



SOA-EERP Business Quality of Service Version 1.0

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Related work:

This specification is related to:

- SOA-EERP Business Rating of Service specification, Version 1.0,
<http://docs.oasis-open.org/soa-eerp/rt/v1.0/SOA-EERP-Rating-Specification.pdf>
- SOA-EERP Business Service Level Agreement specification, Version 1.0,
<http://docs.oasis-open.org/soa-eerp/sla/v1.0/SOA-EERP-BSLA-Specification.pdf>

This document is one of three closely related specifications, SOA-EERP Business Quality of Service (bQoS), SOA-EERP Business Rating (bRating) and SOA-EERP Business Service Level Agreement (bSLA) which need to be understood in combination.

Declared XML Namespace(s):

<http://docs.oasis-open.org/ns/soa-eerp/bqos/200903>

Abstract:

This document specifies the XML vocabulary for business quality of service (bQoS), one of three Specifications for end-to-end resource planning (EERP). Business quality of service describes the business-related characteristics or attributes of a service.

Status:

This document was last revised by the SOA-EERP TC on the above date. The level of approval is also listed above. Check the “Latest Version” or “Latest Approved Version” location noted above for possible later revisions of this document.

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1 Introduction

This document is the specification for Business Quality of Service (bQoS) for End-to-End Resource Planning (EERP), an XML vocabulary by which a business application may communicate selected characteristics of the service it provides.

According to OASIS Reference Model for Service Oriented Architecture [SOA-RM], the Service Oriented Architecture (SOA) is a paradigm for organizing and utilizing distributed capabilities that may be under the control of different ownership domains. The service within SOA is a mechanism to enable access to one or more capabilities, where the access is provided using a prescribed interface and is exercised consistent with constraints and policies as specified by the service description. This specification further defines the Business Quality of Service for the services that is defined in SOA-RM, within the EERP technology. The applications of this specification are any kind of business services, and they are not limited to only Web Services.

EERP applies the well-known technique for service discovery and optimization in a novel way to improve business results. It models the business process and the range of potential services, and then guides the selection and deployment of services based on the end-to-end business value.

Modeling the business characteristics of a service is a prerequisite for estimating the business value of the process that uses those services. The business characteristics of the service defined in this bQoS specification will enable EERP to determine the varieties of optimization to be supported, and to select optimal end-to-end solution.

In contrast to the QoS in the software/IT world, where the message is network/system oriented measurement indicates that deals with network performance and system availability, the contents of bQoS in this specification is business oriented measurement indicators that deals with business characteristics of a service, such as price, performance, and quality.

1.1 Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

1.1.1 Notational Conventions

This specification uses the following syntax to define outlines for detailed elements:

- The syntax appears as an XML instance, but values in italics indicate data types instead of literal values.
- Characters are appended to elements and attributes to indicate cardinality:
 - "?" (0 or 1)
 - "*" (0 or more)
 - "+" (1 or more)
- The character "|" is used to indicate a choice between alternatives.
- The characters "(" and ")" are used to indicate that contained items are to be treated as a group with respect to cardinality or choice.
- The characters "[" and "]" are used to call out references and property names.
- Ellipses (i.e., "...") indicate points of extensibility. Additional children and/or attributes MAY be added at the indicated extension points but MUST NOT contradict the semantics of the parent and/or owner, respectively. By default, if a receiver does not recognize an extension, the receiver

- 43 SHOULD ignore the extension; exceptions to this processing rule, if any, are clearly indicated
 44 below.
- 45 • XML namespace prefixes (see Table 1) are used to indicate the namespace of the element being
 46 defined.
- 47 Elements and Attributes defined by this specification are referred to in the text of this document using
 48 XPath 1.0 expressions. Extensibility points are referred to using an extended version of this syntax:
- 49 • An element extensibility point is referred to using {any} in place of the element name. This
 50 indicates that any element name can be used, from any namespace other than the namespace of
 51 this specification.
 - 52 • An attribute extensibility point is referred to using @{any} in place of the attribute name. This
 53 indicates that any attribute name can be used, from any namespace other than the namespace of
 54 this specification.
- 55 Extensibility points in the exemplar may not be described in the corresponding text.

56 1.2 Normative References

- 57 **[RFC2119]** S. Bradner, *Key words for use in RFCs to Indicate Requirement Levels*,
 58 <http://www.ietf.org/rfc/rfc2119.txt>, IETF RFC 2119, March 1997.
- 59 **[SOAP]** W3C Note, "SOAP: Simple Object Access Protocol 1.1", 08 May 2000.
 60 <http://www.w3.org/TR/2000/NOTE-SOAP-20000508/>
- 61 **[SOAP12]** W3C Recommendation, "SOAP 1.2 Part 1: Messaging Framework", 24 June
 62 2003.
 63 <http://www.w3.org/TR/2003/REC-soap12-part1-20030624/>
- 64 **[URI]** T. Berners-Lee, R. Fielding, L. Masinter, "Uniform Resource Identifiers (URI):
 65 Generic Syntax", RFC 3986, MIT/LCS, Day Software, Adobe Systems, January
 66 2005.
 67 <http://www.ietf.org/rfc/rfc3986.txt>
- 68 **[UBL-20]** OASIS Standard, "Universal Business Language (UBL) v2.0", 12 December 2006
 69 <http://docs.oasis-open.org/ubl/os-UBL-2.0/UBL-2.0.pdf>
- 70 **[UBL-20-cbc]** Universal Business Language (UBL) v2.0, Common Basic Components, October
 71 2006
 72 <http://docs.oasis-open.org/ubl/os-UBL-2.0/xsd/common/UBL-CommonBasicComponents-2.0.xsd>
- 73 **[UBL-20-udt]** Universal Business Language (UBL) v2.0. Unqualified Data Type, February 2005
 74 <http://docs.oasis-open.org/ubl/os-UBL-2.0/xsd/common/UnqualifiedDataTypeSchemaModule-2.0.xsd>
- 75 **[XML-Schema1]** W3C Recommendation, "XML Schema Part 1: Structures Second Edition", 28
 76 October 2004.
 77 <http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/>
- 78 **[XML-Schema2]** W3C Recommendation, "XML Schema Part 2: Datatypes Second Edition", 28
 79 October 2004.
 80 <http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/>
- 81 **[ISO8601]** ISO Standard 8601:2004(E), "Data elements and interchange formats –
 82 Information interchange - Representation of dates and times", Third edition,
 83 December 2004
 84 http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=40874
- 85 **[CEFACT]** CEFACT – Core components specifications, Recommendation 9 January
 86 1996.
 87 http://www.unece.org/cefact/recommendations/rec09/rec09_ecetrd203.pdf

