



### WCO XML Schema Customization Guidelines

#### 1. Characteristics of the Sample XML Schemas

Sample XML schemas for WCO Data Model Version 3 are provided to customs administrations for reference in constructing their own schemas. These sample XML schemas are built using the Russian Doll model approach, which allows easy customization of the schemas through trimming off unnecessary class / class attributes to suit the specific requirements of individual customs administrations.

The sample XML schemas have made use of UN/CEFACT Unqualified Data Type XML Schema to represent the Core Component Technical Specifications (CTS) Core Data Types of the WCO data elements, thereby facilitating interoperability between WCO XML instance documents derived from these schemas with instance documents derived from UN/CEFACT XML schemas and UBL(Universal Business Language) XML schemas.

The sample XML schemas also make use of a Data Set (DS) schema as the building block. The DS schema defines each WCO data element in a named type (named complex type or named simple type). This ensures that all the XML leaf elements in the sample XML schemas must be WCO data elements.

The illustrations provided in these guidelines are based on the XML tool “Altova XML Spy”. Users may adjust the instructions in order to apply the method in their own tools. In fact a simple text editor can also be used to carryout the method described in these guidelines, which is also illustrated below.

#### **Purpose of the Guidelines**

The sample XML schemas are derived from WCO Data Model class diagrams which represent B2G/G2B documents involved in particular customs procedures. As the B2G/G2B overall declaration/response model contains the maximum set of common data elements used by all customs administrations, not all data elements in each (Business to Government)B2G / (Government to Business) G2B document will be needed by an individual customs administration. Those extra data elements will become XML elements not used in the XML schema and may lead to unnecessary confusion. Besides, individual customs administration may need to restrict the cardinality of class or class attribute to reflect their local requirements, e.g. local regulation stipulates that only one border transport means information in a Cargo Report Import procedure is needed.

The purpose of this document is to illustrate how individual customs administrations can make reference to and customize the sample XML schemas to suit their specific



needs, by means of trimming off unnecessary classes/class attributes, and modifying the cardinality of classes/class attributes.

### How Class and Class Attribute are represented in the Sample XML Schema

In the sample XML schema, a class is represented by a non-leaf XML element whereas a class attribute is represented by a leaf XML element. Figure 1 shows how these are represented using the graphical features of an XSD Editor<sup>1</sup> software and Figure 2 shows the representation when using a Text Editor.

