ST.96 - ANNEX V

IMPLEMENTATION RULES AND GUIDELINES

Version 8.0

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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 an interoperable 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 in an Interoperable way (Appendix A), a Conformant way (Appendix B) or a Compatible way (Appendix C). This document refers to the main body of ST.96 and its Annexes I, II and III as prerequisites.

When color is used in this document, green indicates where customizations to an XML Instance are guaranteed to validate and red where customizations to an XML Instance are NOT guaranteed to validate.

1.4   Terminology

5.   In this document, the following terms are defined:

- "Customization" refers to the alteration of ST.96 Schemas in order to better fit specific requirements.

- "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.

- "ST.96 conformant schema" refers to a compatible schema that has not been extended and that sustains constraints expressed by an ST.96 Schema (as a subset schema to ST.96 schema). XML instances valid for an ST.96 conformant schema will validate against ST.96 Schemas.

- "ST.96 interoperable schema" refers to a type of conformant schema that has not been altered in structure from its published state;it sustains constraints expressed by an ST.96 Schema with additional IPO specific components (as a superset schema to ST.96 schemas). XML instances are guaranteed to be valid against ST.96 Schemas.

- "Basic Component" refers to W3C Built-in Datatypes, simple types or complex types with the `xsd:simpleContent` definition.

- "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 schemas in an interoperable, conformant or compatible way (refer to Figure 1).
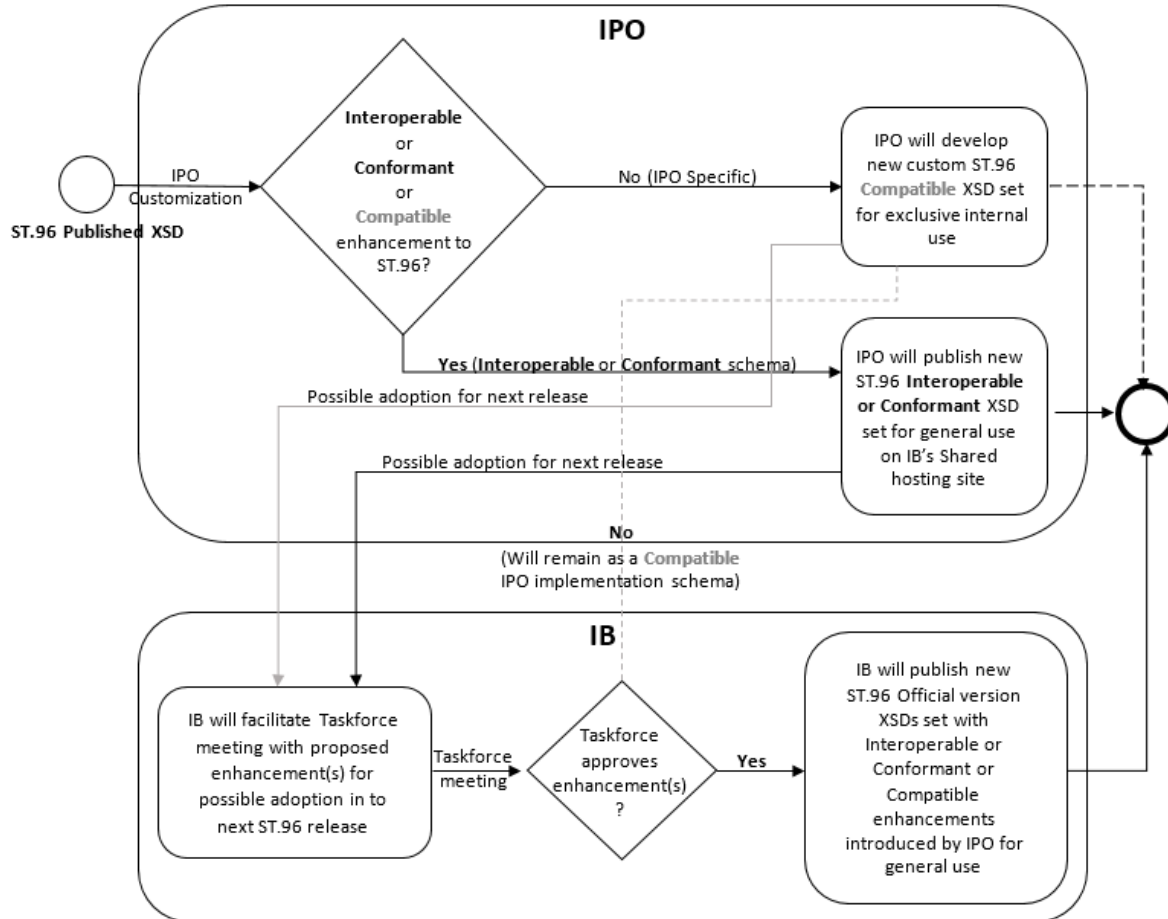
Figure 1: Overview of ST.96 Schema Development Procedure

- 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.

	Schema		Instance
	Annex I (DRC) Compliance	**Alter ST.96 Structure/Constraints**	**Validation against ST.96?**
Compatible (IPO Specific model)	**Yes**	Yes	Not guaranteed
Conformant (Subset model)	**Yes**	Yes	Guaranteed [1]
Interoperable (Conformant Superset model)	**Yes**	**No**	**Guaranteed**

[1] *None of the required components have not been altered, removed or switched to optional in customized schema*

Table 1: Compatible versus conformant vesus interoperable: ST.96 customization

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 an ST.96 Schema has been determined, IPOs SHOULD decide whether the result will be ST.96 *conformant (subset model), ST.96 interoperable (conformant superset model)* or ST.96 *compatible (*IPO Specific Implementation*)* schema. [*It should be noted that the ST.96 Schemas and Customized interoperable (conformant superset model) 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: https://www.wipo.int/standards/en/st96/v8-0/

10.   Designing a customization may involve:

- adding components to meet the requirements of a specific business context; (Conformant, Interoperable and Compatible)

- omitting optional components not needed in a specific context; (Conformant, Compatible)

- modifying constraints on possible values for basic components such as code lists (Conformant, Compatible); and

- combining (or recombining) and assembling components into new aggregate components (Conformant, Interoperable and Compatible)

- combining (or recombining) and assembling components into new document components (Compatible)

2.1 Designing for Interoperability

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

- supersets of the Schema model — MUST not restrict the number of elements in a ST.96 Schema; and

- constraints on content — MUST not be altered.

- stop propagation up to the root element level of XML schema to support the data
  consumer;

- make the changes easily identifiable to support the data producer; and

- make the changes as targeted as possible.

- ST.96 mandatory components must not be removed;

- ST.96 mandatory components must not be changed to optional;

- ST.96 components must remain in the order they were published;

- new components must be added at the bottom of the extended element;

- new components must be added as optional;

- new enumeration values must not be added or removed. These new components must
  be created in an IPO specific namespace. For example, "uspat" as an extension to an
  element in the pat namespace;

- ST.96 elements should retain their original namespace (`pat, tmk, dgn, com, gin,
  cpy`) but be updated to reference IPO modified complex Types which are created in the
  IPO specific namespace. For example, if com:Contact is customized, then the new
  components will refer to `uscom:ContactType`;

- there must only be one component with the same name in either the original namespace
  or the office-specific namespace. In reference to the example above, there should not be
  both `uscom:Contact` and `com:Contact`; and

- do not add or propagate namespace changes to the root of the document.

12.   There are no changes to the element references which import or include the
interoperable schemas except the targeted customized element(s).

2.1.1 Superset of the Schema model

13.   The use of supersets allows for the addition to a component of any new optional components that are needed
to satisfy the new specific business requirements of an implementation.

14.   It must be noted that super-setting can only be used to add optional elements and no change in cardinality for
any existing elements.

    [OI-01]   Interoperable Schemas should use the `xsd:import` construct to refer to ST.96
                    Schemas in IPO definitions.
    [OI-02]   Interoperable Schemas should use the `xsd:import` construct to refer to IPO
                    customized type definitions in targeted ST.96 Schemas customized element definitions.
    [OI-03]   Interoperable Schemas must not alter any existing ST.96 enumeration values.

2.2 Designing for conformance

13.   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.

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

2.2.1 Subsets of the Schema model

15.   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.

16.   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.

2.2.2 Enumeration list constraints on content

17.   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-04]   Office Implementation Schemas must not use `xsd:list` or `xsd:union` to derive simple types defined in WIPO Standard ST.96.

2.2.3 Other constraints on content

18.   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."

19.   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.

2.3   Designing for compatibility

20.   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.

2.3.1 Re-use of ST.96 Schema Components

21.   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.

2.3.2 Compatible extension of ST.96

22.   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.

23.   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`.

24.   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.

25.   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-05]   Compatible Schemas should use `xsd:import` construct to refer to ST.96 Schemas.

  [OI-06]   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-07]   Compatible Schemas may use a default namespace for efficient operations.

  [OI-08]   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*

26.   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-09]   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*

27.   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`.

28.   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*

29.   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.

30.   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.

31.   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.

32.   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

33.   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). 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.

34.   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

35.   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

36.   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

37.   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

38.   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.

39.   The Interoperable schema model improves data exchange between IPO's, making it more practical and adoptable by encouraging all participating IPO's to add their customizations to base ST.96 schemas in a central repository; offering the following advantages:
- a common ground for data extraction using universal XSLT based data extraction based on the official ST.96 schema model;
- central repository of potential improvements for the IB to track and adopt for future ST.96 versions.

The following table, Table 2, summarizes types of common customizations to ST.96 schemas for both Conformant (Interoperable/Superset and Subset) and Compatible approaches in developing schemas.

Appendix Section #	NOT guaranteed to validate Types of Customizations	Conformant		Compatible
		Interoperable/ Superset (Appendix A)	Subset (Appendix B)	(Appendix C)
1.1,1.2 / 2.1,2,2	Adding an optional component to meet the requirements of a specific business context *Unaltered structure and appended to the existing structure (elements only, attributes can be ordered since XSD allows it)	**Allowed**	**Allowed**	**Allowed**
1.3 / 2.3	Omitting optional components not needed in a specific context	Not Allowed	**Allowed**	**Allowed**
1.4 / 2.4	Modifying constraints on possible values for basic components such as code lists	Not Allowed	**Allowed**	**Allowed**
1.5 / 2.5	Changing an optional component(s) to a required component(s)	Not Allowed	**Allowed**	**Allowed**
1.6 / 2.6	Combining (or recombining) and assembling components into new aggregate components (optional)	**Allowed**	**Allowed**	**Allowed**
1.7 / 2.7	Combining (or recombining) and assembling components into new document components	Not Allowed	Not allowed	**Allowed**

1.8 / 2.8	Removing an existing element and adding a new element	Not Allowed	Not allowed	**Allowed**

Table 2: Summary of common customizations for conformant versus compatible schemas

40.   Where the requirements are for a pure superset, it is possible to develop a new customized schema adding new additional elements or attributes to existing ST.96 elements or attributes to produce an interoperable schema.

41.   Though this document (Figure *3*) presents two other types of customizations, subset conformant and compatible customizations, the IB believes the interoperable/superset conformant model for practical reasons is best for efficient data exchange.

42.   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.

43.   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.

44.   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:element ref="com:OfficialTitleTextBag" minOccurs="0"/>
 </xsd:sequence>
</xsd:complexType>
```

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

45.   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 2 shows an approach to specifying the schema fragments defining a non-ST.96 document using both ST.96 and non-ST.96 Components.
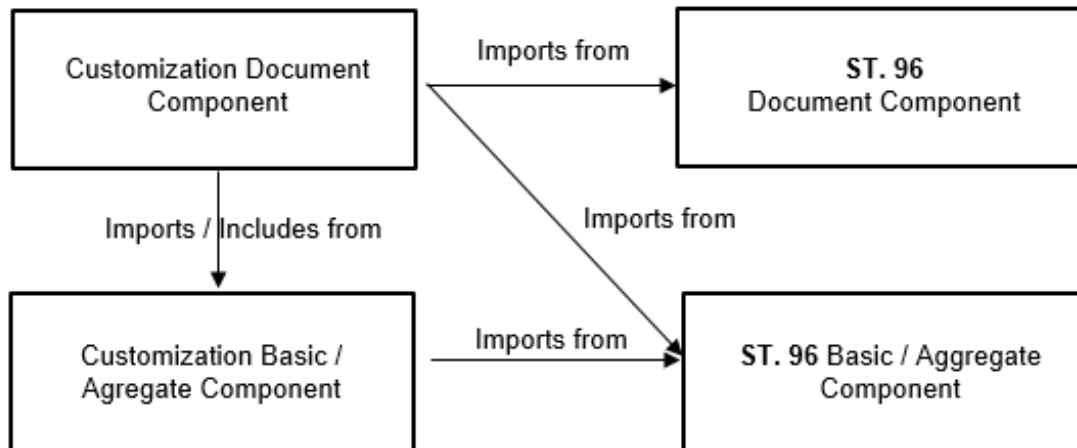
Figure 2: Specifying using both ST.96 and non-ST.96 Components

3.4.   Testing implementation for conformation with DRCs

46.   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). Refer to Figure 2.

4.   DESIGN-STAGE AND PRODUCTION-STAGE SCHEMAS

47.   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.

48.   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.

49.   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.

50.   Figure 3 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 the *ST96XSDValidator*.
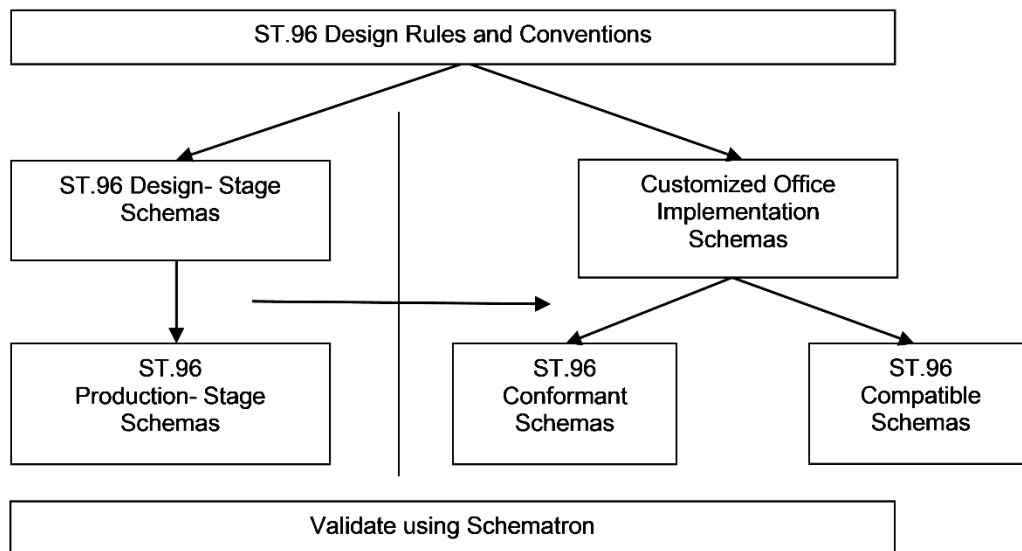
Figure 3: Overview of ST.96 customization process

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 19757-3:2020: https://www.iso.org/standard/74515.html

APPENDIX A - EXAMPLES OF ST.96 INTEROPERABLE SCHEMAS

The following examples are listed to show how developers define ST.96 conformant schemas. These examples are based on ST.96 V6_0. Designing for conformance applies primarily to restrictions which are:

- Supersets of the Schema model — appending the new optional Components to ST.96 Schema.

1. *Design-Stage Schemas - Modular Schemas*

    1.1. *Add an optional element*

    Patent Sample Business Case: Add an optional element `ContractRole` to the `dgn:Applicant` Structure.

    1. Create a folder called "RUDesign" at the same level as "Common", "Patent", "Trademark" etc.
    2. Set the target Namespace to the IPO's namespace and add new namespace entries `xmlns:xxdgn`, 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 IPO 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:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:dgn="http://www.wipo.int/standards/XMLSchema/ST96/Design"
xmlns:rudgn="http://rupto.ru/standards/XMLSchema/ST96/Design"
targetNamespace="http://rupto.ru/standards/XMLSchema/ST96/Design"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V6_0">
```