91 **[SOA-RM]** OASIS Standard, “OASIS Reference Model for Service Oriented Architecture
92 1.0”, 12 October 2006
93 <http://docs.oasis-open.org/soa-rm/v1.0/soa-rm.pdf>

94 **1.2.1 Reference**

95 In this document reference is made to some basic elements and data types in [UBL 2.0](#), in the following
96 schema:

- 97 • UBL 2.0 Common Basic Components [[UBL-20-cbc](#)], UBL-CommonBasicComponents-2.0.xsd
- 98 • UBL 2.0 Unqualified Data Type [[UBL-20-udt](#)], UnqualifiedDataTypeSchemaModule-2.0.xsd

99

100 This specification is designed to work with the general Web Services framework including WSDL service
101 descriptions, and [SOAP](#) message structure and message processing model. The XML vocabulary
102 defined in bQoS should be applicable to any version of [SOAP](#).

103 **1.3 Non-Normative References**

104 None.

105 2 Quality Measurement Indicators

106 The Business Quality of Service (bQoS) of the XML vocabulary is defined in XML Schema format that
107 defines many quality measurement indicators.

108 2.1 Namespaces

109 The XML namespace URI that MUST be used by implementations of this specification is:

110 `http://docs.oasis-open.org/ns/soa-eerp/bqos/200903`

111 Table 1 lists XML namespaces that are used in this specification. The choice of any namespace prefix is
112 arbitrary and not semantically significant.

113 *Table 1: Prefixes and XML Namespaces used in this specification.*

Prefix	Namespace	Specification(s)
S	http://schemas.xmlsoap.org/soap/envelope/	[SOAP]
S12	http://www.w3.org/2003/05/soap-envelope	[SOAP12]
xsd	http://www.w3.org/2001/XMLSchema	[XML-Schema1], [XML-Schema2]
cbc	urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2	[UBL-20-cbc]
udt	urn:un:unece:uncefact:data:specification:UnqualifiedDataTypesSchemaModule:2	[UBL-20-udt]
ccts	urn:un:unece:uncefact:documentation:2	[UBL-20]
bqos	http://docs.oasis-open.org/ns/soa-eerp/bqos/200903	This specification

114 2.2 Schema Files

115 A normative copy of the XML Schema [XML-Schema1, XML-Schema2] description for this specification
116 can be retrieved from the following address:

117 `http://docs.oasis-open.org/soa-eerp/bqos/v1.0/EERP-bQoS-cd04.xsd`

118 2.3 BQoS Element

119 The BQoS is the root element for the Business Quality of Service schema. It can have one or more of the
120 following elements:

- 121 • BQoSPrice indicates price or cost for the service
- 122 • BQoSPerformance indicates time to complete the service, or in the alternative, throughput and
123 latency.
- 124 • BQoSQualities indicates additional properties and attributes.
- 125 • Any additional elements for quality of service can be either:
 - 126 ○ Technical aspect such as service availability, accessibility, integrity, reliability, and
127 security; or
 - 128 ○ Business aspects such as regulatory, geo location, operation hours, and payment
129 methods.

130 **Syntax**

```
131 <bqos:BQoS xmlns:bqos="..." ...>  
132 <bqos:BQoSPrice ...>bqos:BQoSPriceType</bqos:BQoSPrice>  
133 <bqos:BQoSPerformance ...>bqos:BQoSPerformanceType</bqos:BQoSPerformance> ?  
134 <bqos:BQoSQualities...>bqos:BQoSQualitiesType</bqos:BQoSQualities> ?  
135 ...  
136 </bqos:BQoS>
```

137 The following describes the attributes and elements listed in the schema outlined above:

138 /bqos:BQoS

139 The root element for bQoS

140 /bqos:BQoS/bqos:BQoSPrice

141 Price aspect of the service, including the price and other optional elements, see Section 3 for
142 more details.

143 /bqos:BQoS/bqos:BQoSPrice/@{any}

144 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
145 to the BQoSPrice element in the future. Unrecognized attributes MAY cause a fault or be silently
146 ignored.

147 /bqos:BQoS/bqos:BQoSPerformance

148 Performance aspect of the service that has time period for the time to complete the whole
149 service, the throughput for duration to complete number of jobs, or optional elements, see Section
150 4 for more details.

151 /bqos:BQoS/bqos:BQoSPerformance/@{any}

152 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
153 to the BQoSPerformance element in the future. Unrecognized attributes MAY cause a fault or be
154 silently ignored.

155 /bqos:BQoS/bqos:BQoSQualities

156 Quality aspect of the service that has additional properties and attributes to describe the quality of
157 the service, see Section 5 for more details.

158 /bqos:BQoS/bqos:BQoSQualities/@{any}

159 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
160 to the BQoSQualities element in the future. Unrecognized attributes MAY cause a fault or be
161 silently ignored.

162 /bqos:BQoS/@{any}

163 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
164 to the BQoS element in the future. Unrecognized attributes MAY cause a fault or be silently
165 ignored.

166 /bqos:BQoS/bqos:BQoSExtension

167 BQoSExtension element is an optional element that keeps different (extensible) elements to be
168 specified in the future.

169 /bqos:BQoS/bqos:BQoSExtension/{any}

170 This is an extensibility mechanism to allow different (extensible) elements to be specified in the
171 future. Unrecognized elements MAY cause a fault or be silently ignored.

172 3 BQoSPrice

173 BQoSPrice, the Price element for bQoS, describes the price for the service. Price can be expressed in
174 various ways.

