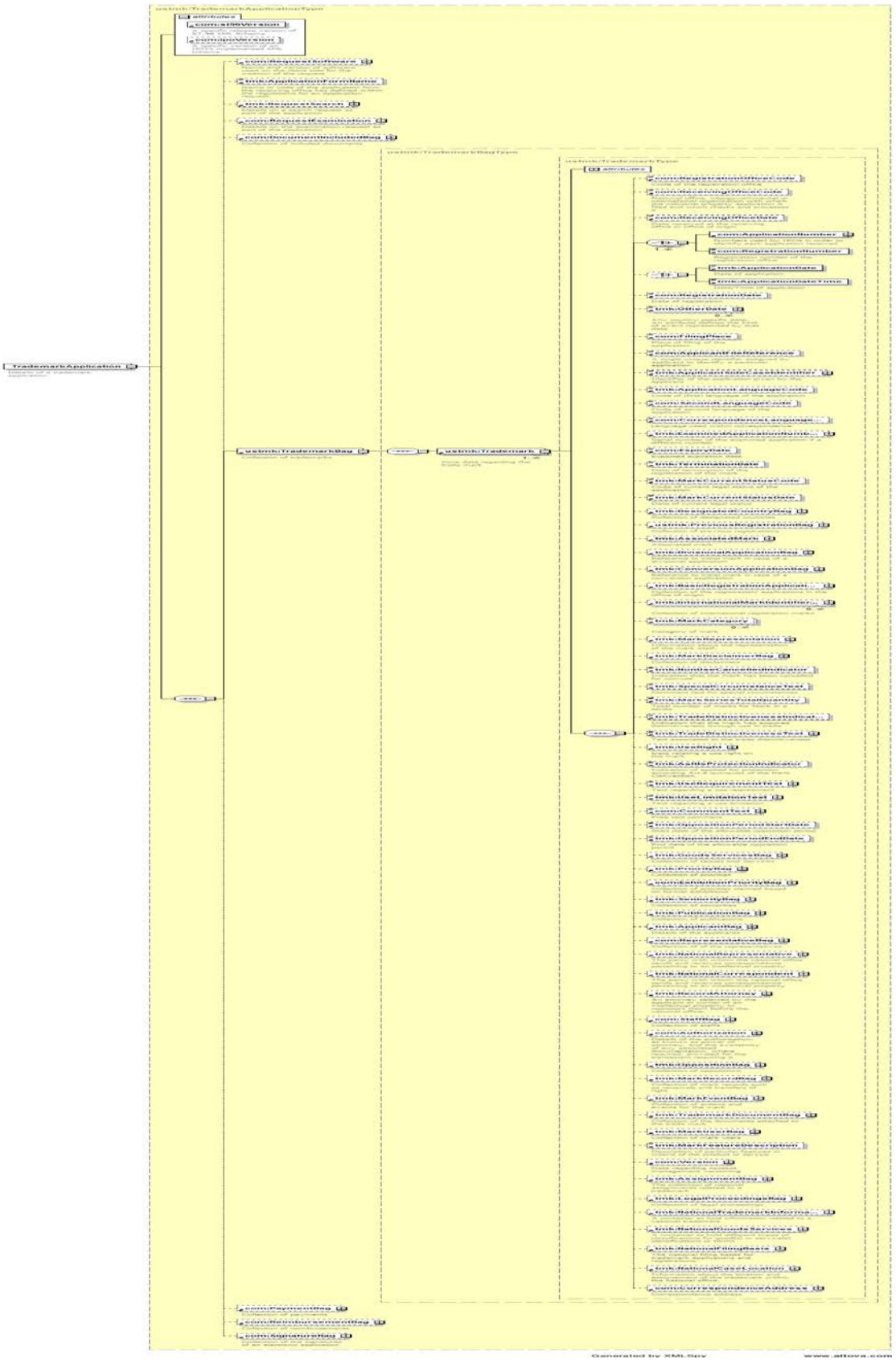


1.4 Design-Stage Schemas - Flattened Schemas: Remove existing element and add a new element

In order to add a new element and remove an existing one, developers SHOULD follow the following steps:

Trademark Sample Business Case: Remove the `RequestSoftware` element and add the `ApplicationCategory` element to the `TrademarkApplication` Structure:

1. Create a new W3C schema file, USTrademarkApplication_V1_0.xsd in the same folder as TrademarkApplication_V2_0.xsd.
2. Set the target Namespace to the IPO's namespace and add the new namespace xmlns:xxtmk, where xx is an ST.3 Code.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:tmk="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ustmk="urn:us:gov:doc:uspto:trademark"
targetNamespace="urn:us:gov:doc:uspto:trademark"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
```

3. Import ST.96 Components which are needed to define a new Type `TrademarkApplicationType`.

```
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="Common_V2_0.xsd"/>
      <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="TrademarkApplication_V2_0.xsd"/>
```

4. Define `ApplicationCategoryType` as indicated below.