3. Define new element type definition `ContractRoleType.xsd` as below:

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:dgn="http://www.wipo.int/standards/XMLSchema/ST96/Design"
xmlns:rudgn="http://rupto.ru/standards/XMLSchema/ST96/Design"
targetNamespace="http://rupto.ru/standards/XMLSchema/ST96/Design"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V6_0">
<xsd:simpleType name="ContractRoleType">
        <xsd:restriction base="xsd:token">
                <xsd:enumeration value="Customer">
                        <xsd:annotation>
                                <xsd:documentation>Indicates whether the entity
is the contract customer</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
                <xsd:enumeration value="Implementor">
                        <xsd:annotation>
                                <xsd:documentation>Indicates whether the entity
is the contract implementor</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
        </xsd:restriction>
  </xsd:simpleType>
</xsd:schema>
```

4. Define new element definition `ContractRole.xsd` by referring `rudgn:ContractRoleType.xsd` created above

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:dgn="http://www.wipo.int/standards/XMLSchema/ST96/Design"
xmlns:rudgn="http://rupto.ru/standards/XMLSchema/ST96/Design"
targetNamespace="http://rupto.ru/standards/XMLSchema/ST96/Design"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V6_0">
  <xsd:include schemaLocation="ContractRoleType.xsd"/>
```

```
  <xsd:annotation>
        <xsd:appinfo>
                <com:SchemaCreatedDate>2017-08-17</com:SchemaCreatedDate>
                <com:SchemaLastModifiedDate>2022-10-
31</com:SchemaLastModifiedDate>

  <com:SchemaContactPoint>otd3138@rupto.ru</com:SchemaContactPoint>
                <com:SchemaReleaseNoteURL/>
        </xsd:appinfo>
  </xsd:annotation>
  <xsd:element name="ContractRole" type="rudgn:ContractRoleType">
        <xsd:annotation>
                <xsd:documentation>Applicant's role in
contract</xsd:documentation>
        </xsd:annotation>
  </xsd:element>
</xsd:schema>
```

5.   Define new element type definition `ApplicantType.xsd` as below:

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:dgn="http://www.wipo.int/standards/XMLSchema/ST96/Design"
xmlns:rudgn="http://rupto.ru/standards/XMLSchema/ST96/Design"
targetNamespace="http://rupto.ru/standards/XMLSchema/ST96/Design"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V6_0">
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/NationalityCode.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/LegalEntityName.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/IncorporationCountryCode.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/IncorporationState.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/Common"
schemaLocation="../Common/Version.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/PartyIdentifier.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Contact.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/PublicationContact.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/operationCategory.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/sequenceNumber.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Design"
schemaLocation="../Design/Entitlement.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Design"
schemaLocation="../Design/ApplicantContractingParty.xsd"/>
  <xsd:include schemaLocation="ContractRole.xsd"/>
  <xsd:annotation>
        <xsd:appinfo>
                <com:SchemaCreatedDate>2019-09-18</com:SchemaCreatedDate>
                <com:SchemaLastModifiedDate>2022-11-
20</com:SchemaLastModifiedDate>
  <com:SchemaContactPoint>otd3138@rupto.ru</com:SchemaContactPoint>
                <com:SchemaReleaseNoteURL/>
        </xsd:appinfo>
```

```
      </xsd:annotation>
  <xsd:complexType name="ApplicantType">
        <xsd:sequence>
                <xsd:element ref="com:NationalityCode" minOccurs="0"/>
                <xsd:element ref="com:LegalEntityName" minOccurs="0"/>
                <xsd:element ref="com:IncorporationCountryCode"
minOccurs="0"/>
                <xsd:element ref="com:IncorporationState" minOccurs="0"/>
                <xsd:element ref="com:CommentText" minOccurs="0"/>
                <xsd:element ref="dgn:Entitlement" minOccurs="0"/>
                <xsd:element ref="dgn:ApplicantContractingParty"
minOccurs="0"/>
                <xsd:element ref="com:Version" minOccurs="0"/>
                <xsd:choice maxOccurs="unbounded">
                        <xsd:element ref="com:PartyIdentifier"/>
                        <xsd:element ref="com:Contact"/>
                        <xsd:element ref="com:PublicationContact"/>
                </xsd:choice>
                <xsd:element ref="rudgn:ContractRole" minOccurs="0"/>
        </xsd:sequence>
        <xsd:attribute ref="com:operationCategory"/>
        <xsd:attribute ref="com:sequenceNumber"/>
  </xsd:complexType>
</xsd:schema>
```

6. Update `Applicant.xsd` in ST.96 "Design" folder, to update `Type`, reference to IPO customized
    `ApplicationType.xsd`

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:dgn="http://www.wipo.int/standards/XMLSchema/ST96/Design"
xmlns:rudgn="http://rupto.ru/standards/XMLSchema/ST96/Design"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://www.wipo.int/standards/XMLSchema/ST96/Design"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V6_0">
  <xsd:import namespace="http://rupto.ru/standards/XMLSchema/ST96/Design"
schemaLocation="../RUDesign/ApplicantType.xsd"/>
  <xsd:element name="Applicant" type="rudgn:ApplicantType">
        <xsd:annotation>
                <xsd:documentation>Applicant or holder
details</xsd:documentation>
        </xsd:annotation>
  </xsd:element>
</xsd:schema>
```

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`<xsd:element name="DesignTransaction" type="dgn:DesignTransactionType">`	
`<xsd:complexType name="DesignTransactionType">`	
`<xsd:sequence>`	
`<xsd:element ref="com:TransactionHeader" minOccurs="0"/>`	
`<xsd:element ref="dgn:DesignTransactionBody" maxOccurs="unbounded"/>`	
•	
•	
•	
`<xsd:element name="TransactionContentBag" type="dgn:TransactionContentBagType">`	
•	
`<xsd:element name="TransactionData" type="dgn:TransactionDataType">`	
•	
`<xsd:element name="Applicant" type="dgn:ApplicantType">`	`<xsd:element name="Applicant" type="rudgn:ApplicantType">`
`<xsd:complexType name="ApplicantType">`	`<xsd:complexType name="ApplicantType">`
`<xsd:sequence>`	`<xsd:sequence>`
`<xsd:element ref="com:NationalityCode" minOccurs="0"/>`	`<xsd:element ref="com:NationalityCode" minOccurs="0"/>`
`<xsd:element ref="com:LegalEntityName" minOccurs="0"/>`	`<xsd:element ref="com:LegalEntityName" minOccurs="0"/>`
`<xsd:element ref="com:IncorporationCountryCode" minOccurs="0"/>`	`<xsd:element ref="com:IncorporationCountryCode" minOccurs="0"/>`
`<xsd:element ref="com:IncorporationState" minOccurs="0"/>`	`<xsd:element ref="com:IncorporationState" minOccurs="0"/>`
`<xsd:element ref="com:CommentText" minOccurs="0"/>`	`<xsd:element ref="com:CommentText" minOccurs="0"/>`
`<xsd:element ref="dgn:Entitlement" minOccurs="0"/>`	`<xsd:element ref="dgn:Entitlement" minOccurs="0"/>`
`<xsd:element ref="dgn:ApplicantContractingParty" minOccurs="0"/>`	`<xsd:element ref="dgn:ApplicantContractingParty" minOccurs="0"/>`
`<xsd:element ref="com:Version" minOccurs="0"/>`	`<xsd:element ref="com:Version" minOccurs="0"/>`
`<xsd:choice maxOccurs="unbounded">`	`<xsd:choice maxOccurs="unbounded">`
`<xsd:element ref="com:PartyIdentifier"/>`	`<xsd:element ref="com:PartyIdentifier"/>`
`<xsd:element ref="com:Contact"/>`	`<xsd:element ref="com:Contact"/>`
`<xsd:element ref="com:PublicationContact"/>`	`<xsd:element ref="com:PublicationContact"/>`
`</xsd:choice>`	`</xsd:choice>`
	`<xsd:element ref="rudgn:ContractRole" minOccurs="0"/>`
`</xsd:sequence>`	`</xsd:sequence>`
`<xsd:attribute ref="com:operationCategory"/>`	`<xsd:attribute ref="com:operationCategory"/>`
`<xsd:attribute ref="com:sequenceNumber"/>`	`<xsd:attribute ref="com:sequenceNumber"/>`
`</xsd:complexType>`	`</xsd:complexType>`

Figure 4: XML instance comparison
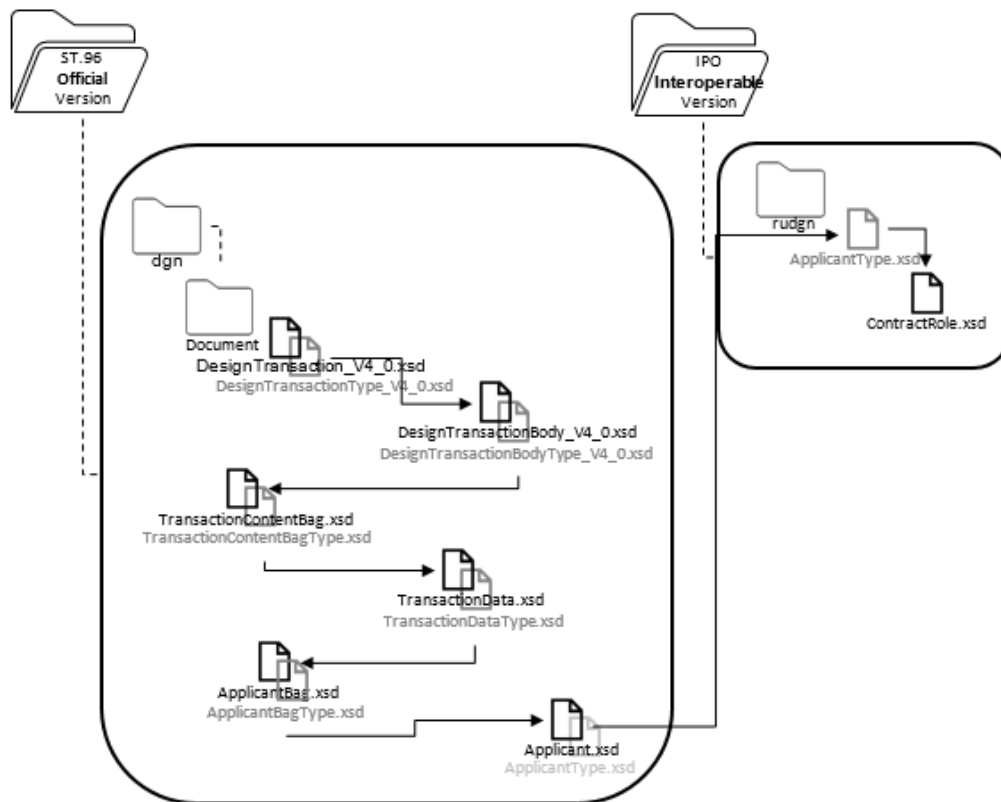
Figure 5: Graphical View
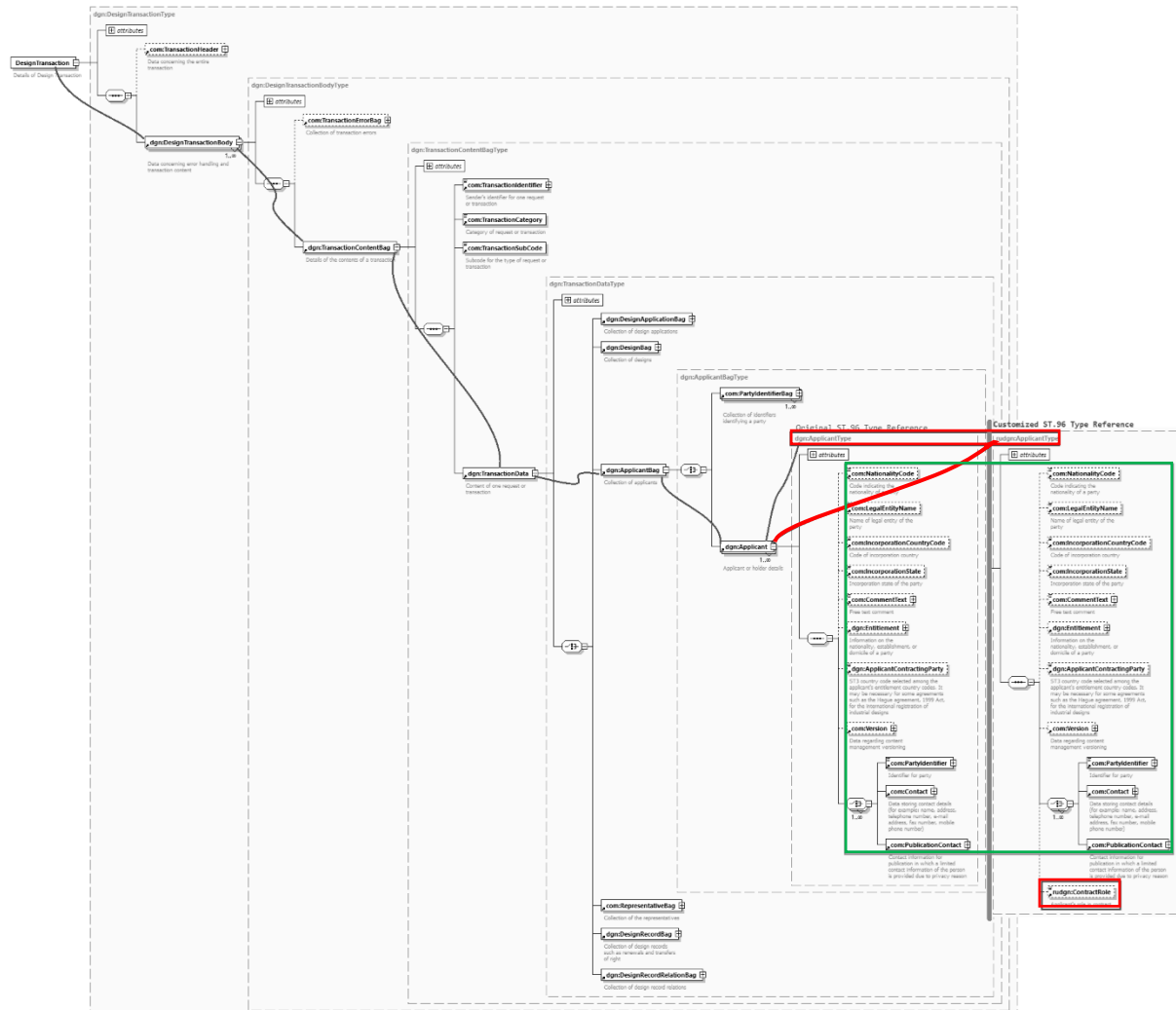
Figure 6: Updated XSD View

1.2.   Add an optional attribute

**Patent Sample Business Case: Add an optional attribute `activeIndicator` to the
`pat:RegisteredPractitioner` Structure.**

1.   Create a folder called "USCommon" at the same level as "Common", "Patent", "Trademark" etc.
2.   Set the target Namespace to the IPO's namespace and add new namespace entries `xmlns:xxcom`, 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 IPO specific implementation. "V1_0" is shown in the following example because this
     is the first Office modified component.