175 There SHOULD be one BQoSPrice element present in the business quality of service.

176 Syntax

```
177 <bqos:BQoSPrice xmlns:bqos="..." ...>  
178   <bqos:Price>bqos:PriceType  
179     <bqos:Unit unitCode="clm66411:UnitCodeContentType"  
180   >cbc:BaseUnitMeasureType</bqos:Unit> ?  
181     <bqos:Amount currencyID="  
182   clm54217:CurrencyCodeContentType">cbc:AmountType</bqos:Amount>  
183   </bqos:Price>  
184   ...  
185 </bqos:BQoSPrice>
```

186 The following describes the attributes and elements listed in the schema outlined above:

187 /bqos:BQoS/bqos:BQoSPrice

188 Price aspects of the service, including the price and other optional elements

189 /bqos:BQoS/bqos:BQoSPrice/bqos:Price

190 Price element that represent the single price for BQoSPrice

191 /bqos:BQoS/bqos:BQoSPrice/bqos:Price/bqos:Unit

192 Number of units is a optional element that includes the unit of measurement using
193 cbc:BaseUnitMeasureType

194 /bqos:BQoS/bqos:BQoSPrice/bqos:Price/bqos:Unit/@unitCode

195 Unit of measurement in cbc:BaseUnitMeasureType. It is a required attribute using
196 clm66411:unitCodeContentType,
197 xmlns:clm66411="urn:un:unece:uncefact:odelist:specification:66411:2001"

198 /bqos:BQoS/bqos:BQoSPrice/bqos:Price/bqos:Amount

199 Amount is a required element in the Price element. It uses cbc:AmountType from UBL that has a
200 required currencyID attribute for currency code.

201 /bqos:BQoS/bqos:BQoSPrice/bqos:Price/bqos:Amount/@currencyID

202 Currency ID in cbc:AmountType. It is a required attribute using
203 clm54217:CurrencyCodeContentType,
204 xmlns:clm54217="urn:un:unece:uncefact:odelist:specification:54217:2001"

205 /bqos:BQoS/bqos:BQoSPrice/{any}

206 This is an extensibility mechanism to allow different (extensible) price elements to be specified in
207 the future. Unrecognized elements MAY cause a fault or be silently ignored.

208 Example

209 The following non-normative example illustrates the use of bQoS price element. It describes 10 units for
210 price of \$171.50 US dollar:

```
211 (001) <?xml version="1.0" encoding="utf-8"?>  
212 (002) <BQoSPrice xmlns="..." ...>  
213 (003)   <Price>  
214 (004)     <Unit unitCode="EA">10</Unit>  
215 (005)     <Amount currencyID="USD">171.50</Amount>  
216 (006)   </Price>
```


218

4 BQoSPerformance

219 BQoSPerformance element for bQoS is the quality of service measured in the time to complete, or
220 alternatively as throughput and latency.

221 There MAY be zero or one BQoSPerformance element present in the business quality of service.

222 Syntax

```
223 <bqos:BQoSPerformance xmlns:bqos="..." ...>  
224   <bqos:TimePeriod ... >bqos:TimePeriodType  
225     <bqos:Duration  
226       unitCode="clm66411:UnitCodeContentType">cbc:DurationMeasureType</bqos:Duration  
227     >  
228       <bqos:Latency  
229         unitCode=="clm66411:UnitCodeContentType">cbc:DurationMeasureType</bqos:Latency  
230       > ?  
231         <bqos:StartTime>udt:DateTimeType</bqos:StartTime> ?  
232       </bqos:TimePeriod> |  
233       <bqos:Throughput ...>  
234         <bqos:Quantity unitCode="clm66411:UnitCodeContentType"> ...  
235       </bqos:Quantity>  
236         <bqos:Duration unitCode="clm66411:UnitCodeContentType">  
237         cbc:DurationMeasureType</bqos:Duration>  
238         <bqos:Latency unitCode="clm66411:UnitCodeContentType">  
239         cbc:DurationMeasureType</bqos:Latency> ?  
240       </bqos:Throughput> |  
241       ...  
242 </bqos:BQoSPerformance>
```

243 The following describes the attributes and elements listed in the schema outlined above:

244 /bqos:BQoS/bqos:BQoSPerformance

245 Performance aspect of the service that has time period for the time to complete the whole service
246 job, the throughput for duration to complete number of jobs, or an optional elements.

247 /bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod

248 TimePeriod is the time period to complete the service, including the duration to complete the
249 service, and optional elements for start time and latency.

250 /bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:Duration

251 Duration element is a required element in the TimePeriod element which is the duration to
252 complete the service. It uses cbc:DurationMeasureType from UBL that has a required unitCode
253 attribute for unit of measurement on the time.

254 /bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:Duration/@unitCode

255 Unit of measurement in cbc:BaseUnitMeasureType. It is a required attribute for the duration time,
256 such as Second, Minute, Hour, Day, Week, etc, using clm66411:unitCodeContentType,
257 xmlns:clm66411="urn:un:unece:unefact:codelist:specification:66411:2001".

258 /bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:StartTime

259 StartTime is an optional element for the date and time to start the service. It uses
260 udt:DateTimeType which is in UTC time format [ISO8601].

261 /bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:Latency

262 Latency is an optional element that describes the time delay before a service is expected to
263 begin. It uses cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit
264 of measurement on the time.

265 /bqos:BQoS/bqos:BQoSPerformance/bqos:TimePeriod/bqos:Latency/@unitCode
 266 Unit of measurement in cbc:BaseUnitMeasureType. It is a required attribute for the duration time,
 267 such as Second, Minute, Hour, Day, Week, etc, using clm66411:unitCodeContentType,
 268 xmlns:clm66411="urn:un:unece:uncefact:codelist:specification:66411:2001".

269 /bqos:BQoS/bqos:BQoSPerformance/bqos:Throughput
 270 Throughput of the performance which is measured by is the amount of work that a service can
 271 provide in a given time period. It includes the quantity of the item and the duration to complete the
 272 work.

273 /bqos:BQoS/bqos:BQoSPerformance/bqos:Throughput/bqos:Duration
 274 Duration element is a required element in the Throughput element. This is the duration to
 275 complete the service. It uses cbc:DurationMeasureType from UBL that has a required unitCode
 276 attribute for unit of measurement on the time.

277 /bqos:BQoS/bqos:BQoSPerformance/bqos:Throughput/bqos:Duration/@unitCode
 278 Unit of measurement in cbc:BaseUnitMeasureType. It is a required attribute for the duration time,
 279 such as Second, Minute, Hour, Day, Week, etc, using clm66411:unitCodeContentType,
 280 xmlns:clm66411="urn:un:unece:uncefact:codelist:specification:66411:2001"

281 /bqos:BQoS/bqos:BQoSPerformance/bqos:Throughput/bqos:Quantity
 282 Quantity is a required element in the Throughput element. It is the numbers for the throughput,
 283 with an attribute of unit of measurement, such as EA, pounds, cubic-feet, etc.