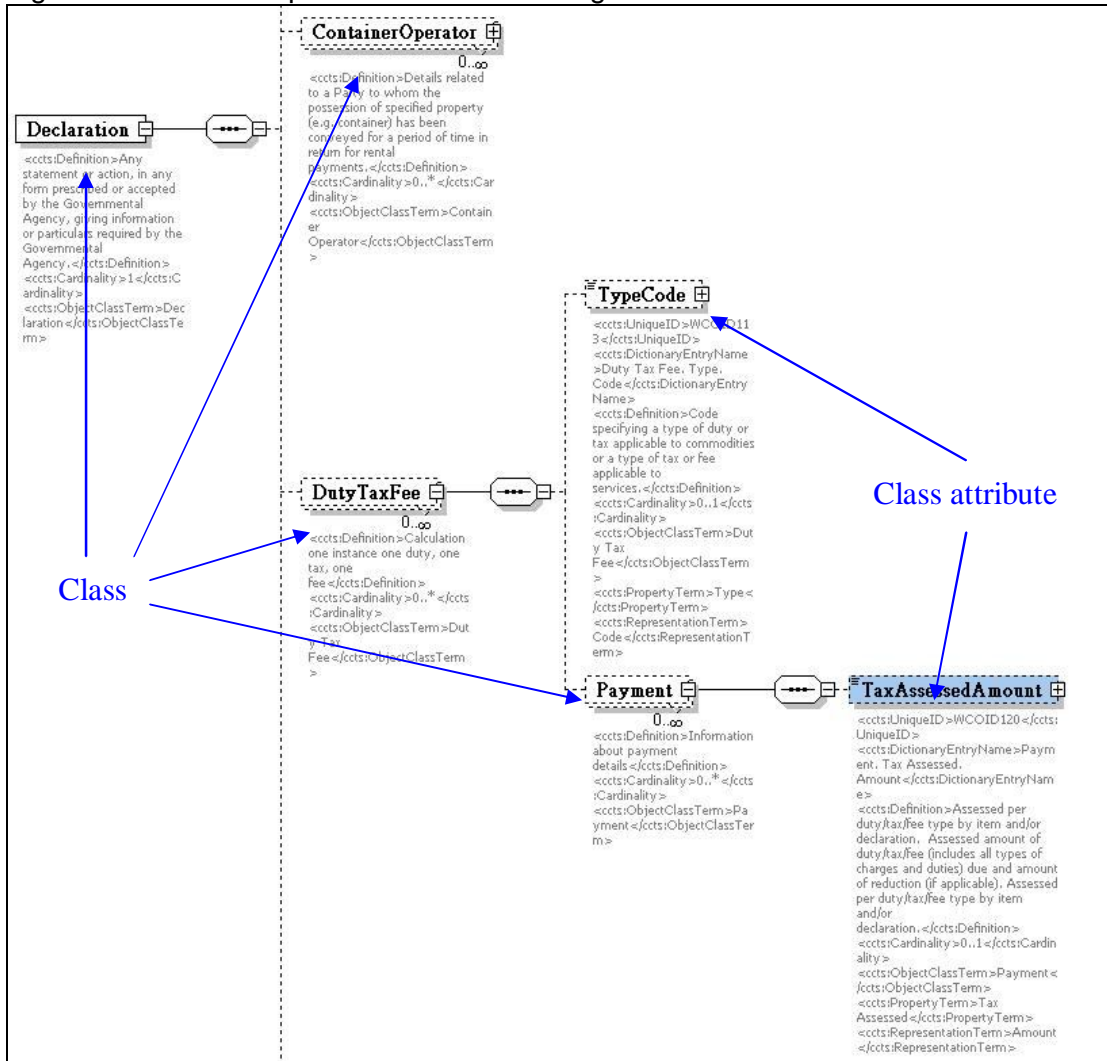


Figure 1

<sup>1</sup> XSD editor is a software for creating XML Schemas .