     *[Note: this example uses 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:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
```

3. Define new attribute `activeIndicator.xsd` as xsd:Boolean

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:uscom="urn:us:gov:doc:uspto:common"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V8_0 ">
  <xsd:attribute name="activeIndicator" type="xsd:boolean">
        <xsd:annotation>
                <xsd:documentation>Indicates active inactive
status.</xsd:documentation>
        </xsd:annotation>
  </xsd:attribute>
</xsd:schema>
```

4. Create a folder called "USPatent" at the same level as "Patent", "Trademark", "Common" etc.
5. Under "USPatent" folder, create a new W3C schema file for `Type`, `RegisteredPractitionerType.xsd`
6. Redefine `pat:RegisteredPractitionerType.xsd` structure with new IPO added attribute towards the end of existing components as shown below:

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:uspat="urn:us:gov:doc:uspto:patent"
xmlns:uscom="urn:us:gov:doc:uspto:common"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:pat="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
targetNamespace="urn:us:gov:doc:uspto:patent" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V8_0">
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../Patent/RegisteredPractitionerRegistrationNumber.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../Patent/RegisteredPractitionerCategory.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Contact.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/PublicationContact.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/sequenceNumber.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/id.xsd"/>
  <xsd:import namespace="urn:us:gov:doc:uspto:common"
schemaLocation="../USCommon/activeIndicator.xsd"/>
  <xsd:complexType name="RegisteredPractitionerType">
        <xsd:sequence>
                <xsd:element
ref="pat:RegisteredPractitionerRegistrationNumber" minOccurs="0"/>
                <xsd:element ref="pat:RegisteredPractitionerCategory"/>
                <xsd:choice maxOccurs="2">
                        <xsd:element ref="com:Contact"/>
                        <xsd:element ref="com:PublicationContact"/>
                </xsd:choice>
        </xsd:sequence>
        <xsd:attribute ref="com:sequenceNumber" use="required"/>
        <xsd:attribute ref="uscom:activeIndicator"/>
        <xsd:attribute ref="com:id"/>
```

```
</xsd:complexType>
</xsd:schema>
```

7. Update ST.96 `RegisteredPractitioner.xsd` to refer IPO customized `RegisteredPractitionerType.xsd` with appropriate import statement.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:pat="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
xmlns:uspat="urn:us:gov:doc:uspto:patent"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V6_0">
  <xsd:import namespace="urn:us:gov:doc:uspto:patent"
schemaLocation="../USPatent/RegisteredPractitionerType.xsd"/>
  <xsd:element name="RegisteredPractitioner"
type="uspat:RegisteredPractitionerType">
        <xsd:annotation>
                <xsd:documentation>The individual who represents or prosecutes
on behalf of the inventor</xsd:documentation>
        </xsd:annotation>
  </xsd:element>
</xsd:schema>
```


Figure 7: XML instance comparison

Figure 8: Graphical View

Figure 9: Updated XSD View

1.3.   Remove an optional element

Not Allowed

1.4.   Modify constraints

Not Allowed. Section 1.6/2.6 is an alternative approach to handle this situation by introducing a parallel component with IPO's customizations. This is considered a workaround approach, but it comes with an overhead of duplication of similar components for IPO's.

1.5.   Make an element required

Not Allowed

1.6.   Add new aggregate component

Patent Sample Business Case: Add a new optional aggregate component `uscom:CrossReferenceLink` to `com:P`

[Note: ST.96 has a similar component com:CrossReference but, USPTO business requirement wants to restrict the required @crossReferenceCategory attribute values unique to USPTO and eliminate the use of the broad list the ST.96 attribute provides. To handle this case and maintain an interoperable schema model USPTO created an alternative parallel component with the required enumeration entries.]

   1.   Create a folder called "USCommon" at the same level as "Common", "Patent", "Trademark" etc.

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

[Note: this example uses the URN for the IPO namespace as approved at USPTO.
Other IPO's can use either the 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:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
```

3. Define new W3C schema file `CrossReferenceLinkCategoryType.xsd`

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:uscom="urn:us:gov:doc:uspto:common"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
<xsd:simpleType name="CrossReferenceLinkCategoryType">
  <xsd:annotation>
        <xsd:documentation>Category of Cross reference
link</xsd:documentation>
  </xsd:annotation>
  <xsd:restriction base="xsd:token">
        <xsd:enumeration value="USC">
                <xsd:annotation>
                        <xsd:documentation>United States
Code</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="CFR">
                <xsd:annotation>
                        <xsd:documentation>Code of Federal
Regulation</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Form paragraph">
                <xsd:annotation>
                        <xsd:documentation>Form paragraph</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Chapter">
                <xsd:annotation>
                        <xsd:documentation>Chapter</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Section">
                <xsd:annotation>
                        <xsd:documentation>Section with Chapters or section
within a publication</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Administrative instruction">
                <xsd:annotation>
```
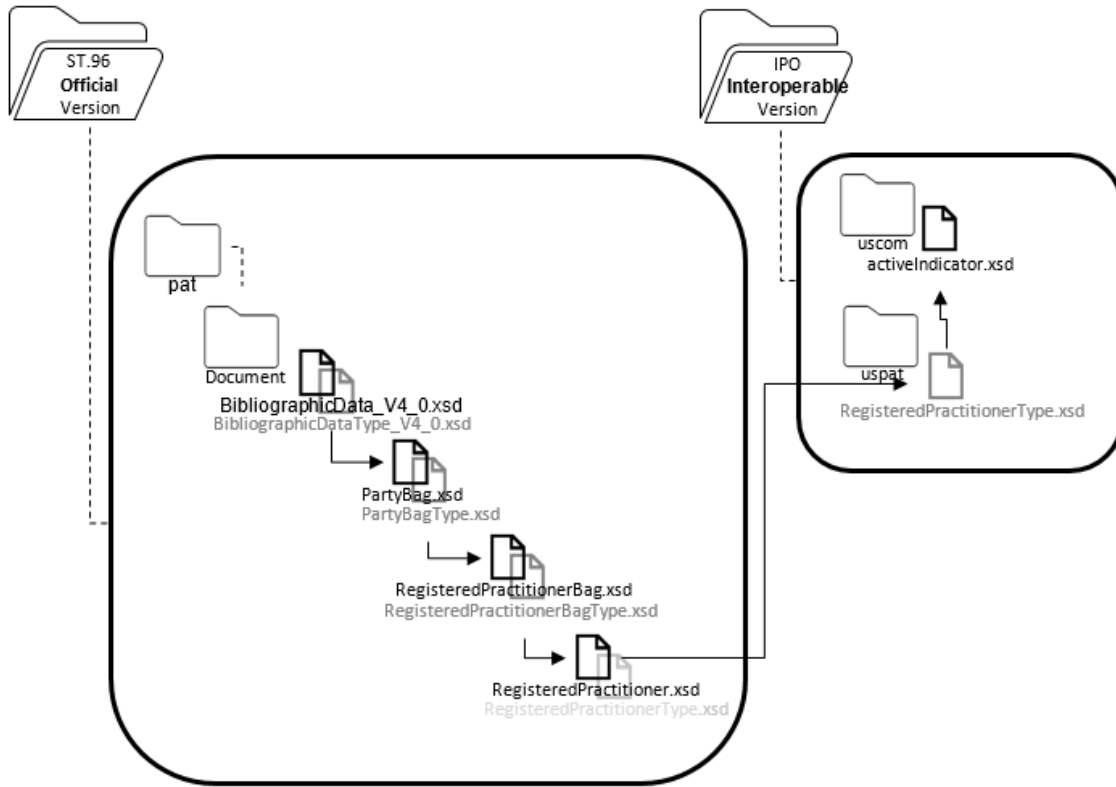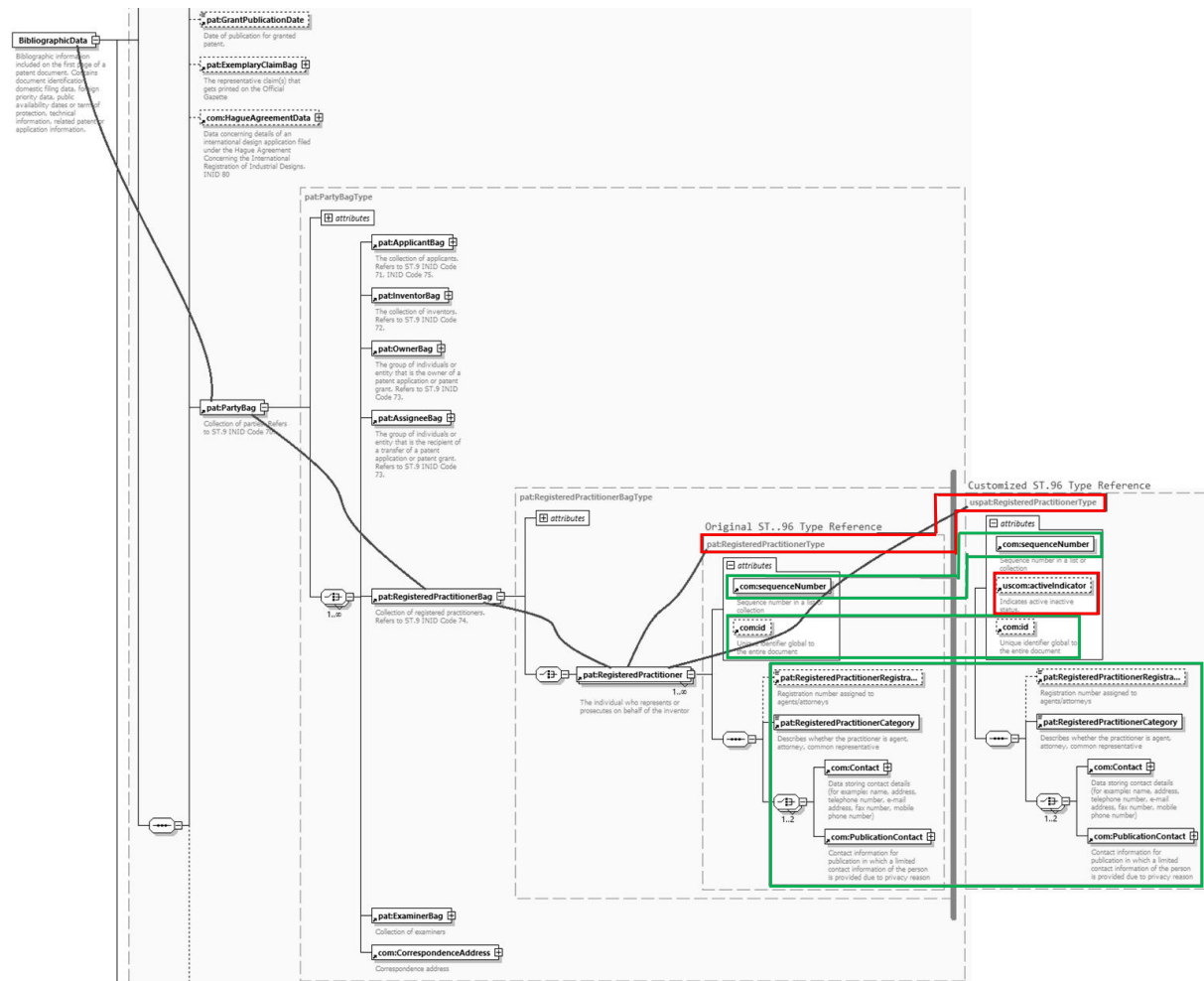
```
                <xsd:documentation>Administrative
instruction</xsd:documentation>
            </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="PCT">
                <xsd:annotation>
                    <xsd:documentation>Patent Cooperation
Treaty</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Reference link">
                <xsd:annotation>
                    <xsd:documentation>Reference link, used for external
reference populated with URL</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Examiner note">
                <xsd:annotation>
                    <xsd:documentation>Examiner note, used for external
reference located in another document</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
    </xsd:restriction>
</xsd:simpleType>
</xsd:schema>
```

4.   Define new W3C schema file for attribute `crossReferenceLinkCategory.xsd` and reference its type with above created type definition.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:uscom="urn:us:gov:doc:uspto:common"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
<xsd:include schemaLocation="CrossReferenceLinkCategoryType.xsd"/>
<xsd:attribute name="crossReferenceLinkCategory"
type="uscom:CrossReferenceLinkCategoryType">
  <xsd:annotation>
        <xsd:documentation>Category of cross reference, e.g.
table.</xsd:documentation>
  </xsd:annotation>
</xsd:attribute>
</xsd:schema>
```

5.   Define new W3C schema file `CrossReferenceLinkType.xsd` by referencing above created attribute

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