284 /bqos:BQoS/bqos:BQoSPerformance/bqos:Throughput/bqos:Latency
 285 Latency is an optional element for the time delay for starting the service. It uses
 286 cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit of
 287 measurement on the time.

288 /bqos:BQoS/bqos:BQoSPerformance/bqos:Throughput/bqos:Latency/@unitCode
 289 Unit of measurement in cbc:BaseUnitMeasureType. It is a required attribute for the duration time,
 290 such as Second, Minute, Hour, Day, Week, etc, using clm66411:unitCodeContentType,
 291 xmlns:clm66411="urn:un:unece:uncefact:codelist:specification:66411:2001".

292 /bqos:BQoS/bqos:BQoSPerformance/{any}
 293 This is an extensibility mechanism to allow different (extensible) performance or time elements to
 294 be specified in the future. Unrecognized elements MAY cause a fault or be silently ignored.

295 Examples

296 The following non-normative example illustrates the use of bQoS Performance element using the
 297 Throughput element instead of TimePeriod element. It describes the throughput of 10 units per day:

```
298
299 (001) <?xml version="1.0" encoding="utf-8"?>
300 (002) <BQoSPerformance xmlns="..." ...>
301 (003)   <Throughput>
302 (004)     <Duration unitCode="DAY">1</Duration>
303 (005)     <Quantity unitCode="EA">10.0</Quantity>
304 (006)   </Throughput>
305 (007) </BQoSPerformance>
```

306

307 The following non-normative example illustrates the use of bQoS Performance element using the
 308 TimePeriod element. It describes the 8 hours of the duration, and can be started on October 17, 2009,
 309 9:30:47.02 Zulu time:

```
310
311 (001) <?xml version="1.0" encoding="utf-8"?>
```

```
312 (002) <BQoSPerformance xmlns="..." ...>
313 (003)   <TimePeriod>
314 (004)     <Duration unitCode="HUR">8</Duration>
315 (005)     <StartTime>2009-10-17T09:30:47.0Z</StartTime>
316 (006)   </TimePeriod>
317 (007) </BQoSPerformance>
```

318

5 BQoSQualities

319 The BQoSQualities, the Quality elements for bQoS, describes additional properties and attributes for the
320 service. While any quality name/value can be asserted by a Service Provider to represent the quality of
321 the service, this specification is not addressing issues of namespace management for qualities beyond
322 the three pre-defined EERP namespaces.

323 There SHOULD be zero or one BQoSQualities element present in the business quality of service.

324 Syntax

```
325 <bqos:BQoSQualities xmlns:bqos="..." ...>  
326   <bqos:Property>bqos:PropertyType  
327     <bqos:PropertyName ...>bqos:PropertyNameType</bqos:PropertyName>  
328     <bqos:PropertyValue ...>bqos:PropertyValue</bqos:PropertyValue> ?  
329   </bqos:Property> +  
330   ...  
331 </bqos:BQoSQualities>
```

332 The following describes the attributes and elements listed in the schema outlined above:

333 /bqos:BQoS/bqos:BQoSQualities

334 Quality aspect of the service is measured in terms of additional properties and attributes. It has a
335 list of property for BQoSQualities and other optional elements.

336 /bqos:BQoS/bqos:BQoSQualities/bqos:Property

337 Property element is for additional property or attribute for quality measurement of the service in
338 bQoS that has name and value pair to describe the quality of the service.

339 /bqos:BQoS/bqos:BQoSQualities/bqos:PropertyName

340 Property name is a required element for the name in the name and value pair in the Property
341 element. It uses bqos:PropertyNameType which is a cbc:NamType from UBL that has a optional
342 languageID attribute for language code.

343 /bqos:BQoS/bqos:BQoSQualities/bqos:Property/bqos:PropertyName/@languageID

344 Language ID is an optional attribute in the PropertyName element, using xsd:language type. The
345 value can be those defined in urn:un:unece:uncefact:odelist:specification:5639:1988.

346 /bqos:BQoS/bqos:BQoSQualities/bqos:Property/bqos:PropertyName/@{any}

347 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
348 to the PropertyName element in the future. This can be the namespace and the format for the
349 Property. Unrecognized attributes MAY cause a fault or be silently ignored.

350 /bqos:BQoS/bqos:BQoSQualities/bqos:Property/bqos:PropertyValue

351 The property value is an optional element for the value in the name and value pair in the Property
352 element. It uses bqos:PropertyValueType which is a cbc:NamType from UBL that has a optional
353 languageID attribute for language code.

354 /bqos:BQoS/bqos:BQoSQualities/bqos:Property/bqos:PropertyValue/@languageID

355 Language ID is an optional attribute in the PriceValue element, using xsd:language type. The
356 value can be those defined in urn:un:unece:uncefact:odelist:specification:5639:1988.

357 /bqos:BQoS/bqos:BQoSQualities/bqos:Property/@{any}

358 This is an extensibility mechanism to allow additional attributes, based on schemas, to be added
359 to the Property element in the future. Unrecognized attributes MAY cause a fault or be silently
360 ignored.

361 /bqos:BQoS/bqos:BQoSQualities/{any}

362 This is an extensibility mechanism to allow different (extensible) properties or attribute elements
363 to be specified in the future. Unrecognized elements MAY cause a fault or be silently ignored.
364 For example, one or more /bqos:BQoS/bqos:BQoSQualities/Performance:QualityAssertion
365 elements can be placed in here for the Service Provider to assert the specific Qualities of its
366 services.

367 **Example**

368 The following non-normative example illustrates the use of bQoS price element. It describes the Class is
369 Golden and it has “Network Connection” as additional property for this service:

```
370 (001) <?xml version="1.0" encoding="utf-8"?>  
371 (002) <BQoSQualities xmlns="..." ...>  
372 (003)   <Property>  
373 (004)     <PropertyName languageID="EN">Class</PropertyName>  
374 (005)     <PropertyValue>Golden</PropertyValue>  
375 (006)   </Property>  
376 (003)   <Property>  
377 (004)     <PropertyName languageID="EN">Network Connection</PropertyName>  
378 (006)   </Property>  
379 (007) </BQoSQualities>
```


380

6 BQoS Examples

381 The examples in this section are non-normative.

6.1 Service Price with a Batch of Products Examples

383 This bQoS example will show the following quality indicators:

- 384 1. The service price is CNY 120000 per service, including 1000 gas-meters for one batch.
- 385 2. The throughput is usually 1 week or 7 days for the service. In another words, it will cost 1 week or
386 7 days to provide and delivery 1000 gas-meters as one batch of product.
- 387 3. The service has additional attributes to provide the IC card gas-meters integrated with iron IC-
388 card box for the quality indicators.