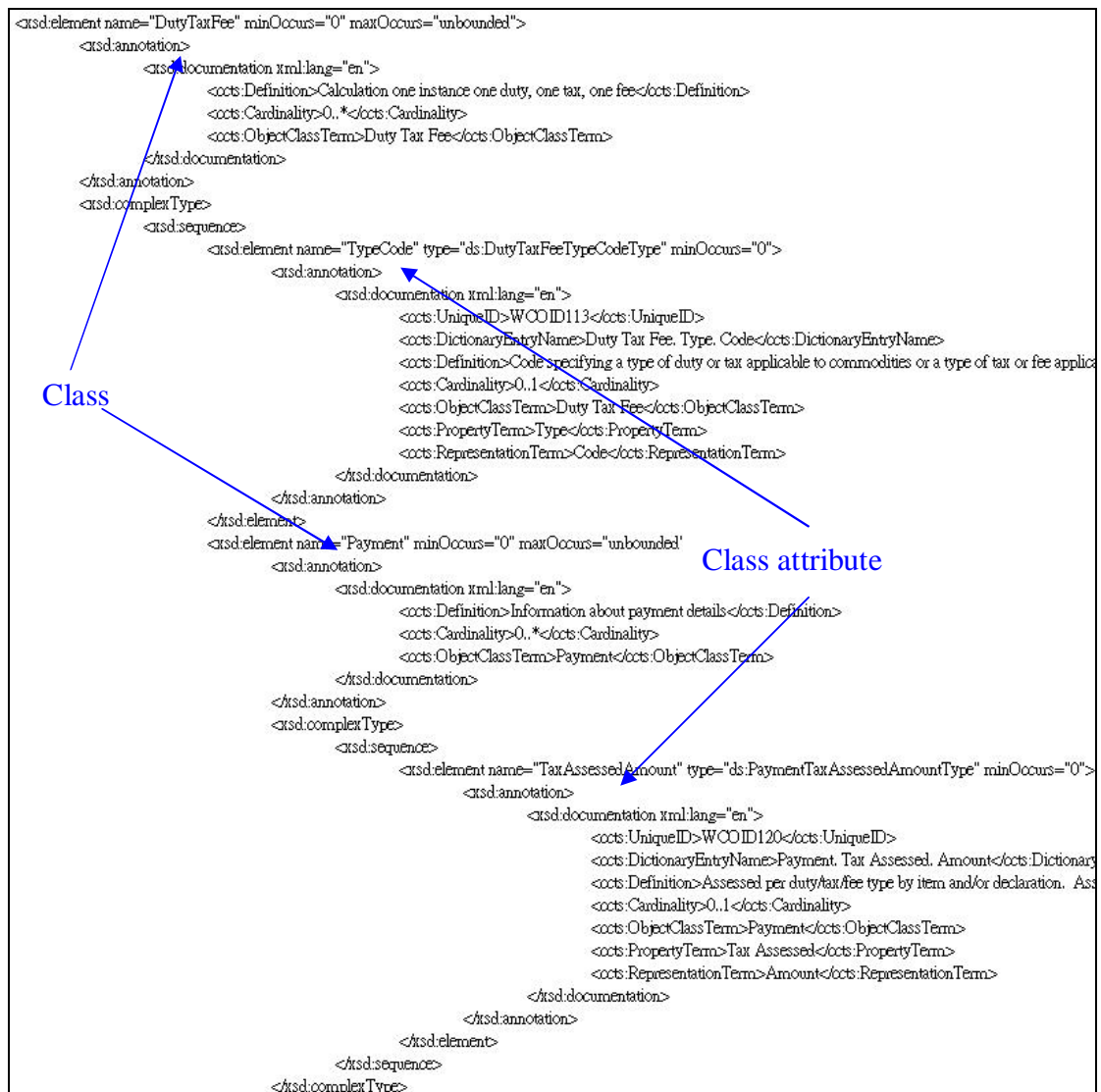


Figure 2

### Customizing the Sample XML Schema

After determining the requirements of their XML messages, individual customs administrations can use the following three operations to customize the sample XML schema to match their requirements. The three operations include: (1) trim class operation, (2) trim class attribute operation, and (3) modify cardinality operation. The following sections will illustrate how to perform these operations using an XSD Editor (graphical view), and then illustrate how these can be performed using a Text Editor. Nevertheless, readers can also use other suitable tools to carry out the operations.

#### (i) Customization using the graphical view of an XSD Editor.

##### Trim class (non-leaf XML element) operation

1. Open the XML schema with XSD Editor in the graphical view/ tree view.
2. Browse to the XML element representing the class and highlight it by clicking the XML element as shown in Figure 3.