```
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/O.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/U.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/S.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Sub.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Sup.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Br.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Image.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Ins.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Del.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/idrefs.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/extRef.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/sourceURI.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/sourceSystemName.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/sourceSystemIdentifier.xsd"/>
<xsd:include schemaLocation="crossReferenceLinkCategory.xsd"/>
<xsd:complexType name="CrossReferenceLinkType" mixed="true">
  <xsd:choice minOccurs="0" maxOccurs="unbounded">
        <xsd:element ref="com:B"/>
        <xsd:element ref="com:I"/>
        <xsd:element ref="com:O"/>
        <xsd:element ref="com:U"/>
        <xsd:element ref="com:S"/>
        <xsd:element ref="com:Sub"/>
        <xsd:element ref="com:Sup"/>
        <xsd:element ref="com:Br"/>
        <xsd:element ref="com:Image"/>
        <xsd:element ref="com:Ins"/>
        <xsd:element ref="com:Del"/>
  </xsd:choice>
  <xsd:attribute ref="com:id"/>
  <xsd:attribute ref="com:idrefs"/>
  <xsd:attribute ref="com:extRef"/>
  <xsd:attribute ref="uscom:crossReferenceLinkCategory" use="required"/>
  <xsd:attribute ref="com:sourceURI"/>
  <xsd:attribute ref="com:sourceSystemName"/>
  <xsd:attribute ref="com:sourceSystemIdentifier"/>
</xsd:complexType>
</xsd:schema>
```

6.   Create new W3C schema file **CrossReferenceLink.xsd** with above created type reference

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:uscom="urn:us:gov:doc:uspto:common"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
<xsd:include schemaLocation="CrossReferenceLinkType.xsd"/>
<xsd:element name="CrossReferenceLink" type="uscom:CrossReferenceLinkType">
  <xsd:annotation>
        <xsd:documentation>Cross Reference Link is used to refer to another
part of the current document or refer to something else that is outside of the
current document related to Administrative and Legal publications.  For
referring to 'figure' which is in the same document, com:FigureReference
should be used. For referring to 'claim' within 'claim text', ClaimReference
should be used.
        </xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:schema>
```

7.   Create new W3C schema file `PType.xsd`

[Note: Since this is an unbounded choice type, you can add new aggregate component anywhere in the existing choice of components. But for other XSD types interoperability recommends adding newly created components to the bottom of the existing list to avoid backward compatibility issues.]

```
<?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:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/B.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/I.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/O.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/S.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/U.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Sup.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Sub.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Image.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/SmallCapital.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Ins.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Del.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/OCRConfidenceData.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Br.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/UL.xsd"/>
```

```xml
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/OL.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Pre.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/DL.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/Math.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/ChemicalFormulae.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/InlineFormula.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/PatentCitation.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/NPLCitation.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/FigureReference.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../Common/CrossReference.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/Common"
schemaLocation="../Common/Table.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/pNumber.xsd"/>
<xsd:include schemaLocation="CrossReferenceLink.xsd"/>
<xsd:complexType name="PType" mixed="true">
  <xsd:choice minOccurs="0" maxOccurs="unbounded">
        <xsd:element ref="com:B"/>
        <xsd:element ref="com:I"/>
        <xsd:element ref="com:O"/>
        <xsd:element ref="com:S"/>
        <xsd:element ref="com:U"/>
        <xsd:element ref="com:Sup"/>
        <xsd:element ref="com:Sub"/>
        <xsd:element ref="com:Image"/>
        <xsd:element ref="com:SmallCapital"/>
        <xsd:element ref="com:Ins"/>
        <xsd:element ref="com:Del"/>
        <xsd:element ref="com:OCRConfidenceData"/>
        <xsd:element ref="com:Br"/>
        <xsd:element ref="com:UL"/>
        <xsd:element ref="com:OL"/>
        <xsd:element ref="com:Pre"/>
        <xsd:element ref="com:DL"/>
        <xsd:element ref="com:Math"/>
        <xsd:element ref="com:ChemicalFormulae"/>
        <xsd:element ref="com:InlineFormula"/>
        <xsd:element ref="com:PatentCitation"/>
        <xsd:element ref="com:NPLCitation"/>
        <xsd:element ref="com:FigureReference"/>
        <xsd:element ref="com:CrossReference"/>
        <xsd:element ref="uscom:CrossReferenceLink"/>
        <xsd:element ref="com:BioDeposit"/>
```

```
        <xsd:element ref="com:Table"/>
  </xsd:choice>
  <xsd:attribute ref="com:id"/>
  <xsd:attribute ref="com:pNumber"/>
</xsd:complexType>
</xsd:schema>
```

8. Update ST.96 `P.xsd` to refer IPO customized `PType.xsd` with appropriate import statement.

```
<?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:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V6_0">
<xsd:import namespace="urn:us:gov:doc:uspto:common"
schemaLocation="../USCommon/PType.xsd"/>
<xsd:element name="P" type="uscom:PType">
  <xsd:annotation>
        <xsd:documentation>Paragraph</xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:schema>
```

Figure 10: Updated XSD View

1.7. Add new document components

Not Allowed

1.8. Remove an existing element and add a new element

Not Allowed

2. *Design-Stage Schemas - Flattened Schemas*

   2.1. Add an optional element

   Patent Sample Business Case: Add an optional element `ContractRole` to the `dgn:Applicant` Structure.

   1. Create a new W3C schema file, `RUDesign_V1_0.xsd` in the same folder as `DesignApplication_V6_0.xsd`.

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

```
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:dgn="http://www.wipo.int/standards/XMLSchema/ST96/Design"
xmlns:rudgn="http://rupto.ru/standards/XMLSchema/ST96/Design"
targetNamespace="http://rupto.ru/standards/XMLSchema/ST96/Design"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">

</xsd:schema>
```

   3. Define new element type definition `ContractRoleType` in `RUDesign_V1_0.xsd` as below:

```
<xsd:simpleType name="ContractRoleType">
        <xsd:restriction base="xsd:token">
                <xsd:enumeration value="Customer">
                        <xsd:annotation>
                                <xsd:documentation>Indicates whether the entity
is the contract customer</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
                <xsd:enumeration value="Implementor">
                        <xsd:annotation>
                                <xsd:documentation>Indicates whether the entity
is the contract implementor</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
        </xsd:restriction>
  </xsd:simpleType>
```

   4. Define new element definition `ContractRole.xsd` in `RUDesign_V1_0.xsd` by referring `rudgn:ContractRoleType.xsd` created above

```
<xsd:element name="ContractRole" type="rudgn:ContractRoleType">
        <xsd:annotation>
                <xsd:documentation>Applicant's role in
contract</xsd:documentation>
        </xsd:annotation>
  </xsd:element>
```

   5. Define new element type definition `ApplicantType.xsd` with two imports needed in `RUDesign_V1_0.xsd` as below:

```
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation=" ommonCommon_V6_0.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Design"
schemaLocation="DesignApplication_V6_0.xsd"/>

  <xsd:complexType name="ApplicantType">
```

```
        <xsd:sequence>
                <xsd:element ref="com:NationalityCode" minOccurs="0"/>
                <xsd:element ref="com:LegalEntityName" minOccurs="0"/>
                <xsd:element ref="com:IncorporationCountryCode"
minOccurs="0"/>
                <xsd:element ref="com:IncorporationState" minOccurs="0"/>
                <xsd:element ref="com:CommentText" minOccurs="0"/>
                <xsd:element ref="dgn:Entitlement" minOccurs="0"/>
                <xsd:element ref="dgn:ApplicantContractingParty"
minOccurs="0"/>
                <xsd:element ref="com:Version" minOccurs="0"/>
                <xsd:choice maxOccurs="unbounded">
                        <xsd:element ref="com:PartyIdentifier"/>
                        <xsd:element ref="com:Contact"/>
                        <xsd:element ref="com:PublicationContact"/>
                </xsd:choice>
                <xsd:element ref="rudgn:ContractRole" minOccurs="0"/>
        </xsd:sequence>
        <xsd:attribute ref="com:operationCategory"/>
        <xsd:attribute ref="com:sequenceNumber"/>
  </xsd:complexType>
```
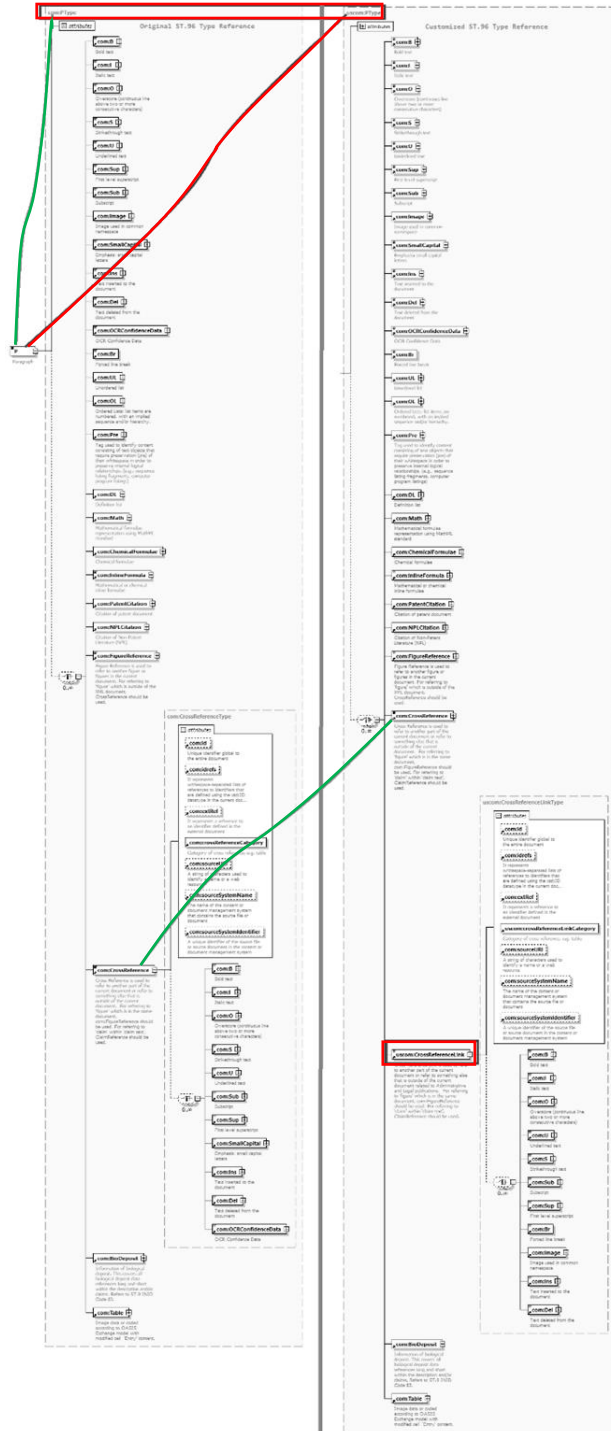
```
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:dgn="http://www.wipo.int/standards/XMLSchema/ST96/Design"
xmlns:rudgn="http://rupto.ru/standards/XMLSchema/ST96/Design"
targetNamespace="http://rupto.ru/standards/XMLSchema/ST96/Design"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V1_0">
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="ST96_Common_V6_0.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Design"
schemaLocation="DesignApplication_V6_0.xsd"/>
  <xsd:simpleType name="ContractRoleType">
        <xsd:restriction base="xsd:token">
                <xsd:enumeration value="Customer">
                        <xsd:annotation>
                                <xsd:documentation>Indicates whether the entity
is the contract customer</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
                <xsd:enumeration value="Implementor">
                        <xsd:annotation>
                                <xsd:documentation>Indicates whether the entity
is the contract implementor</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
        </xsd:restriction>
  </xsd:simpleType>
  <xsd:element name="ContractRole" type="rudgn:ContractRoleType">
        <xsd:annotation>
                <xsd:documentation>Applicant's role in
contract</xsd:documentation>
        </xsd:annotation>
  </xsd:element>
  <xsd:complexType name="ApplicantType">
        <xsd:sequence>
                <xsd:element ref="com:NationalityCode" minOccurs="0"/>
                <xsd:element ref="com:LegalEntityName" minOccurs="0"/>
                <xsd:element ref="com:IncorporationCountryCode"
minOccurs="0"/>
                <xsd:element ref="com:IncorporationState" minOccurs="0"/>
```

```
                <xsd:element ref="com:CommentText" minOccurs="0"/>
                <xsd:element ref="dgn:Entitlement" minOccurs="0"/>
                <xsd:element ref="dgn:ApplicantContractingParty"
minOccurs="0"/>
                <xsd:element ref="com:Version" minOccurs="0"/>
                <xsd:choice maxOccurs="unbounded">
                        <xsd:element ref="com:PartyIdentifier"/>
                        <xsd:element ref="com:Contact"/>
                        <xsd:element ref="com:PublicationContact"/>
                </xsd:choice>
                <xsd:element ref="rudgn:ContractRole" minOccurs="0"/>
        </xsd:sequence>
        <xsd:attribute ref="com:operationCategory"/>
        <xsd:attribute ref="com:sequenceNumber"/>
  </xsd:complexType>
</xsd:schema>
```

6. Update `Applicant definition` in `DesignApplication_V4_0.xsd (ST.96 Design XSD flattened)`, to update `Type`, reference to IPO customized `ApplicationType` with appropriate namespace reference and import as listed below

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:dgn="http://www.wipo.int/standards/XMLSchema/ST96/Design"
xmlns:rudgn="http://rupto.ru/standards/XMLSchema/ST96/Design"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://www.wipo.int/standards/XMLSchema/ST96/Design"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V4_0">
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="ST96_V6_0_Common.xsd"/>
  <xsd:import namespace="http://rupto.ru/standards/XMLSchema/ST96/Design"
schemaLocation="RUDesign_V1_0.xsd"/>
  <xsd:element name="Applicant" type="rudgn:ApplicantType">
        <xsd:annotation>
                <xsd:documentation>Applicant or holder
details</xsd:documentation>
        </xsd:annotation>
  </xsd:element>
</xsd:schema>
```

Figure 11: Updated XSD View

2.2.   Add an optional attribute

**Patent Sample Business Case: Add an optional attribute `activeIndicator` to the
`pat:RegisteredPractitioner` Structure.**

1.   Create a new W3C schema file, `USCommon_V1_0.xsd` at the same level as `ST96_V6_0_Common.xsd`.
2.   Set the target Namespace to the IPO's namespace and add new namespace entries `xmlns:xxcom`, where
     `xx` is the lower-case ST.3 Code. Each IPO is expected to version the modified components separately from
     WIPO because this is the IPO specific implementation. "V1_0" is shown in the following example because this
     is the first Office modified component.

     Note: this example uses 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:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">

</xsd:schema>
```