389 Example

390 The following example illustrates the whole bQoS document for quality indicators:

```
391 (1) <?xml version="1.0" encoding="UTF-8"?>
392 (2) <bqos:BQoS xmlns:bqos="..." ... >
393 (3)   <bqos:BQoSPrice
394 (4)     <bqos:Price>
395 (5)       <bqos:Unit unitCode="EA">1000</bqos:Unit>
396 (6)       <!-- CNY: Chinese Yuan -->
397 (7)       <bqos:Amount currencyID="CNY">120000</bqos:Amount>
398 (8)     </bqos:Price>
399 (9)   </bqos:BQoSPrice>
400 (10)  <bqos:BQoSPerformance>
401 (11)    <bqos:Throughput>
402 (12)      <!-- delivery: 1 week -->
403 (13)      <bqos:Duration unitCode="DAY">7</bqos:Duration>
404 (14)      <!-- batch production, generally 1000 sets a batch -->
405 (15)      <bqos:Quantity>1000</bqos:Quantity>
406 (16)      <bqos:Latency unitCode="DAY">0</bqos:Latency>
407 (17)    </bqos:Throughput>
408 (18)  </bqos:BQoSPerformance>
409 (19)  <bqos:BQoSQualities>
410 (20)    <bqos:Property>
411 (21)      <bqos:PropertyName languageID="zh-cn">外壳</bqos:PropertyName>
412 (22)      <bqos:PropertyValue languageID="zh-cn">铁壳</bqos:PropertyValue>
413 (23)    </bqos:Property>
414 (24)    <bqos:Property>
415 (25)      <bqos:PropertyName languageID="en">MeterType</bqos:PropertyName>
416 (26)      <bqos:PropertyValue languageID="en">IC card gas-
417 meter</bqos:PropertyValue>
418 (27)    </bqos:Property>
419 (28)    <bqos:Property>
420 (29)      <bqos:PropertyName languageID="en">IC-Card-Box</bqos:PropertyName>
421 (30)      <bqos:PropertyValue
422 languageID="en">integrated</bqos:PropertyValue>
423 (31)    </bqos:Property>
424 (32)  </bqos:BQoSQualities>
425 (33) </bqos:BQoS>
```

426 6.2 Storage Service Examples

427 This bQoS example will show a storage service with the following quality indicators:

- 428 1. The storage service price is 600 Euro in total.
- 429 2. The time period for the storage service is 4 day, starting from July 15, 2009, 16:30, UTC time.

430 3. The service has additional attributes of internet tracking and temperature from 70 to 85 degree
431 Fahrenheit the quality indicators.

432 **Example**

433 The following example illustrates the storage service bQoS for quality indicators:

```
434 (1) <?xml version="1.0" encoding="UTF-8"?>
435 (2) <bqos:BQoS xmlns:bqos="..." ... >
436 (3)   <BQoSPrice>
437 (4)     <Price>
438 (5)       <Amount currencyID="EUR">600</Amount>
439 (6)     </Price>
440 (7)   </BQoSPrice>
441 (8)   <BQoSPerformance>
442 (9)     <TimePeriod>
443 (10)      <Duration unitCode="DAY">4</Duration>
444 (11)      <StartTime>2009-07-15T16:30:00.0Z</StartTime>
445 (12)    </TimePeriod>
446 (13)   </BQoSPerformance>
447 (14)   <BQoSQualities>
448 (15)     <Property>
449 (16)       <PropertyName>Internet Tracking</PropertyName>
450 (17)     </Property>
451 (18)     <Property>
452 (19)       <PropertyName>Temperature</PropertyName>
453 (20)       <PropertyValue>70F-78F</PropertyValue>
454 (21)     </Property>
455 (22)   </BQoSQualities>
456 (23) </bqos:BQoS>
```

457

7 Conformance

458 An implementation conforms to this specification if it satisfies all of the MUST or REQUIRED level
459 requirements defined within this specification. A SOAP Node MUST NOT use the XML namespace
460 identifier for this specification (listed in Section 1.1) within SOAP Envelopes unless it is compliant with this
461 specification.

462 This specification references a number of other specifications (listed in Section 1.4.2). In order to comply
463 with this specification, an implementation MUST implement the portions of referenced specifications
464 necessary to comply with the required provisions of this specification. Additionally, the implementation of
465 the portions of the referenced specifications that are specifically cited in this specification MUST comply
466 with the rules for those portions as established in the referenced specification.

467 Normative text within this specification takes precedence over normative outlines (as described in section
468 1.4.1), which in turn take precedence over the XML Schema [XML Schema Part 1, Part 2] and WSDL
469 [WSDL 1.1] descriptions. That is, the normative text in this specification further constrains the schemas
470 and/or WSDL that are part of this specification; and this specification contains further constraints on the
471 elements defined in referenced schemas.

472 The minimum set of information exchange for bQoS that would allow conforming applications to
473 exchange information and satisfy the conformance should at least to have
474 /bqos:BQoS/bqos:BQoSPrice/bqos:Price/bqos:Amount element, like this:

```
475 (001) <?xml version="1.0" encoding="utf-8"?>  
476 (002) <BQoS xmlns="http://docs.oasis-open.org/ns/soa-eerp/bqos/200903">  
477 (003)   <BQoSPrice>  
478 (004)     <Price>  
479 (005)       <Amount currencyID="USD">0.0</Amount>  
480 (006)     </Price>  
481 (007)   </BQoSPrice>  
482 (008) </BQoS>
```

483 A nearly empty artifact does not conform to this specification. The following are three non-conform
484 examples.

485 Non-conform example 1:

```
486 (001) <?xml version="1.0" encoding="utf-8"?>  
487 (002) <BQoS xmlns="http://docs.oasis-open.org/ns/soa-eerp/bqos/200903">  
488 (003)   <BQoSPrice />  
489 (004) </BQoS>
```

490 Non-conform example 2:

```
491 (001) <?xml version="1.0" encoding="utf-8"?>  
492 (002) <BQoS xmlns="http://docs.oasis-open.org/ns/soa-eerp/bqos/200903">  
493 (003)   < BQoSPerformance />  
494 (004) </BQoS>
```

495 Non-conform example 3:

```
496 (001) <?xml version="1.0" encoding="utf-8"?>  
497 (002) <BQoS xmlns="http://docs.oasis-open.org/ns/soa-eerp/bqos/200903">  
498 (003)   <BQoSPrice>  
499 (004)     <Price />
```

```
500 (005) </BQoSPrice>
501 (006) </BQoS>
```

502 This specification defines a number of extensions; compliant services are NOT REQUIRED to implement
503 those extensions defined in this specification. However, if a service implements an aspect of the
504 specification, it MUST comply with the requirements specified (e.g. related "MUST" statements). If an
505 implementation silently ignores unrecognized attributes where any attribute is allowed, or silently ignores
506 unrecognized elements where any element is allowed, it should be considered as an interoperable
507 implementation.