```
<xsd:simpleType name="ApplicationCategoryType">
            <xsd:restriction base="xsd:token">
                  <xsd:enumeration value="domestic">
                        <xsd:annotation>
                              <xsd:documentation>Domestic TM
                              </xsd:documentation>
                        </xsd:annotation>
                  </xsd:enumeration>
                  <xsd:enumeration value="international">
                  </xsd:enumeration>
            </xsd:restriction>
      </xsd:simpleType>
```

5. Declare new element `ApplicationCategory` and refer to the `ApplicationCategoryType` simple type defined above.

```
<xsd:element name="ApplicationCategory" type="ustmk:ApplicationCategoryType">
            <xsd:annotation>
                  <xsd:documentation>
Describes type of Trademark application
</xsd:documentation>
            </xsd:annotation>
</xsd:element>
```

6. Create the new Complex Type `TrademarkApplicationType` which refers to existing elements except `RequestSoftware` and add the new element called `ApplicationCategory`.

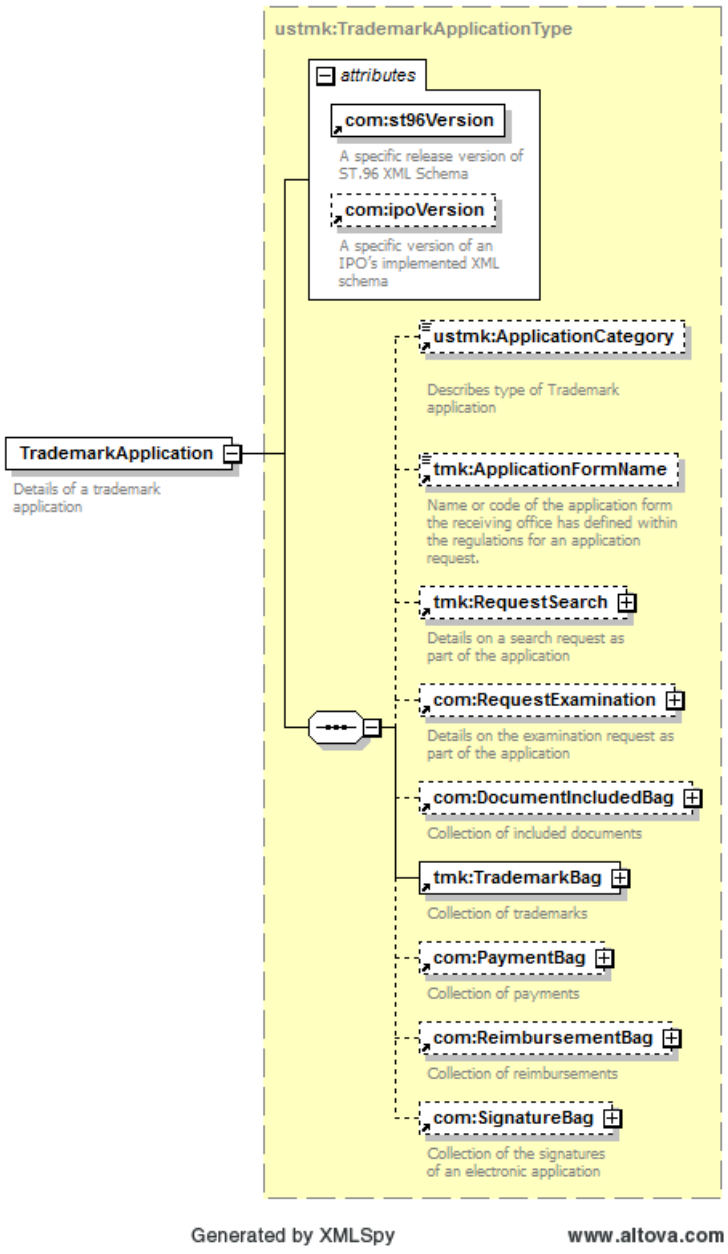
```
      <xsd:complexType name="TrademarkApplicationType">
            <xsd:sequence>
                  <xsd:element ref="ustmk:ApplicationCategory" minOccurs="0"/>
```

```
                <xsd:element ref="tmk:ApplicationFormName" minOccurs="0"/>
                <xsd:element ref="tmk:RequestSearch" minOccurs="0"/>
                <xsd:element ref="com:RequestExamination" minOccurs="0"/>
                <xsd:element ref="com:DocumentIncludedBag" minOccurs="0"/>
                <xsd:element ref="tmk:TrademarkBag"/>
                <xsd:element ref="com:PaymentBag" minOccurs="0"/>
                <xsd:element ref="com:ReimbursementBag" minOccurs="0"/>
                <xsd:element ref="com:SignatureBag" minOccurs="0"/>
          </xsd:sequence>
          <xsd:attribute ref="com:st96Version" use="required"/>
          <xsd:attribute ref="com:ipoVersion"/>
</xsd:complexType>
```

7. Declare the new element `TrademarkApplication` which refers to `TrademarkApplicationType` defined above.

```
     <xsd:element name="TrademarkApplication"
type="ustmk:TrademarkApplicationType">
          <xsd:annotation>
               <xsd:documentation>Details of a trademark
application</xsd:documentation>
          </xsd:annotation>
</xsd:element>
```

8. The final content model design is shown below:



[Annex VI follows]