3.   Define new attribute definition `activeIndicator` as xsd:Boolean in `USCommon_V1_0.xsd` file

```
  <xsd:attribute name="activeIndicator" type="xsd:boolean">
        <xsd:annotation>
              <xsd:documentation>Indicates active inactive
status.</xsd:documentation>
        </xsd:annotation>
  </xsd:attribute>
```

4.   Create a new W3C schema file `USPatent_V1_0.xsd` at the same level as `USCommon_V1_0.xsd`.
5.   Redefine `pat:RegisteredPractitionerType.xsd` structure with new IPO added attribute towards the
     end of existing components as shown below:

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:uspat="urn:us:gov:doc:uspto:patent"
xmlns:uscom="urn:us:gov:doc:uspto:common"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:pat="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
targetNamespace="urn:us:gov:doc:uspto:patent" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V8_0">
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="BibliographicData_V4_0.xsd"/>
  <xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation=" Common_V6_0.xsd"/>
  <xsd:import namespace="urn:us:gov:doc:uspto:common"
schemaLocation="USCommon_V1_0.xsd"/>
  <xsd:complexType name="RegisteredPractitionerType">
        <xsd:sequence>
              <xsd:element
ref="pat:RegisteredPractitionerRegistrationNumber" minOccurs="0"/>
              <xsd:element ref="pat:RegisteredPractitionerCategory"/>
              <xsd:choice maxOccurs="2">
                    <xsd:element ref="com:Contact"/>
                    <xsd:element ref="com:PublicationContact"/>
              </xsd:choice>
        </xsd:sequence>
        <xsd:attribute ref="com:sequenceNumber" use="required"/>
        <xsd:attribute ref="uscom:activeIndicator"/>
        <xsd:attribute ref="com:id"/>
  </xsd:complexType>
</xsd:schema>
```
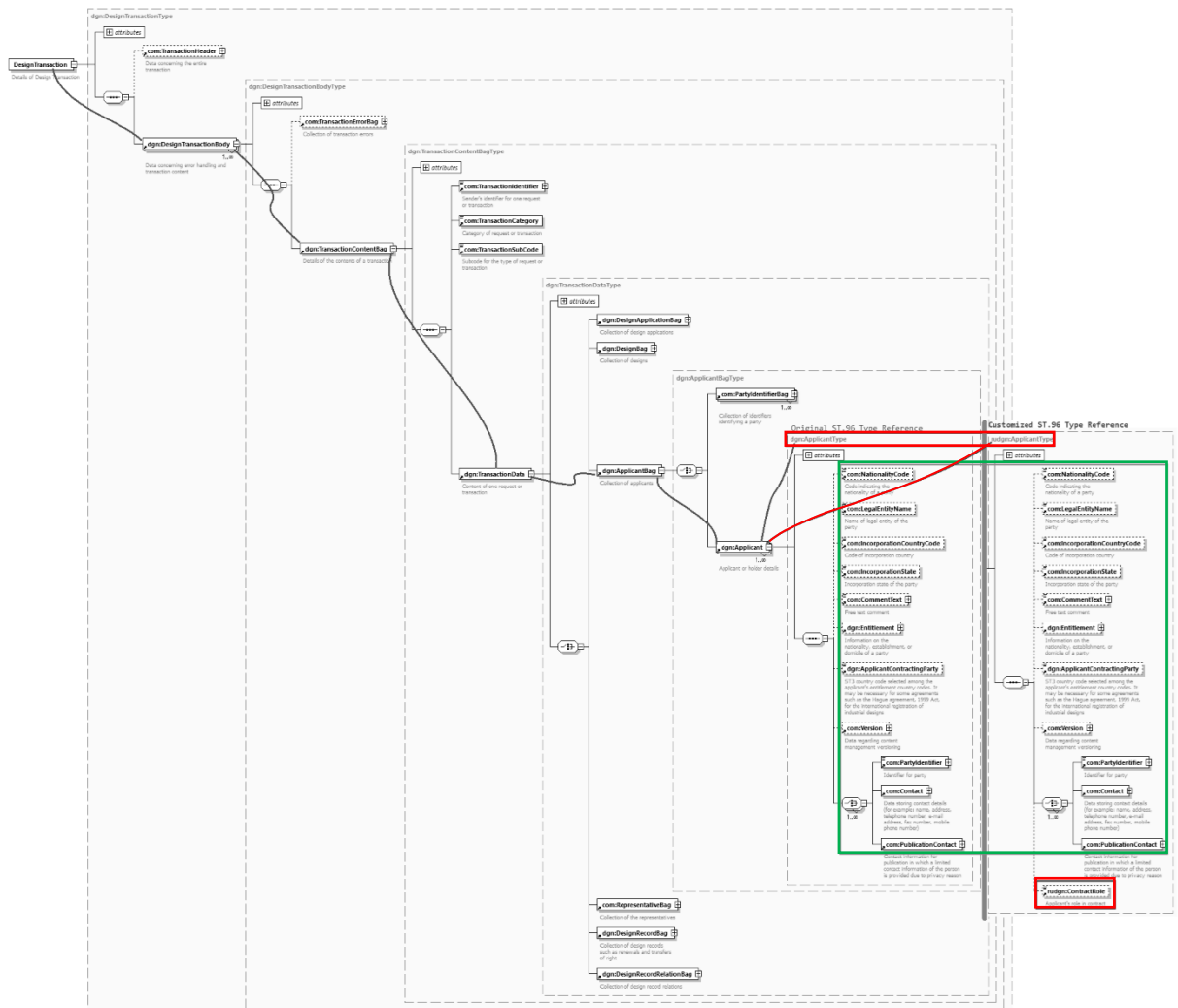
6. Update `BibliographicData_V6_0.xsd`, file `RegisteredPractitioner` definition to refer IPO customized `RegisteredPractitionerType` with appropriate namespace reference and import statement.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:pat="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
xmlns:uspat="urn:us:gov:doc:uspto:patent"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V4_0">
  <xsd:import namespace="urn:us:gov:doc:uspto:patent"
schemaLocation="USPatent_V1_0.xsd"/>
  <xsd:element name="RegisteredPractitioner"
type="uspat:RegisteredPractitionerType">
        <xsd:annotation>
                <xsd:documentation>The individual who represents or prosecutes
on behalf of the inventor</xsd:documentation>
        </xsd:annotation>
  </xsd:element>
</xsd:schema>
```
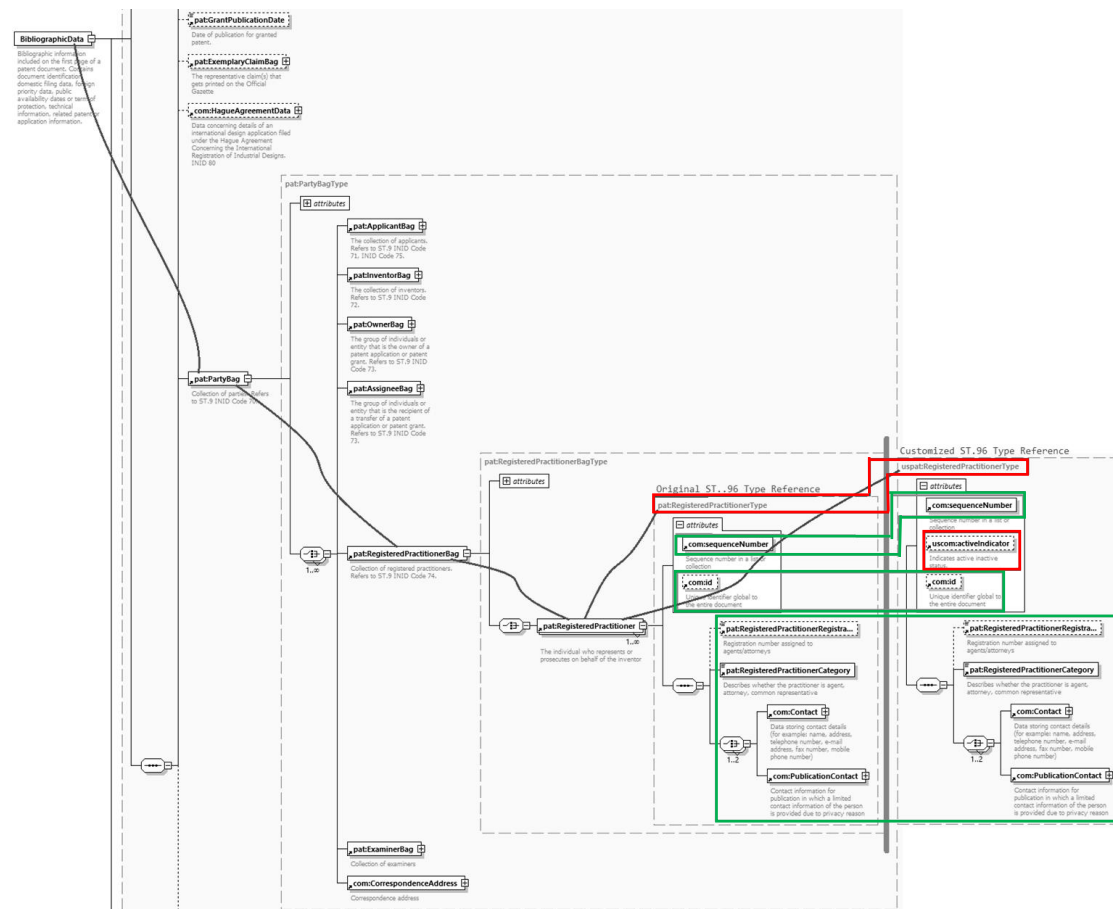

Figure 12: Updated XSD View

2.3.   Remove an optional element

Not Allowed

2.4.   Modify constraints

Not Allowed. Section 1.6/2.6 is an alternative approach to handle this situation by introducing a parallel component with IPO's customizations. This is considered as a workaround, but it comes with an overhead of duplication of similar components to IPOs.

2.5.   Make an element required

Not Allowed

2.6.   Add new aggregate component

Patent Sample Business Case: Add a new optional aggregate component `uscom:CrossReferenceLink` to `com:P`

1.   Create a new W3C schema file, `USCommon_V1_0.xsd` at the same level as `Common_V6_0.xsd`.
2.   Set the target Namespace to the IPO's namespace and add new namespace entries `xmlns:xxcom`, 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 IPO specific implementation. "V1_0" is shown in the following example because this is the first Office modified component.

>   Please note that the example uses URN for IPO namespace as approved at USPTO.
>   Other IPO's can use either URN or URL namespace based on their internal practice.

```xml
<?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:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">

</xsd:schema>
```

3.   Define `CrossReferenceLinkCategoryType` definition in `USCommon_V1_0.xsd`.

```xml
<xsd:simpleType name="CrossReferenceLinkCategoryType">
  <xsd:annotation>
        <xsd:documentation>Category of Cross reference
link</xsd:documentation>
  </xsd:annotation>
  <xsd:restriction base="xsd:token">
        <xsd:enumeration value="USC">
                <xsd:annotation>
                        <xsd:documentation>United State
Code</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="CFR">
                <xsd:annotation>
                        <xsd:documentation>Code of Federal
Regulation</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Form paragraph">
                <xsd:annotation>
                        <xsd:documentation>Form paragraph</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Chapter">
```

```
                <xsd:annotation>
                        <xsd:documentation>Chapter</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Section">
                <xsd:annotation>
                        <xsd:documentation>Section with Chapters or section
within a publication</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Administrative instruction">
                <xsd:annotation>
                        <xsd:documentation>Administrative
instruction</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="PCT">
                <xsd:annotation>
                        <xsd:documentation>Patent Cooperation
Treaty</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Reference link">
                <xsd:annotation>
                        <xsd:documentation>Reference link, used for external
reference populated with URL</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Examiner note">
                <xsd:annotation>
                        <xsd:documentation>Examiner note, used for external
reference located in another document</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
  </xsd:restriction>
</xsd:simpleType>
```

4. Define new `crossReferenceLinkCategory` attribute definition in `USCommon_V1_0.xsd`.

```
<xsd:attribute name="crossReferenceLinkCategory"
type="uscom:CrossReferenceLinkCategoryType">
  <xsd:annotation>
        <xsd:documentation>Category of cross reference, e.g.
table.</xsd:documentation>
  </xsd:annotation>
</xsd:attribute>
```

5. Define new `CrossReferenceLinkType` definition in `USCommon_V1_0.xsd` file with appropriate
   namespace and imports to ST.96 Common references.

```
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation=" Common_V6_0.xsd"/>  (← Towards the top of the file)

<xsd:complexType name="CrossReferenceLinkType" mixed="true">
  <xsd:choice minOccurs="0" maxOccurs="unbounded">
        <xsd:element ref="com:B"/>
        <xsd:element ref="com:I"/>
        <xsd:element ref="com:O"/>
        <xsd:element ref="com:U"/>
        <xsd:element ref="com:S"/>
        <xsd:element ref="com:Sub"/>
        <xsd:element ref="com:Sup"/>
        <xsd:element ref="com:Br"/>
```

```
            <xsd:element ref="com:Image"/>
            <xsd:element ref="com:Ins"/>
            <xsd:element ref="com:Del"/>
    </xsd:choice>
  <xsd:attribute ref="com:id"/>
  <xsd:attribute ref="com:idrefs"/>
  <xsd:attribute ref="com:extRef"/>
  <xsd:attribute ref="uscom:crossReferenceLinkCategory" use="required"/>
  <xsd:attribute ref="com:sourceURI"/>
  <xsd:attribute ref="com:sourceSystemName"/>
  <xsd:attribute ref="com:sourceSystemIdentifier"/>
</xsd:complexType>
```

6. Create new `CrossReferenceLink.xsd` definition in `USCommon_V1_0.xsd`

```
<xsd:element name="CrossReferenceLink" type="uscom:CrossReferenceLinkType">
  <xsd:annotation>
        <xsd:documentation>Cross Reference Link is used to refer to another
part of the current document or refer to something else that is outside of the
current document related to Administrative and Legal publications.  For
referring to 'figure' which is in the same document, com:FigureReference
should be used. For referring to 'claim' within 'claim text', ClaimReference
should be used.</xsd:documentation>
  </xsd:annotation>
</xsd:element>
```