508 **A. Acknowledgements**

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511 **Participants:**

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514	William Cox,	Individual
515	Andy Lee	Changfeng Open Standards Platform Software Alliance
516	Carl Mattocks	Individual
517	Yulin Xu	Changfeng Open Standards Platform Software Alliance
518	Paul Yang	Changfeng Open Standards Platform Software Alliance
519	James Zhili Zhang	TIBCO Software Inc.
520	Hong Zhou	Changfeng Open Standards Platform Software Alliance

B. XML Schema

522 Note: The separate machine readable schema document, listed on Section 2.2, is normative. The text
523 included here is non-normative.

```

524 <?xml version="1.0" encoding="UTF-8"?>
525 <!--
526 Document Type:      EERP-bQoS CD04
527 Create On:         09/12/2010
528
529 -->
530 <!-- ===== xsd:schema Element With Namespaces Declarations ===== -->
531 <!-- ===== Copyright Notice ===== -->
532 <!--
533 OASIS takes no position regarding the validity or scope of any
534 intellectual property or other rights that might be claimed to pertain
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574 EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY
575 WARRANTY THAT THE USE OF THE INFORMATION HEREIN
576 WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED
577 WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A
578 PARTICULAR PURPOSE.
579 -->
580 <xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns="http://docs.oasis-
581 open.org/ns/soa-eerp/bqos/200903" xmlns:bqos="http://docs.oasis-open.org/ns/soa-eerp/bqos/200903"
582 xmlns:cbc="urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2"
583 xmlns:udt="urn:un:unece:uncefact:data:specification:UnqualifiedDataTypesSchemaModule:2"
584 xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="http://docs.oasis-open.org/ns/soa-
585 erp/bqos/200903" elementFormDefault="qualified" attributeFormDefault="unqualified"
586 version="1.0">
587 <!-- ===== Imports ===== -->
588 <xsd:import namespace="urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2"
589 schemaLocation="http://docs.oasis-open.org/ubl/os-UBL-2.0/xsd/common/UBL-CommonBasicComponents-
590 2.0.xsd"/>
591 <xsd:import
592 namespace="urn:un:unece:uncefact:data:specification:UnqualifiedDataTypesSchemaModule:2"
593 schemaLocation="http://docs.oasis-open.org/ubl/os-UBL-
594 2.0/xsd/common/UnqualifiedDataTypeSchemaModule-2.0.xsd"/>
595 <!-- ===== Root Element ===== -->

```

```

596 <xsd:element name="BQoS" type="BQoSType">
597   <xsd:annotation>
598     <xsd:documentation>Root element of Business Quality of Service (bQoS)</xsd:documentation>
599   </xsd:annotation>
600 </xsd:element>
601 <!-- ===== Element Declarations ===== -->
602 <xsd:element name="Amount" type="cbc:AmountType">
603   <xsd:annotation>
604     <xsd:documentation>Amount element</xsd:documentation>
605   </xsd:annotation>
606 </xsd:element>
607 <xsd:element name="BQoSPerformance" type="BQoSPerformanceType">
608   <xsd:annotation>
609     <xsd:documentation>Performance aspect of the service that has time period for the time to
610 complete the whole service job, the throughput for duration to complete number of jobs, or an
611 optional elements. </xsd:documentation>
612   </xsd:annotation>
613 </xsd:element>
614 <xsd:element name="BQoSPrice" type="BQoSPriceType">
615   <xsd:annotation>
616     <xsd:documentation>The Price element for bQoS, price aspects of the service, describes the
617 price for the service, including the price and other optional elements. </xsd:documentation>
618   </xsd:annotation>
619 </xsd:element>
620 <xsd:element name="BQoSQualities" type="BQoSQualitiesType">
621   <xsd:annotation>
622     <xsd:documentation>Quality aspect of the service is measured in terms of additional
623 properties and attributes. It has a list of property for BQoSQualities and other optional
624 elements. </xsd:documentation>
625   </xsd:annotation>
626 </xsd:element>
627 <xsd:element name="Duration" type="cbc:DurationMeasureType">
628   <xsd:annotation>
629     <xsd:documentation>Duration element is the duration to complete the service. It uses
630 cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit of measurement
631 on the time. </xsd:documentation>
632   </xsd:annotation>
633 </xsd:element>
634 <xsd:element name="Latency" type="cbc:DurationMeasureType">
635   <xsd:annotation>
636     <xsd:documentation>Latency describes the time delay before a service is expected to begin.
637 It uses cbc:DurationMeasureType from UBL that has a required unitCode attribute for unit of
638 measurement on the time. </xsd:documentation>
639   </xsd:annotation>
640 </xsd:element>
641 <xsd:element name="Price" type="PriceType">
642   <xsd:annotation>
643     <xsd:documentation>Price element for bQoS that is the single price </xsd:documentation>
644   </xsd:annotation>
645 </xsd:element>
646 <xsd:element name="Property" type="PropertyType">
647   <xsd:annotation>
648     <xsd:documentation>Property element is for additional property or attribute for quality
649 measurement of the service in bQoS that has name and value pair to describe the quality of the
650 service.</xsd:documentation>
651   </xsd:annotation>
652 </xsd:element>
653 <xsd:element name="PropertyName" type="PropertyNameType">
654   <xsd:annotation>
655     <xsd:documentation>Property name is a required element for the name in the name and value
656 pair in the Property element. It uses bqos:PropertyNameType which is a cbc:NamType from UBL that
657 has a optional languageID attribute for language code. </xsd:documentation>
658   </xsd:annotation>
659 </xsd:element>
660 <xsd:element name="PropertyValue" type="PropertyValueType">
661   <xsd:annotation>
662     <xsd:documentation>Value of the Property or Attribute</xsd:documentation>
663   </xsd:annotation>
664 </xsd:element>
665 <xsd:element name="Quantity" type="cbc:BaseQuantityType">
666   <xsd:annotation>
667     <xsd:documentation>Quantity is the numbers for the throughput, with an attribute of unit of
668 measurement, such as EA, pounds, cubic-feet, etc. </xsd:documentation>
669   </xsd:annotation>
670 </xsd:element>
671 <xsd:element name="StartTime" type="udt:DateTimeType">
672   <xsd:annotation>
673     <xsd:documentation>StartTime is the date and time to start the
674 service.</xsd:documentation>
675   </xsd:annotation>
676 </xsd:element>
677 <xsd:element name="TimePeriod" type="TimePeriodType">