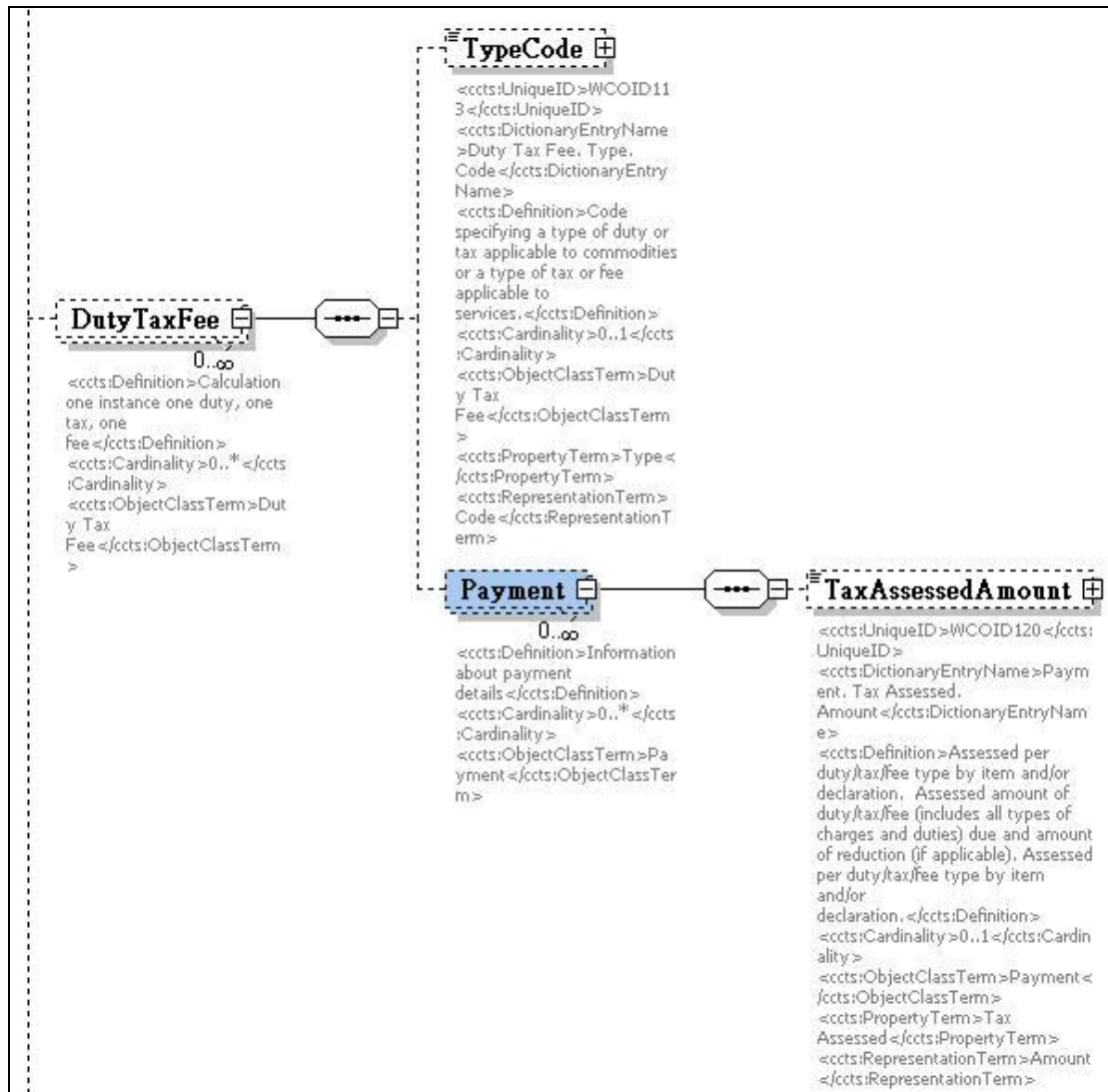


Figure 3

3. Press delete key to complete the operation as shown in Figure 4.

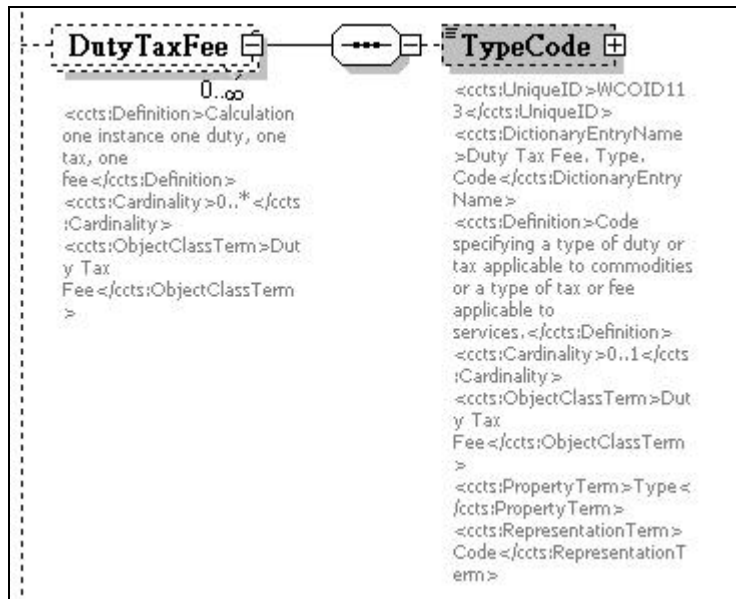


Figure 4

Trim class attribute (leaf XML element) operation

1. Open the XML schema with XSD Editor Graphical view/ tree view.
2. Browse to the XML element representing the class attribute and highlight it by clicking the XML element as shown in Figure 5.