7. Create new `PType.xsd` definition in `USCommon_V1_0.xsd`.

   *[Note: Since this is an unbounded choice type, you can add newly inserted aggregate component
   anywhere in the existing choice of components. But for other XSD types interoperability recommends
   adding newly created components to the bottom of the existing list to avoid backward compatibility issues.]*

```
  <xsd:complexType name="PType" mixed="true">
  <xsd:choice minOccurs="0" maxOccurs="unbounded">
        <xsd:element ref="com:B"/>
        <xsd:element ref="com:I"/>
        <xsd:element ref="com:O"/>
        <xsd:element ref="com:S"/>
        <xsd:element ref="com:U"/>
        <xsd:element ref="com:Sup"/>
        <xsd:element ref="com:Sub"/>
        <xsd:element ref="com:Image"/>
        <xsd:element ref="com:SmallCapital"/>
        <xsd:element ref="com:Ins"/>
        <xsd:element ref="com:Del"/>
        <xsd:element ref="com:OCRConfidenceData"/>
        <xsd:element ref="com:Br"/>
        <xsd:element ref="com:UL"/>
        <xsd:element ref="com:OL"/>
        <xsd:element ref="com:Pre"/>
        <xsd:element ref="com:DL"/>
        <xsd:element ref="com:Math"/>
        <xsd:element ref="com:ChemicalFormulae"/>
        <xsd:element ref="com:InlineFormula"/>
        <xsd:element ref="com:PatentCitation"/>
        <xsd:element ref="com:NPLCitation"/>
        <xsd:element ref="com:FigureReference"/>
        <xsd:element ref="com:CrossReference"/>
        <xsd:element ref="uscom:CrossReferenceLink"/>
```

```
        <xsd:element ref="com:BioDeposit"/>
        <xsd:element ref="com:Table"/>
  </xsd:choice>
  <xsd:attribute ref="com:id"/>
  <xsd:attribute ref="com:pNumber"/>
</xsd:complexType>
```

8. Update definition of `P` in `Common_V6_0.xsd` to refer IPO customized `PType.xsd` with appropriate import statement to IPO namespace reference

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:mathml="http://www.w3.org/1998/Math/MathML" xmlns:tbl="http://www.oasis-
open.org/tables/exchange/1.0" xmlns:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V4_0">
<xsd:import namespace="urn:us:gov:doc:uspto:common"
schemaLocation="USCommon_V1_0.xsd"/> (← Towards the top of the file)

<xsd:element name="P" type="uscom:PType">
  <xsd:annotation>
        <xsd:documentation>Paragraph</xsd:documentation>
  </xsd:annotation>
</xsd:element>
```
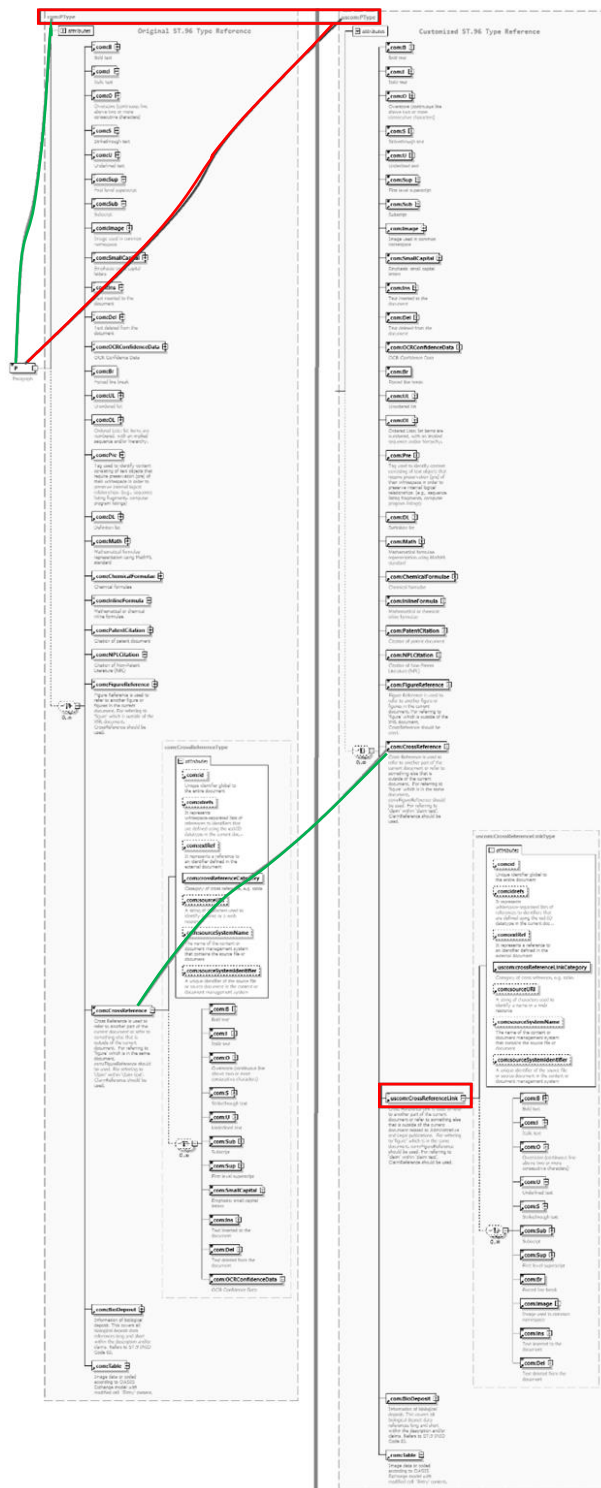
Figure 13: Updated XSD View

2.7. Add new document components

Not Allowed

2.8.   Remove an existing element and add a new element

Not Allowed

APPENDIX B - EXAMPLES OF ST.96 CONFORMANT (Subset) 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. *Design-Stage Schemas - Modular Schemas*

   1.1. *Add an optional element*

   Same as Appendix A section 1.1

   1.2. *Add an optional attribute*

   Same as Appendix A section 1.2

   1.3. *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 IPO specific implementation. "V1_0" is shown in the following example because this is the first Office modified component.

      Please note that the example uses URN for IPO namespace as approved at USPTO. Other IPO's can use either URN or URL namespace based on their internal practice.

```xml
<?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.

```xml
    <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 IPO 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>
```
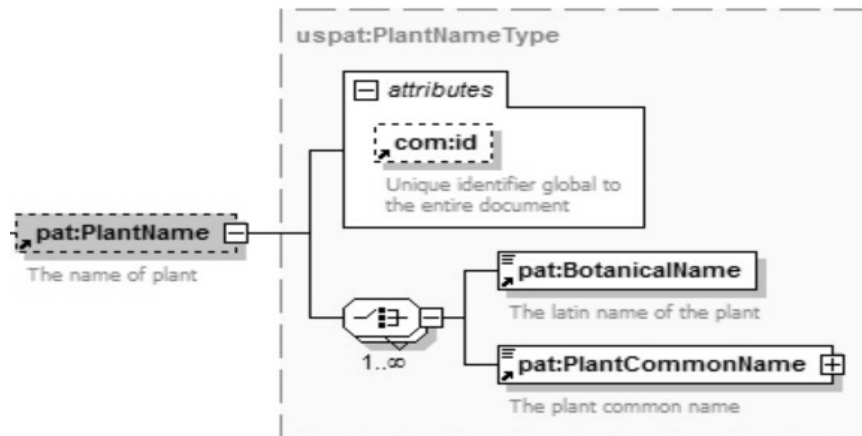
11.   The final content model design is shown below in Figure 14:

Figure 14: uspat:PlantName

1.4.   Modify constraints

**Patent Sample Business Case: Alter (Restrict to IPO specific values) `com:CrossReferenceCategory`
*enumeration entries to meet IPO's business need.***

1.   Create a folder called "USCommon" at the same level as "Common", "Patent", "Trademark" etc.
2.   Set the target Namespace to the IPO's namespace and add new namespace entries `xmlns:xxcom`,
     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 IPO specific implementation. "V1_0" is shown in the following
     example because this is the first Office modified component.

     Please note that the example uses URN for IPO namespace as approved at USPTO.
     Other IPO's can use either URN or URL namespace based on their internal practice.

```xml
<?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:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
```

3. Define new W3C schema file `CrossReferenceCategoryType.xsd`

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:uscom="urn:us:gov:doc:uspto:common"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
<xsd:simpleType name="CrossReferenceCategoryType">
  <xsd:annotation>
        <xsd:documentation>Category of Cross reference</xsd:documentation>
  </xsd:annotation>
  <xsd:restriction base="xsd:token">
        <xsd:enumeration value="USC">
                <xsd:annotation>
                        <xsd:documentation>United State
Code</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
```

```
                <xsd:enumeration value="CFR">
                        <xsd:annotation>
                                <xsd:documentation>Code of Federal
Regulation</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
                <xsd:enumeration value="Form paragraph">
                        <xsd:annotation>
                                <xsd:documentation>Form paragraph</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
                <xsd:enumeration value="Chapter">
                        <xsd:annotation>
                                <xsd:documentation>Chapter</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
                <xsd:enumeration value="Section">
                        <xsd:annotation>
                                <xsd:documentation>Section with Chapters or section
within a publication</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
                <xsd:enumeration value="Administrative instruction">
                        <xsd:annotation>
                                <xsd:documentation>Administrative
instruction</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
                <xsd:enumeration value="PCT">
                        <xsd:annotation>
                                <xsd:documentation>Patent Cooperation
Treaty</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
                <xsd:enumeration value="Reference link">
                        <xsd:annotation>
                                <xsd:documentation>Reference link, used for external
reference populated with URL</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
                <xsd:enumeration value="Examiner note">
                        <xsd:annotation>
                                <xsd:documentation>Examiner note, used for external
reference located in another document</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
        </xsd:restriction>
</xsd:simpleType>
</xsd:schema>
```

4. Update ST.96 `crossReferenceCategory.xsd` to refer IPO customized
    `CrossReferenceCategoryType.xsd` with an appropriate import statement.

```
<?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:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V4_0">
<xsd:import namespace="urn:us:gov:doc:uspto:common"
schemaLocation="../USCommon/CrossReferenceCategoryType.xsd"/>
<xsd:element name="CrossReferenceCategory"
type="uscom:CrossReferenceCategoryType">
  <xsd:annotation>
        <xsd:documentation>Category of cross reference, e.g.
table</xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:schema>
```
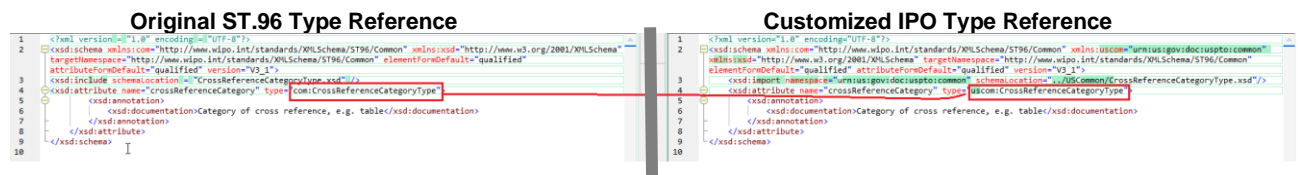
Pre and Post-Update XSD differences:

Original ST.96 Type Reference	Customized IPO Type Reference

Figure 15: Comparison after applying design rules

1.5.   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 Patent->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="V6_0">
```

8. Update existing ST.96 `BibliographicDataType.xsd` include statement 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` namespace 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>
```

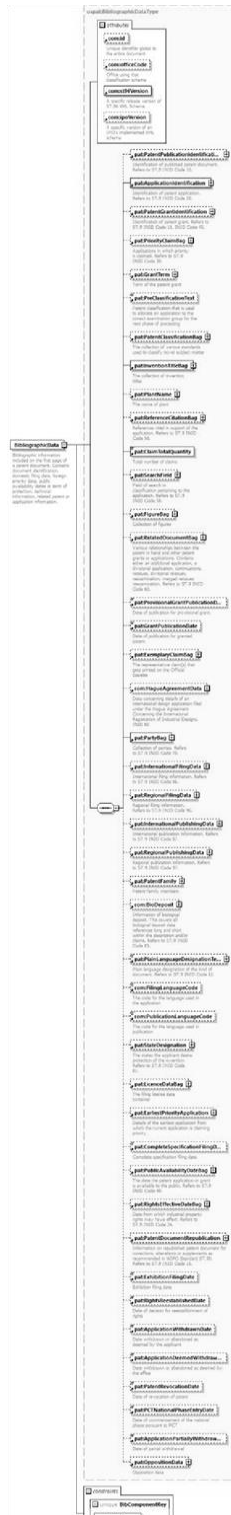10. The final content model design is shown below:

Figure 16: uspat: BibliographicData

1.6. Add new aggregate component

Same as Appendix A section 1.6

1.7. Add new document components

Not Allowed

1.8. Remove an existing element and add a new element

Not Allowed

2. Design-Stage Schemas - Flattened Schemas

2.1. Add an optional element

Same as Appendix A section 2.1

2.2. Add an optional attribute

Same as Appendix A section 2.2

2.3. 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_V4_01.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 IPO 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_V4_01.xsd"/>
     <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="BibliographicData_V4_01.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>
```

2.4. Add new aggregate component

Same as Appendix A section 1.6

2.5. Add new document components

Not Allowed

2.6. Remove an existing element and add a new element

Not Allowed

3. Design-Stage Schemas - Flattened Schemas

3.1. Add an optional element

Same as Appendix A section 2.1

3.2. Add an optional attribute

Same as Appendix A section 2.2

3.3. Remove an optional element

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

5.   Create a new W3C schema file, `USBibliographicData_V1_0.xsd` in the same folder as `BibliographicData_V4_01.xsd`.

6.   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 IPO 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">
```

7.   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_V4_01.xsd"/>
     <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="BibliographicData_V4_01.xsd"/>
```

8.   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>
```

9.   In the existing BibliographicData_V4_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 IPO 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">
```

10. 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"/>
```

11. 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>
```

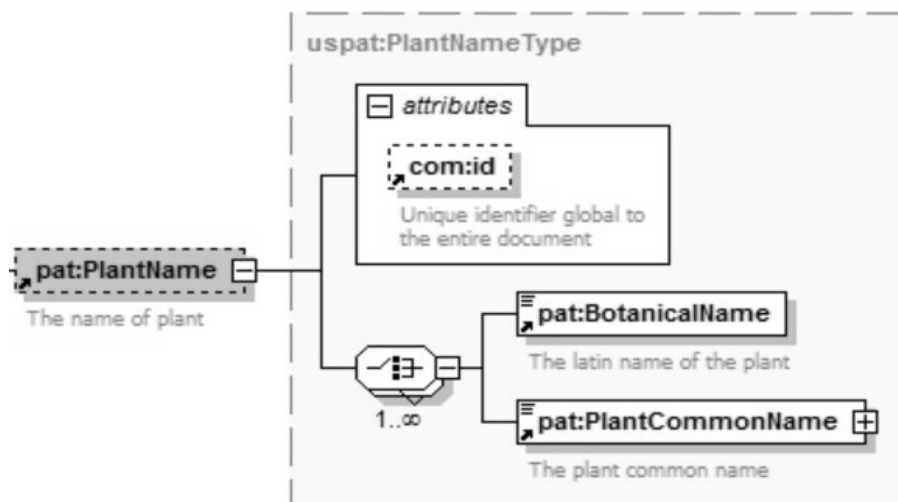12. The final content model design for PlantName is shown below:

Figure 17: uspat: PlantName

3.4. Modify constraints

Patent Sample Business Case: Alter (Restrict to IPO specific values) com:CrossReferenceCategory enumeration entries to meet IPO's business need.