```

```

678     <xsd:annotation>
679       <xsd:documentation>TimePeriod is the time period to complete the service, including the
680 duration to complete the service, and optional elements for start time and latency
681 </xsd:documentation>
682 </xsd:annotation>
683 </xsd:element>
684 <xsd:element name="Throughput" type="ThroughputType">
685   <xsd:annotation>
686     <xsd:documentation>The performance is measured by is the amount of work that a service can
687 provide in a given time period. </xsd:documentation>
688   </xsd:annotation>
689 </xsd:element>
690 <xsd:element name="Unit" type="cbc:BaseUnitMeasureType">
691   <xsd:annotation>
692     <xsd:documentation>Number of units with unit of measurement</xsd:documentation>
693   </xsd:annotation>
694 </xsd:element>
695 <!-- Extension -->
696 <xsd:element name="BQoSExtension">
697   <xsd:annotation>
698     <xsd:documentation>Additional bQoS elements </xsd:documentation>
699   </xsd:annotation>
700   <xsd:complexType mixed="true">
701     <xsd:choice minOccurs="0" maxOccurs="unbounded">
702       <xsd:any processContents="skip" minOccurs="0" maxOccurs="unbounded"/>
703     </xsd:choice>
704     <xsd:attribute name="optional" type="xsd:boolean" use="optional" default="true"/>
705   </xsd:complexType>
706 </xsd:element>
707 <!-- ===== Type Definitions ===== -->
708 <xsd:complexType name="BQoSPerformanceType">
709   <xsd:annotation>
710     <xsd:documentation>Complex type for the performance aspect of the service
711 bQoS</xsd:documentation>
712   </xsd:annotation>
713   <xsd:choice>
714     <xsd:element ref="TimePeriod">
715       <xsd:annotation>
716         <xsd:documentation>TimePeriod is the time period to complete the service, including the
717 duration to complete the service, and optional elements for start time and
718 latency.</xsd:documentation>
719       </xsd:annotation>
720     </xsd:element>
721     <xsd:element ref="Throughput"/>
722     <xsd:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
723   </xsd:choice>
724   <xsd:anyAttribute namespace="##any" processContents="lax"/>
725 </xsd:complexType>
726 <xsd:complexType name="BQoSPriceType">
727   <xsd:annotation>
728     <xsd:documentation>Complex type for the price/cost aspect of the service
729 bQoS</xsd:documentation>
730   </xsd:annotation>
731   <xsd:sequence>
732     <xsd:element ref="Price">
733       <xsd:annotation>
734         <xsd:documentation>Price element that represent the single price for
735 BQoSPrice.</xsd:documentation>
736       </xsd:annotation>
737     </xsd:element>
738     <xsd:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
739   </xsd:sequence>
740   <xsd:anyAttribute namespace="##any" processContents="lax"/>
741 </xsd:complexType>
742 <xsd:complexType name="BQoSQualitiesType">
743   <xsd:annotation>
744     <xsd:documentation>Complex type for the Quality related aspects of the service BQoS
745 </xsd:documentation>
746   </xsd:annotation>
747   <xsd:sequence>
748     <xsd:element ref="Property" maxOccurs="unbounded">
749       <xsd:annotation>
750         <xsd:documentation>Property element is for additional property or attribute for quality
751 measurement of the service in bQoS that has name and value pair to describe the quality of the
752 service.</xsd:documentation>
753       </xsd:annotation>
754     </xsd:element>
755     <xsd:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
756   </xsd:sequence>
757   <xsd:anyAttribute namespace="##any" processContents="lax"/>
758 </xsd:complexType>
759 <xsd:complexType name="BQoSType">

```



```

760     <xsd:annotation>
761     <xsd:documentation>Complex type for the Business QoS</xsd:documentation>
762   </xsd:annotation>
763   <xsd:sequence>
764     <xsd:element ref="BQoSPrice">
765       <xsd:annotation>
766       <xsd:documentation>The Price element for bQoS that describes the price for the service.
767 Price can be expressed in various ways.</xsd:documentation>
768       </xsd:annotation>
769     </xsd:element>
770     <xsd:element ref="BQoSPerformance" minOccurs="0">
771       <xsd:annotation>
772       <xsd:documentation>BQoSPerformance element for bQoS is the quality of service measured
773 in the time to complete, or alternatively as throughput and latency.</xsd:documentation>
774       </xsd:annotation>
775     </xsd:element>
776     <xsd:element ref="BQoSQualities" minOccurs="0">
777       <xsd:annotation>
778       <xsd:documentation>The Quality elements for bQoS that describes additional properties
779 and attributes for the service. It has a list of property for BQoSQualities and other optional
780 elements. </xsd:documentation>
781       </xsd:annotation>
782     </xsd:element>
783     <xsd:element ref="BQoSExtension" minOccurs="0" maxOccurs="unbounded">
784       <xsd:annotation>
785       <xsd:documentation>Other aspects of "quality of business"</xsd:documentation>
786       </xsd:annotation>
787     </xsd:element>
788   </xsd:sequence>
789   <xsd:anyAttribute namespace="##any" processContents="lax"/>
790 </xsd:complexType>
791 <xsd:complexType name="PriceType">
792   <xsd:annotation>
793   <xsd:documentation>Complex type for Pricing or Billing for the service</xsd:documentation>
794   </xsd:annotation>
795   <xsd:sequence>
796     <xsd:element ref="Unit" minOccurs="0">
797       <xsd:annotation>
798       <xsd:documentation>Number of units is a optional element that includes the unit of
799 measurement. </xsd:documentation>
800       </xsd:annotation>
801     </xsd:element>
802     <xsd:element ref="Amount">
803       <xsd:annotation>
804       <xsd:documentation>Amount is a required element in the Price element. It uses
805 cbc:AmountType from UBL that has a required currencyID attribute for currency
806 code.</xsd:documentation>
807       </xsd:annotation>
808     </xsd:element>
809   </xsd:sequence>
810 </xsd:complexType>
811 <xsd:complexType name="PropertyType">
812   <xsd:annotation>
813   <xsd:documentation>Complex type for additional property or attribute for
814 quality</xsd:documentation>
815   </xsd:annotation>
816   <xsd:sequence>
817     <xsd:element ref="PropertyName"/>
818     <xsd:element ref="PropertyValue" minOccurs="0">
819       <xsd:annotation>
820       <xsd:documentation>Value of the Property or Attribute. It uses bqos:PropertyValue
821 which is a cbc:NamType from UBL that has a optional languageID attribute for language code.
822 </xsd:documentation>
823       </xsd:annotation>
824     </xsd:element>
825   </xsd:sequence>
826   <xsd:anyAttribute namespace="##any" processContents="lax"/>
827 </xsd:complexType>
828 <xsd:complexType name="PropertyNameType">
829   <xsd:annotation>
830   <xsd:documentation>Complex type for property or attribute name </xsd:documentation>
831   </xsd:annotation>
832   <xsd:simpleContent>
833     <xsd:extension base="cbc:NameType">
834     <xsd:anyAttribute namespace="##any" processContents="lax"/>
835     </xsd:extension>
836   </xsd:simpleContent>
837 </xsd:complexType>
838 <xsd:complexType name="PropertyValueType">
839   <xsd:annotation>
840   <xsd:documentation>Complex type for property or attribute value. </xsd:documentation>
841   </xsd:annotation>