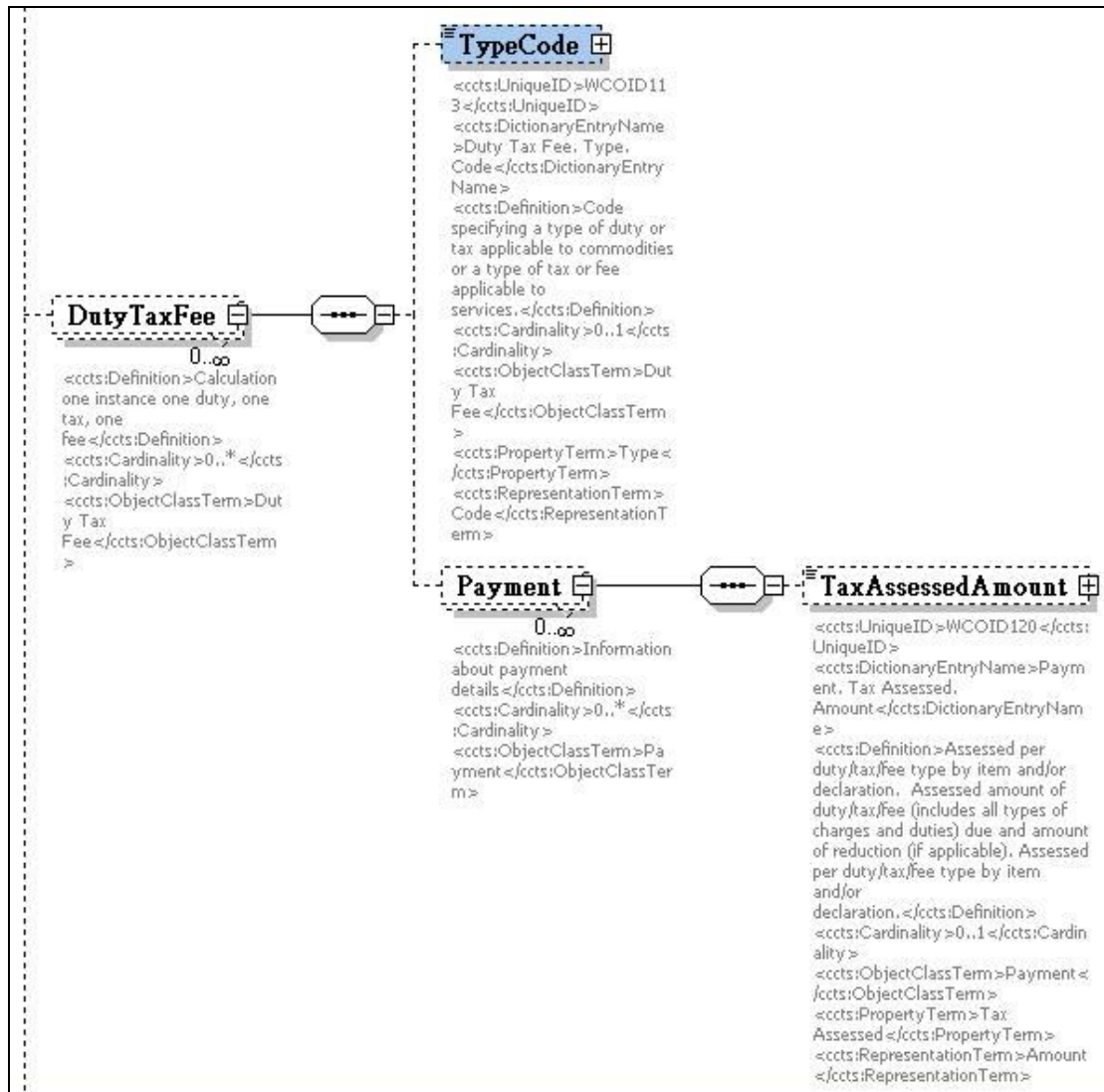


Figure 5

3. Press delete key to complete the operation as shown in Figure 6.

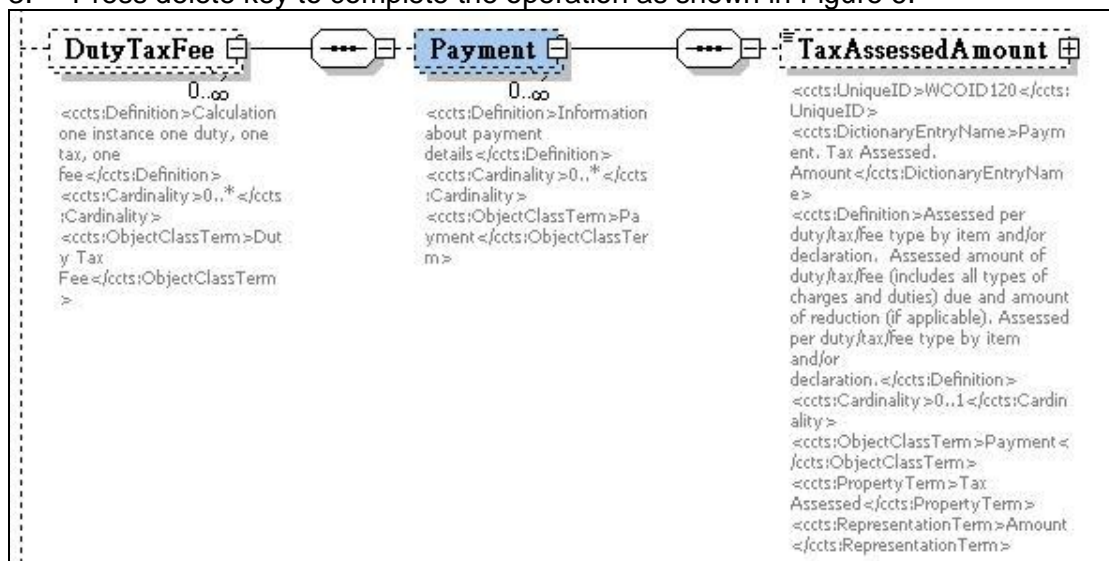






Figure 6

Modify cardinality operation

1. Open the XML schema with XSD Editor in the graphical/ tree view.
2. Browse to the XML element representing the class/class attribute and highlight it by clicking the XML element as shown in Figure 7.