1. Create a new W3C schema file, USCommon_V1_0.xsd at the same level as ST96_V4_0_Common.xsd.

2. Set the target Namespace to the IPO's namespace and add new namespace entries `xmlns:xxcom`, 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 IPO specific implementation. "V1_0" is shown in the following example because this is the first Office modified component.

    [Note that the example uses URN for IPO namespace as approved at USPTO.
    Other IPO's can use either URN or URL namespace based on their internal practice.]

```xml
<?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:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">

</xsd:schema>
```

3. Define `CrossReferenceCategoryType` definition in `USCommon_V1_0.xsd`.

```xml
<xsd:simpleType name="CrossReferenceCategoryType">
  <xsd:annotation>
        <xsd:documentation>Category of Cross reference</xsd:documentation>
  </xsd:annotation>
  <xsd:restriction base="xsd:token">
        <xsd:enumeration value="USC">
                <xsd:annotation>
                        <xsd:documentation>United State
Code</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="CFR">
                <xsd:annotation>
                        <xsd:documentation>Code of Federal
Regulation</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Form paragraph">
                <xsd:annotation>
                        <xsd:documentation>Form paragraph</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Chapter">
                <xsd:annotation>
                        <xsd:documentation>Chapter</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Section">
                <xsd:annotation>
                        <xsd:documentation>Section with Chapters or section
within a publication</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="Administrative instruction">
                <xsd:annotation>
                        <xsd:documentation>Administrative
instruction</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
        <xsd:enumeration value="PCT">
                <xsd:annotation>
                        <xsd:documentation>Patent Cooperation
Treaty</xsd:documentation>
                </xsd:annotation>
        </xsd:enumeration>
```

```
                <xsd:enumeration value="Reference link">
                        <xsd:annotation>
                                <xsd:documentation>Reference link, used for external
reference populated with URL</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
                <xsd:enumeration value="Examiner note">
                        <xsd:annotation>
                                <xsd:documentation>Examiner note, used for external
reference located in another document</xsd:documentation>
                        </xsd:annotation>
                </xsd:enumeration>
        </xsd:restriction>
</xsd:simpleType>
```

4. Update ST.96 `crossReferenceCategory` definition to refer to the IPO's customized
    `CrossReferenceCategoryType` definition in `USCommon_V1_0.xsd` with an appropriate import statement.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:com="http://www.wipo.int/standards/XMLSchema/ST96/Common"
xmlns:mathml="http://www.w3.org/1998/Math/MathML" xmlns:tbl="http://www.oasis-
open.org/tables/exchange/1.0" xmlns:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
elementFormDefault="qualified" attributeFormDefault="qualified"
version="V4_0">
<xsd:import namespace="urn:us:gov:doc:uspto:common"
schemaLocation="USCommon_V1_0.xsd"/> (← Towards the top of the file)


<xsd:attribute name="crossReferenceCategory"
type="uscom:CrossReferenceCategoryType">
  <xsd:annotation>
        <xsd:documentation>Category of cross reference, e.g.
table</xsd:documentation>
  </xsd:annotation>
</xsd:attribute>
```
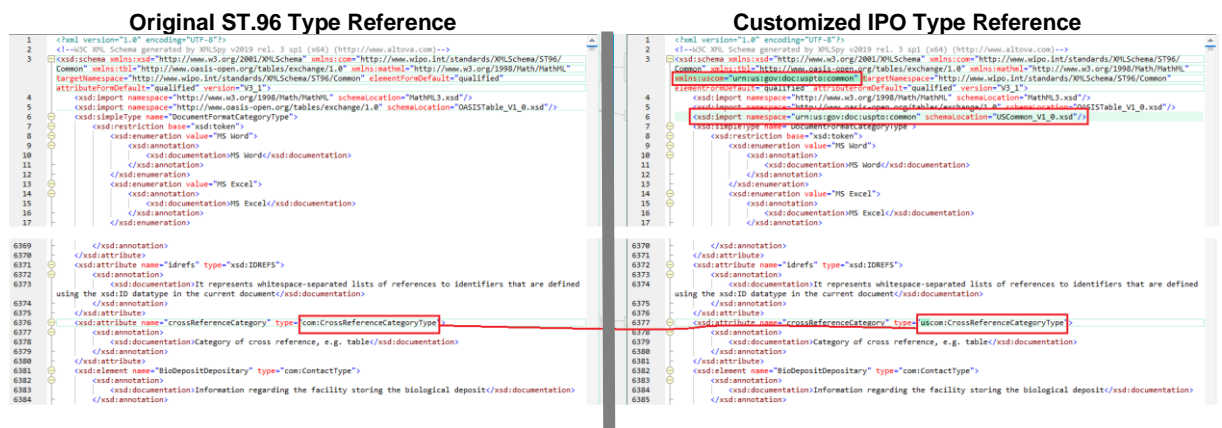
Pre and Post-Update XSD differences:

Figure 18: Comparison after applying design rules

3.5. 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_V4_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 IPO 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_V4_0.xsd"/>
     <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="BibliographicData_V4_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_V4_01.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 IPO 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:

Figure 19: uspat: BibliographicData

![WIPO logo] WIPO
WORLD
INTELLECTUAL PROPERTY
ORGANIZATION

**HANDBOOK ON INTELLECTUAL PROPERTY
INFORMATION AND DOCUMENTATION**

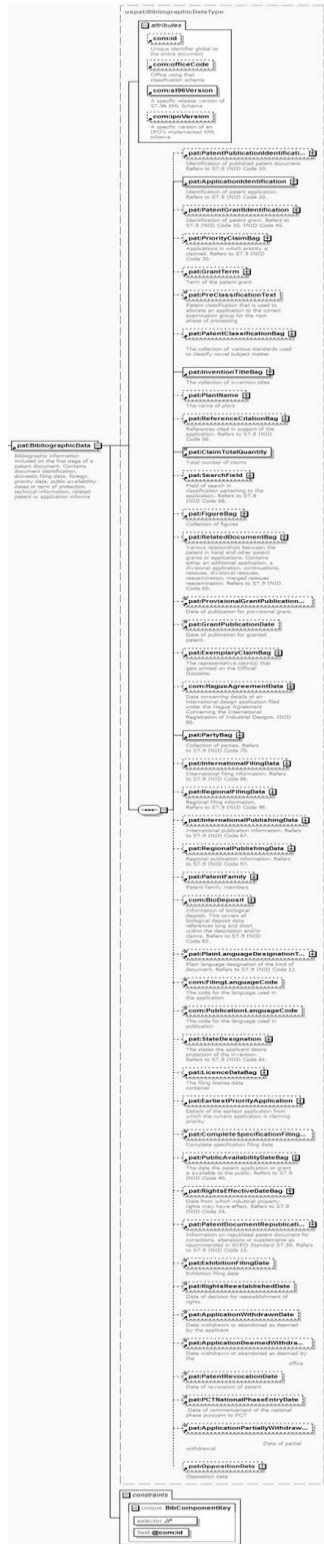Ref.: Standards - Standards - ST.96   page: 3.96.v.62

3.6.   Add new aggregate component

Same as Appendix A section 2.6

3.7.   Add new document components

Not Allowed

3.8.   Remove an existing element and add a new element

Not Allowed

APPENDIX C - 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.   *Design-Stage Schemas - Modular Schemas*

   1.1.   Add an optional element

Same as Appendix A section 1.1

   1.2.   Add an optional attribute

Same as Appendix A section 1.2

   1.3.   Remove an optional element

Same as Appendix B section 1.3

   1.4.   Modify constraints

Same as Appendix B section 1.4

   1.5.   Make an element required

Same as Appendix B section 1.5

   1.6.   Add new aggregate component

Same as Appendix A, B section 1.6

   1.7.   Add new document components

Patent Sample Business Case: Create new `Patent BibliographicData` document level model with additional IPO needed components on top of ST.96 structure.

1.   Create a folder called "USCommon" at the same level as "Common", "Patent", "Trademark" etc.
2.   Set the target Namespace to the IPO's namespace and add new namespace entries `xmlns:xxcom`, 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 IPO specific implementation. "V1_0" is shown in the following example because this is the first Office modified component.

   *[Note the example uses URN for IPO namespace as approved at USPTO.
   Other IPO's can use either URN or URL namespace based on their internal practice.*]

```xml
<?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:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
```

3.   Define new W3C schema file `CustomerNumberType.xsd`

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:uscom="urn:us:gov:doc:uspto:common"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
<xsd:element name="CustomerNumber" type="xsd:string">
 <xsd:annotation>
```

```
        <xsd:documentation>Customer number for
correspondence.</xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:schema>
```

4.   Define new W3C schema file `BusinessEntityStatusCategory.xsd`

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:uscom="urn:us:gov:doc:uspto:common"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
<xsd:element name="BusinessEntityStatusCategory" type="xsd:token">
  <xsd:annotation>
        <xsd:documentation>Business entity status type.</xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:schema>
```

5.   Create a folder called "USPatent" at the same level as "Common", "Patent", "Trademark" etc.

6.   **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 IPO specific implementation. "V1_0" is shown in the following example because this is the first Office modified component.**

*[Note the example uses 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">
```

7.   Define new W3C schema file `MicroformQuantity.xsd`

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:uspat="urn:us:gov:doc:uspto:patent"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:us:gov:doc:uspto:patent" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V8_0">
<xsd:element name="MicroformQuantity" type="xsd:positiveInteger">
  <xsd:annotation>
        <xsd:documentation>Microform quantity number</xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:schema>
```

8.   Create a folder Document in USPatent folder

9.   Define new W3C schema file `BibliographicDataType_V1_0.xsd` in Document folder

```
<?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:uspat="urn:us:gov:doc:uspto:patent"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="urn:us:gov:doc:uspto:patent" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
```

```
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/Document/BibliographicDataType_V4_0.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/FigureNumber.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="../../Patent/RepublicationCategory.xsd"/>
<xsd:import namespace="urn:us:gov:doc:uspto:common"
schemaLocation="../../USCommon/CustomerNumber.xsd"/>
<xsd:import namespace="urn:us:gov:doc:uspto:common"
schemaLocation="../../USCommon/BusinessEntityStatusCategory.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="../../Common/ApplicantFileReference.xsd"/>
<xsd:include schemaLocation="../MicroformQuantity.xsd"/>
<xsd:complexType name="BibliographicDataType">
  <xsd:complexContent>
        <xsd:extension base="pat:BibliographicDataType">
                <xsd:sequence>
                        <xsd:element ref="pat:FigureNumber" minOccurs="0"/>
                        <xsd:element ref="com:ApplicantFileReference"
minOccurs="0"/>
                        <xsd:element ref="uscom:CustomerNumber" minOccurs="0"/>
                        <xsd:element ref="uscom:BusinessEntityStatusCategory"
minOccurs="0" maxOccurs="unbounded"/>
                        <xsd:element ref="uspat:MicroformQuantity"
minOccurs="0"/>
                        <xsd:element ref="pat:RepublicationCategory"
minOccurs="0"/>
                </xsd:sequence>
        </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
</xsd:schema>
```

10.   Define new W3C schema file `BibliographicData_V1_0.xsd` in Document folder with
appropriate import to type created above.

```
<?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:uspat="urn:us:gov:doc:uspto:patent"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:us:gov:doc:uspto:patent" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">
<xsd:include schemaLocation="BibliographicDataType_V1_0.xsd"/>
<xsd:annotation>
  <xsd:appinfo>
        <com:SchemaCreatedDate>2015/02/20</com:SchemaCreatedDate>
        <com:SchemaLastModifiedDate>2015/02/26</com:SchemaLastModifiedDate>
        <com:SchemaContactPoint> USPTO, Enterprise Data Architecture Division
(EDAD)</com:SchemaContactPoint>
        <com:SchemaReleaseNoteURL>ReleaseNotes.txt</com:SchemaReleaseNoteURL>
  </xsd:appinfo>
</xsd:annotation>
<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>
</xsd:schema>
```

11. The final content model design compared to ST.96 copy is shown below:
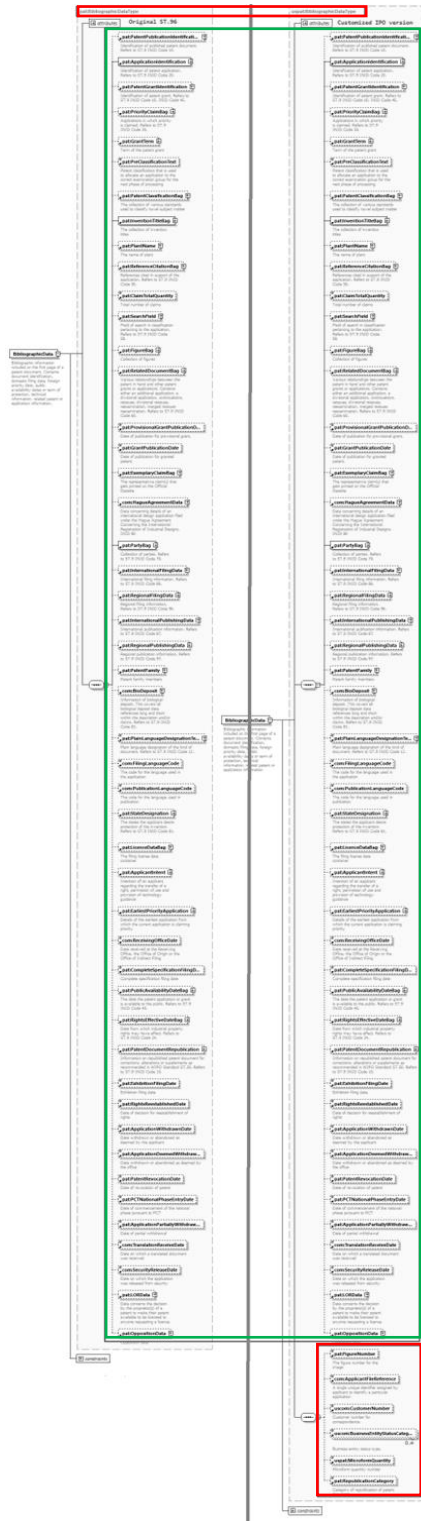

Figure 20: uspat: BibliographicData – customized versus official

1.8. Remove an 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
<?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: 2018-02-26
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: 2018-02-12
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
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>
</xsd:schema>
```