```

```

842     <xsd:simpleContent>
843       <xsd:extension base="cbc:ValueType"/>
844     </xsd:simpleContent>
845   </xsd:complexType>
846   <xsd:complexType name="QualitiesType">
847     <xsd:annotation>
848       <xsd:documentation>Complex type for Quality elements </xsd:documentation>
849     </xsd:annotation>
850     <xsd:sequence>
851       <xsd:element ref="Property" maxOccurs="unbounded"/>
852       <xsd:any namespace="##other" processContents="lax" minOccurs="0" maxOccurs="unbounded"/>
853     </xsd:sequence>
854     <xsd:anyAttribute namespace="##any" processContents="lax"/>
855   </xsd:complexType>
856   <xsd:complexType name="TimePeriodType">
857     <xsd:annotation>
858       <xsd:documentation>Complex type for Time period </xsd:documentation>
859     </xsd:annotation>
860     <xsd:sequence>
861       <xsd:element ref="Duration">
862         <xsd:annotation>
863           <xsd:documentation>Duration to complete the service. It uses cbc:DurationMeasureType
864             from UBL that has a required unitCode attribute for unit of measurement on the time.
865         </xsd:documentation>
866         </xsd:annotation>
867       </xsd:element>
868       <xsd:element ref="Latency" minOccurs="0">
869         <xsd:annotation>
870           <xsd:documentation>Latency is an optional element that describes the time delay before a
871             service is expected to begin. It uses cbc:DurationMeasureType from UBL that has a required
872             unitCode attribute for unit of measurement on the time. </xsd:documentation>
873         </xsd:annotation>
874       </xsd:element>
875       <xsd:element ref="StartTime" minOccurs="0">
876         <xsd:annotation>
877           <xsd:documentation>StartTime is an optional element for the date and time to start the
878             service. It uses udt:DateTimeType which is in UTC time format .</xsd:documentation>
879         </xsd:annotation>
880       </xsd:element>
881     </xsd:sequence>
882     <xsd:anyAttribute namespace="##any" processContents="lax"/>
883   </xsd:complexType>
884   <xsd:complexType name="ThroughputType">
885     <xsd:annotation>
886       <xsd:documentation>Complex type for the throughput </xsd:documentation>
887     </xsd:annotation>
888     <xsd:sequence>
889       <xsd:element ref="Duration">
890         <xsd:annotation>
891           <xsd:documentation>Duration element is a required element in the Throughput element.
892             This is the duration to complete the service. It uses cbc:DurationMeasureType from UBL that has a
893             required unitCode attribute for unit of measurement on the time. </xsd:documentation>
894         </xsd:annotation>
895       </xsd:element>
896       <xsd:element ref="Quantity">
897         <xsd:annotation>
898           <xsd:documentation>Quantity is the numbers for the throughput, with an attribute of unit
899             of measurement, such as EA, pounds, cubic-feet, etc. The numbers for the throughput, with
900             attribute of Unit of measurement, such as EA, lb, cubic-feet, etc.</xsd:documentation>
901         </xsd:annotation>
902       </xsd:element>
903       <xsd:element ref="Latency" minOccurs="0"/>
904     </xsd:sequence>
905     <xsd:anyAttribute namespace="##any" processContents="lax"/>
906   </xsd:complexType>
907 </xsd:schema>

```

908 **C. Non-Normative Text**

909 None

910

D. Revision History

911

Revision	Date	Editor	Changes Made
0.8	03/02/2009	Szu Chang	Initial draft
0.9	03/09/2009	Szu Chang	Change the syntax to include the data type
WD01	04/15/2009	Szu Chang	Rename draft 0.9 to working draft 0.1
WD02	04/29/2009	Szu Chang	Added whole example and some minor edits
WD03	05/07/2009	Szu Chang	Added issue list and some minor edits. This is to get ready for CD01
WD04	05/17/2009	Szu Chang	Added conformance section
WD05	06/24/2009	Szu Chang	Fixed issues I022, I026, I029, I032, I036, I039, and I045.
WD06	07/03/2009	Szu Chang	Fixed issues I026, I029, I033, I042, I044, I049 and I053.
CD02	07/11/2009	Szu Chang	Changed WD06 to CD02 after approved by TC
CD03	01/06/2010	Szu Chang	Changed NS and fixed URIs from CD02 to CD03
WD08	05/10/2010	Szu Chang	Changed after the public review comments
WD09	06/23/2010	Szu Chang	Changed after the first round of review PR comments
CD04	09/12/2010	Szu Chang	TC approved, changed from WS09 to CD04

912