3. Change the value of minOcc and maxOcc in the Details Window as circled in Figure 7.

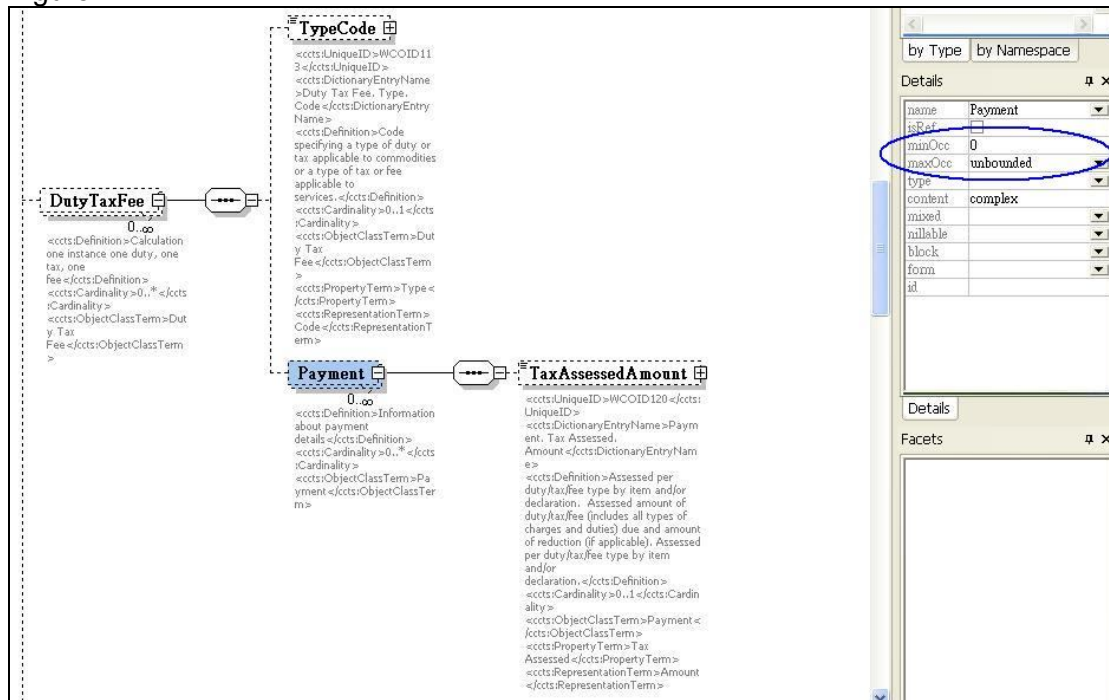


Figure 7

Note: The value of minOcc must be smaller than or equal to the value of maxOcc. For compatibility, the value of minOcc should be larger than or equal to the original value whereas the value of maxOcc should be smaller than or equal to the original value.