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>2018-02-12</com:SchemaCreatedDate>
            <com:SchemaLastModifiedDate>2018-02-
12</com:SchemaLastModifiedDate>
    <com:SchemaContactPoint>xml.standards@wipo.int</com:SchemaContactPoint>
    <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> </xsd:schema>
```
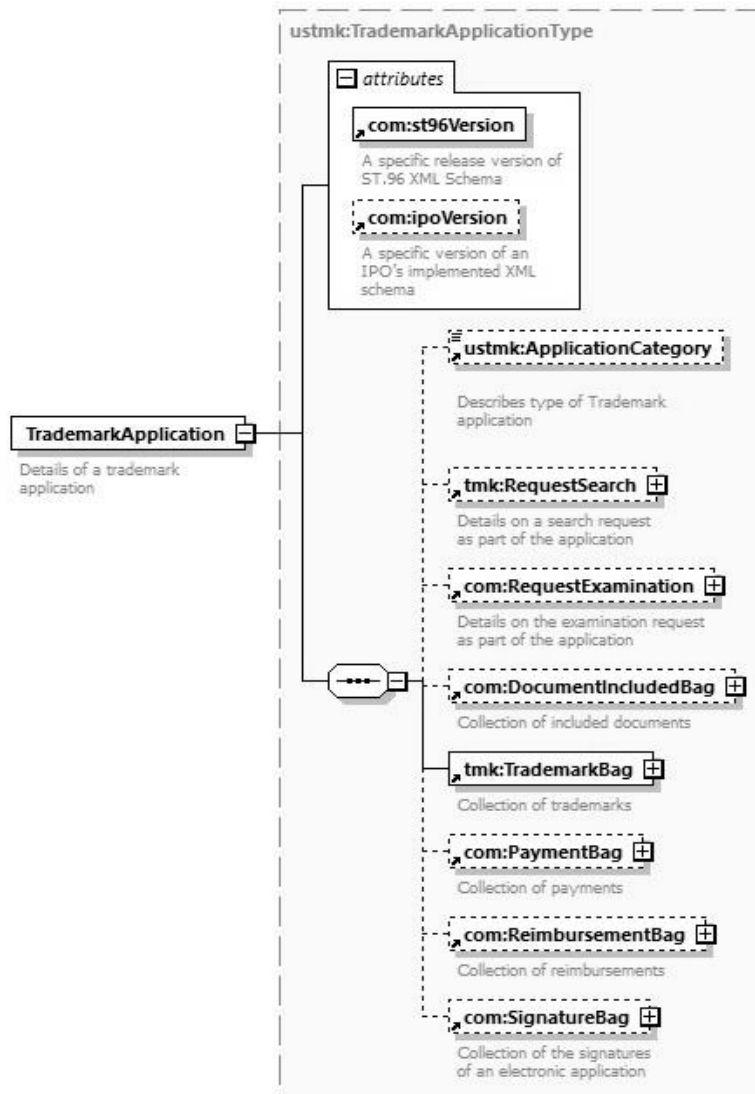
14. The final content model design is shown below:

Figure 21: ustmk: TrademarkApplication

2.   *Design-Stage Schemas - Flattened Schemas*

   2.1. Add an optional element

   Same as Appendix A section 2.1

   2.2. Add an optional attribute

   Same as Appendix A section 2.2

   2.3. Remove an optional element

   Same as Appendix B section 2.3

   2.4. Modify constraints

   Same as Appendix B section 2.4

2.5. Make an element required

Same as Appendix B section 2.5

2.6. Add new aggregate component

Same as Appendix A, B section 2.6

2.7. Add new document components

Patent Sample Business Case: Create a new Patent BibliographicData document level model with the required additional components at the top of the ST.96 structure.

1. Create a new W3C schema file, `USCommon_V1_0.xsd` in the same folder as `BibliographicData_V4_0.xsd`.

2. Set the target Namespace to the IPO's namespace and add new namespace entries xmlns:xxcom, 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 IPO 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:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="urn:us:gov:doc:uspto:common" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">

</xsd:schema>
```

3. Define new component `CustomerNumberType` in `USCommon_V1_0.xsd`.

```
  <xsd:element name="CustomerNumber" type="xsd:string">
  <xsd:annotation>
        <xsd:documentation>Customer number for
correspondence.</xsd:documentation>
  </xsd:annotation>
</xsd:element>
```

4. Define new component BusinessEntityStatusCategory in `USCommon_V1_0.xsd`.

```
<xsd:element name="BusinessEntityStatusCategory" type="xsd:token">
  <xsd:annotation>
        <xsd:documentation>Business entity status type.</xsd:documentation>
  </xsd:annotation>
</xsd:element>
```

5. Create a new W3C schema file, `USBibliographicData_V1_0.xsd` in the same folder as `BibliographicData_V4_0.xsd`.

6. 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 IPO 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">

</xsd:schema>
```

7.   Define new component `MicroformQuantity` in `USBibliographicData_V1_0.xsd`.

```
<xsd:element name="MicroformQuantity" type="xsd:positiveInteger">
  <xsd:annotation>
        <xsd:documentation>Microform quantity number</xsd:documentation>
  </xsd:annotation>
</xsd:element>
```

8.   Define new component `BibliographicDataType` in `USBibliographicData_V1_0.xsd`.

```
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="BibliographicData_V4_0.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation=" Common_V6_0.xsd"/>
<xsd:import namespace="urn:us:gov:doc:uspto:common"
schemaLocation="USCommon_V1_0.xsd"/>

<xsd:complexType name="BibliographicDataType">
  <xsd:complexContent>
        <xsd:extension base="pat:BibliographicDataType">
                <xsd:sequence>
                        <xsd:element ref="pat:FigureNumber" minOccurs="0"/>
                        <xsd:element ref="com:ApplicantFileReference"
minOccurs="0"/>
                        <xsd:element ref="uscom:CustomerNumber" minOccurs="0"/>
                        <xsd:element ref="uscom:BusinessEntityStatusCategory"
minOccurs="0" maxOccurs="unbounded"/>
                        <xsd:element ref="uspat:MicroformQuantity"
minOccurs="0"/>
                        <xsd:element ref="pat:RepublicationCategory"
minOccurs="0"/>
                </xsd:sequence>
        </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```

9.   Define new component `BibliographicData` in `USBibliographicData_V1_0.xsd`.

```
<xsd:annotation>
  <xsd:appinfo>
        <com:SchemaCreatedDate>2015/02/20</com:SchemaCreatedDate>
        <com:SchemaLastModifiedDate>2015/02/26</com:SchemaLastModifiedDate>
        <com:SchemaContactPoint> USPTO, Enterprise Data Architecture Division
(EDAD)</com:SchemaContactPoint>
        <com:SchemaReleaseNoteURL>ReleaseNotes.txt</com:SchemaReleaseNoteURL>
  </xsd:appinfo>
</xsd:annotation>
<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.   Complete `USBibliographicData_V1_0.xsd` file updated in steps 7 – 9 for reference.

```
<?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"
xmlns:uscom="urn:us:gov:doc:uspto:common"
targetNamespace="urn:us:gov:doc:uspto:patent" elementFormDefault="qualified"
attributeFormDefault="qualified" version="V1_0">

<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Patent"
schemaLocation="BibliographicData_V4_0.xsd"/>
<xsd:import namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation=" Common_V6_0.xsd"/>
<xsd:import namespace="urn:us:gov:doc:uspto:common"
schemaLocation="USCommon_V1_0.xsd"/>

<xsd:annotation>
  <xsd:appinfo>
        <com:SchemaCreatedDate>2015/02/20</com:SchemaCreatedDate>
        <com:SchemaLastModifiedDate>2022/10/26</com:SchemaLastModifiedDate>
        <com:SchemaContactPoint> USPTO, Enterprise Data Architecture Division
(EDAD)</com:SchemaContactPoint>
        <com:SchemaReleaseNoteURL>ReleaseNotes.txt</com:SchemaReleaseNoteURL>
  </xsd:appinfo>
</xsd:annotation>
<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>

<xsd:complexType name="BibliographicDataType">
  <xsd:complexContent>
        <xsd:extension base="pat:BibliographicDataType">
                <xsd:sequence>
                        <xsd:element ref="pat:FigureNumber" minOccurs="0"/>
                        <xsd:element ref="com:ApplicantFileReference"
minOccurs="0"/>
                        <xsd:element ref="uscom:CustomerNumber" minOccurs="0"/>
                        <xsd:element ref="uscom:BusinessEntityStatusCategory"
minOccurs="0" maxOccurs="unbounded"/>
                        <xsd:element ref="uspat:MicroformQuantity"
minOccurs="0"/>
                        <xsd:element ref="pat:RepublicationCategory"
minOccurs="0"/>
```

```
                    </xsd:sequence>
            </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>

<xsd:element name="MicroformQuantity" type="xsd:positiveInteger">
  <xsd:annotation>
        <xsd:documentation>Microform quantity number</xsd:documentation>
  </xsd:annotation>
</xsd:element>
</xsd:schema>
```
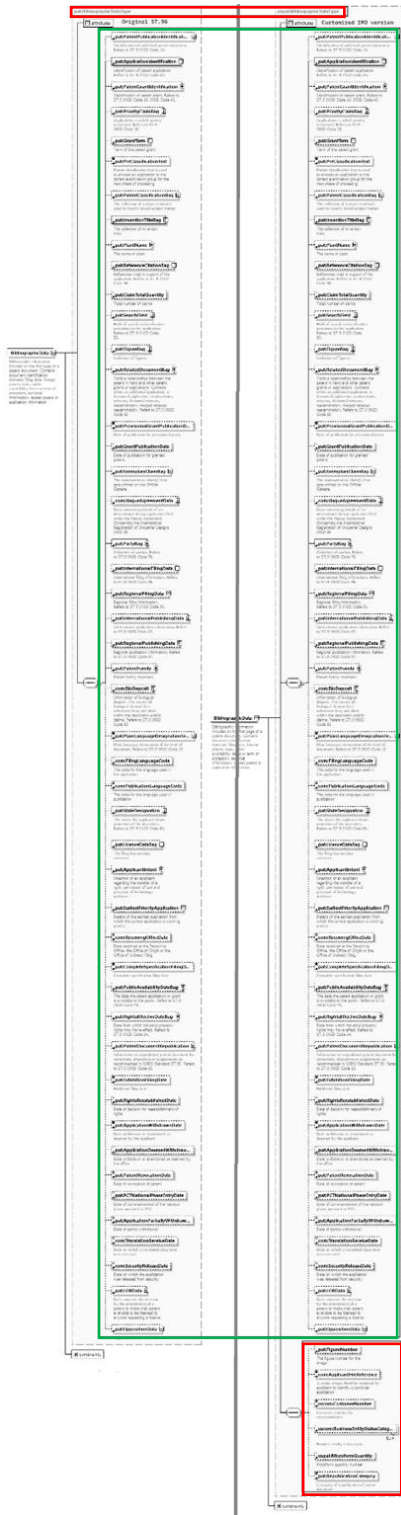
12. The final content model design compared to ST.96 copy is shown below:

Figure 22: uspat: BibliographicData: customized versus official

2.8. Remove an 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_V4_01.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
<?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`.

```xml
    <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Common"
schemaLocation="Common_V4_01.xsd"/>
    <xsd:import
namespace="http://www.wipo.int/standards/XMLSchema/ST96/Trademark"
schemaLocation="TrademarkApplication_V4_01.xsd"/>
```

4. Define `ApplicationCategoryType` as indicated below.

```xml
<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.

```xml
<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>
```

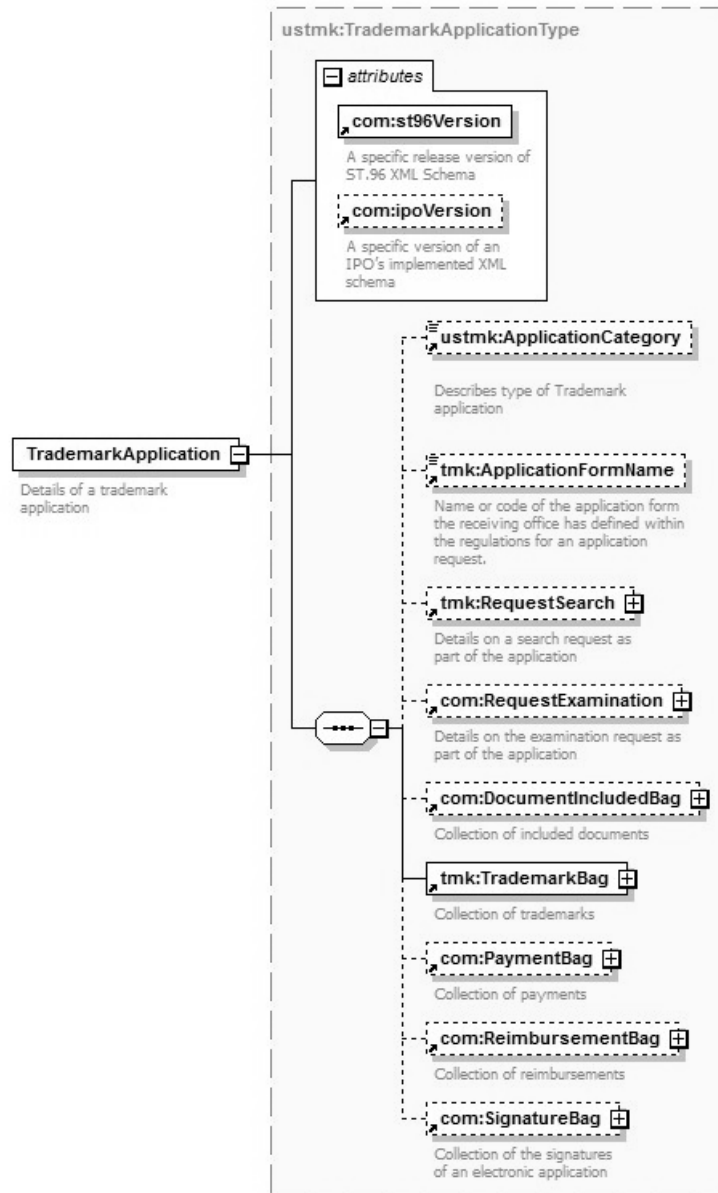8.   The final content model design is shown below:

Figure 23: ustmk: TrademarkApplication

[Annex VI follows]