**Customization using Text Editor**

Trim class (non-leaf XML element) operation

1. Open the XML schema with Text Editor.
2. Search the XML element which represents the class.
3. Select the text between <xsd:element ...> and the corresponding </xsd:element> which should be at the same level of the <xsd:element ...>, as shown in Figure 8.



```
<xsd:complexType>
  <xsd:sequence>
    <xsd:element name="TypeCode" type="ds:DutyTaxFeeTypeCodeType" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation xml:lang="en">
          <ccts:UniqueID>WCOID113</ccts:UniqueID>
          <ccts:DictionaryEntryName>Duty Tax Fee. Type. Code</ccts:DictionaryEntryName>
          <ccts:Definition>Code specifying a type of duty or tax applicable to co
          <ccts:Cardinality>0..1</ccts:Cardinality>
          <ccts:ObjectClassTerm>Duty Tax Fee</ccts:ObjectClassTerm>
          <ccts:PropertyTerm>Type</ccts:PropertyTerm>
          <ccts:RepresentationTerm>Code</ccts:RepresentationTerm>
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="Payment" minOccurs="0" maxOccurs="unbounded">
      <xsd:annotation>
        <xsd:documentation xml:lang="en">
          <ccts:Definition>Information about payment details</ccts:Definition>
          <ccts:Cardinality>0..*</ccts:Cardinality>
          <ccts:ObjectClassTerm>Payment</ccts:ObjectClassTerm>
        </xsd:documentation>
      </xsd:annotation>
      <xsd:complexType>
        <xsd:sequence>
          <xsd:element name="TaxAssessedAmount" type="ds:PaymentTaxAssessedAmount" minOccurs="0" maxOccurs="unbounded">
            <xsd:annotation>
              <xsd:documentation xml:lang="en">
                <ccts:UniqueID>WCOID120</ccts:UniqueID>
                <ccts:DictionaryEntryName>Payment. Tax Assessed Amount</ccts:DictionaryEntryName>
                <ccts:Definition>Assessed per duty/tax/fee type
                <ccts:Cardinality>0..1</ccts:Cardinality>
                <ccts:ObjectClassTerm>Payment</ccts:ObjectClassTerm>
                <ccts:PropertyTerm>Tax Assessed</ccts:PropertyTerm>
                <ccts:RepresentationTerm>Amount</ccts:RepresentationTerm>
              </xsd:documentation>
            </xsd:annotation>
          </xsd:element>
        </xsd:sequence>
      </xsd:complexType>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
```

Figure 8

4. Press delete key to complete the operation as shown in Figure 9.





```
<xsd:element name="DutyTaxFee" minOccurs="0" maxOccurs="unbounded">
  <xsd:annotation>
    <xsd:documentation xml:lang="en">
      <ccts:Definition>Calculation one instance one duty, one tax, one fee</ccts:Definition>
      <ccts:Cardinality>0..* </ccts:Cardinality>
      <ccts:ObjectClassTerm>Duty Tax Fee</ccts:ObjectClassTerm>
    </xsd:documentation>
  </xsd:annotation>
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="TypeCode" type="ds:DutyTaxFeeTypeCodeType" minOccurs="0">
        <xsd:annotation>
          <xsd:documentation xml:lang="en">
            <ccts:UniqueID>WCOID113</ccts:UniqueID>
            <ccts:DictionaryEntryName>Duty Tax Fee. Type. Code</ccts:Dicti
            <ccts:Definition>Code specifying a type of duty or tax applicable t
            <ccts:Cardinality>0..1 </ccts:Cardinality>
            <ccts:ObjectClassTerm>Duty Tax Fee</ccts:ObjectClassTerm>
            <ccts:PropertyTerm>Type</ccts:PropertyTerm>
            <ccts:RepresentationTerm>Code</ccts:RepresentationTerm>
          </xsd:documentation>
        </xsd:annotation>
      </xsd:element>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
<xsd:element name="GovernmentProcedure" minOccurs="0" maxOccurs="unbounded">
```

Figure 9

Trim class attribute (leaf XML element) operation

1. Open the XML schema with Text Editor.
2. Search the XML element which represents the class attribute.
3. Select the text between <xsd:element ...> and the corresponding </xsd:element> which should be at the same level of the <xsd:element ...>, as shown in Figure 10.



```
<xsd:element name="DutyTaxFee" minOccurs="0" maxOccurs="unbounded">
  <xsd:annotation>
    <xsd:documentation xml:lang="en">
      <ccts:Definition>Calculation one instance one duty, one tax, one fee</ccts:Definition>
      <ccts:Cardinality>0..*</ccts:Cardinality>
      <ccts:ObjectClassTerm>Duty Tax Fee</ccts:ObjectClassTerm>
    </xsd:documentation>
  </xsd:annotation>
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="TypeCode" type="ds:DutyTaxFeeTypeCodeType" minOccurs="0">
        <xsd:annotation>
          <xsd:documentation xml:lang="en">
            <ccts:UniqueID>WCOID113</ccts:UniqueID>
            <ccts:DictionaryEntryName>Duty Tax Fee. Type. Code</ccts:Dicti
            <ccts:Definition>Code specifying a type of duty or tax applicable t
            <ccts:Cardinality>0..1</ccts:Cardinality>
            <ccts:ObjectClassTerm>Duty Tax Fee</ccts:ObjectClassTerm>
            <ccts:PropertyTerm>Type</ccts:PropertyTerm>
            <ccts:RepresentationTerm>Code</ccts:RepresentationTerm>
          </xsd:documentation>
        </xsd:annotation>
      </xsd:element>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
<xsd:element name="Payment" minOccurs="0" maxOccurs="unbounded">
```

Figure 10

4. Press delete key to complete the operation as shown in Figure 11.

```
<xsd:element name="DutyTaxFee" minOccurs="0" maxOccurs="unbounded">
  <xsd:annotation>
    <xsd:documentation xml:lang="en">
      <ccts:Definition>Calculation one instance one duty, one tax, one fee</ccts:Definition>
      <ccts:Cardinality>0..*</ccts:Cardinality>
      <ccts:ObjectClassTerm>Duty Tax Fee</ccts:ObjectClassTerm>
    </xsd:documentation>
  </xsd:annotation>
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="Payment" minOccurs="0" maxOccurs="unbounded">
```

Figure 11

Modify cardinality operation

1. Open the XML schema with Text Editor.
2. Search the XML element representing the class/class attribute.
3. Change the value of minOccurs and maxOccurs, as circled in Figure 12.



```
<xsd:element name="DutyTaxFee" minOccurs="0" maxOccurs="unbounded">
  <xsd:annotation>
    <xsd:documentation xml:lang="en">
      <ccts:Definition>Calculation one instance one duty, one tax, one fee</ccts:Definition>
      <ccts:Cardinality>0..*</ccts:Cardinality>
      <ccts:ObjectClassTerm>Duty Tax Fee</ccts:ObjectClassTerm>
    </xsd:documentation>
  </xsd:annotation>
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="TypeCode" type="ds:DutyTaxFeeTypeCodeType" minOccurs="0">
        <xsd:annotation>
          <xsd:documentation xml:lang="en">
            <ccts:UniqueID>WCOID113</ccts:UniqueID>
            <ccts:DictionaryEntryName>Duty Tax Fee. Type. Code</ccts:Dicti
            <ccts:Definition>Code specifying a type of duty or tax applicable t
            <ccts:Cardinality>0..1</ccts:Cardinality>
            <ccts:ObjectClassTerm>Duty Tax Fee</ccts:ObjectClassTerm>
            <ccts:PropertyTerm>Type</ccts:PropertyTerm>
            <ccts:RepresentationTerm>Code</ccts:RepresentationTerm>
          </xsd:documentation>
        </xsd:annotation>
      </xsd:element>
      <xsd:element name="Payment" minOccurs="0" maxOccurs="unbounded">
        <xsd:annotation>
          <xsd:documentation xml:lang="en">
            <ccts:Definition>Information about payment details</ccts:Definitio
            <ccts:Cardinality>0..*</ccts:Cardinality>
            <ccts:ObjectClassTerm>Payment</ccts:ObjectClassTerm>
          </xsd:documentation>
        </xsd:annotation>
        <xsd:complexType>
          <xsd:sequence>
            <xsd:element name="TaxAssessedAmount" type="ds:PaymentTax
```

Figure 12

Note: The value of minOccurs must be smaller or equal to the value of maxOccurs. For compatibility, the value of minOccurs should be larger than or equal to the original value whereas the value of maxOccurs should be smaller than or equal to the original value. There will be no minOccurs/maxOccurs XML attribute when the occurrence is 1.

X---X---X