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Requirements for Collaboration-Protocol Profiles and Collaboration-Protocol Agreements

Version 1.0

ebXML Trading-Partner Team

28 November 2000

1 Status of this Document

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39 **2 Trading Partner Team participants**

40 We would like to recognize the following for their significant participation to the
41 development of this document.

42

43 TBD

44 **3 Table of Contents**

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67 **4 Introduction**

68 **4.1 Summary of Contents of Document**

69 This document defines the requirements on which the Collaboration-Protocol Profiles
70 and Collaboration-Profile Agreements (CPP and CPA) specification will be based. It
71 describes the assumptions and goals for development of the CPP and CPA
72 specification. It then lists the high-level requirements of the CPP and CPA documents
73 and the requirements on the CPP and CPA specification itself. It also lists some
74 possible requirements for later phases of the development of the specification. A
75 glossary is at the end.

76 **4.2 Note on Terminology**

77 In this specification, the term "Party" is used throughout to denote either the owner of
78 a CPP or one of the participants in a CPA. The term "Partner" is used only in contexts
79 where this term is an accepted usage, such as "Trading Partners Team" and "Trading
80 Partner Agreement".

81
82 In this specification, the term "transaction" is used only in contexts in which it refers
83 to the ebXML Business Process metamodel. For other purposes of this specification,
84 the term "message exchange" is used.

86 **4.3 Audience**

87 The target audience for the Requirements specification is the people who are
88 designing the CPP and CPA specification, i.e. the ebXML Trading Partners team.

90 **4.4 Related Documents**

92 **5 Vision**

93 **5.1 Purpose of this Specification**

94 As defined in the ebXML Business-Process Model, a Trading Partner is an entity that
95 engages in commercial transactions with other Trading Partners. Each Partner's
96 capabilities (both commercial/business and technical) to engage in message
97 exchanges with other Partners may be described by a document called a Trading-
98 Partner Profile. The agreed interactions between two Partners may be documented in
99 a document called a Trading-Partner Agreement (TPA). A TPA may be created by
100 computing the intersection of the two Partners' TPPs.

101
102 The message-exchange capabilities of a Party may be described by a Collaboration-
103 Protocol Profile (CPP) within the TPP. The message-exchange agreement between
104 two Parties may be described by a Collaboration-Protocol Agreement (CPA) within
105 the TPA.

106

107 The purpose of this specification is to define the requirements for the CPP and CPA
108 specification that the ebXML Trading Partner team is developing. This specification
109 defines the requirements only for phase 1 of the specification. An additional section
110 lists some ideas for later phases.

111

112 The keywords MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD,
113 SHOULD NOT, RECOMMENDED, MAY, and OPTIONAL, when they appear in
114 this document, are to be interpreted as described in RFC 2119 [Bra97].

115 **5.2 Base Assumptions**

116 Exchange of information between two Parties requires each Party to know the other
117 Party's supported Collaborative Processes and the technology details about how the
118 other sends and receives messages and, in some cases, for the two Parties to reach
119 agreement on some of the details.

120

121 The way each Party can exchange information, in context of a Collaborative Process,
122 can be described by a Collaboration-Protocol Profile (CPP) within a TPP that may be
123 stored in a repository. The agreement between the Parties can be expressed as a
124 Collaboration-Protocol Agreement (CPA).

125 **5.3 Goals**

126 An essential goal for development of an electronic CPA is to ensure interoperability
127 between two Parties even though they may procure application software and run-time
128 support software from different vendors.

129

130 An additional goal is that the specification should enable implementations in which a
131 pair of Parties can:

- 132 • Use built-in or default CPAs when appropriate
- 133 • Swap Party information prior to starting to exchange messages or
- 134 • Install identical copies of a CPA in their run-time systems.

135

136 This assures that they are compatibly configured to exchange messages.

137

138 Message-exchange characteristics described in the Collaboration-Protocol Profiles
139 (PP) and Collaboration-Protocol Agreements (CPA) can be divided into two main
140 types: Message-exchange-related (technology), and Process-related (application).

141

142 Messaging-exchange-related characteristics include such information as:

- 143 • Party identifiers
- 144 • Communication protocol
- 145 • Communication addresses and other communication details
- 146 • Security profiles and parameters
- 147 • General message characteristics
- 148 • Characteristics related to reliable messaging
- 149 • Characteristics related to quality of service

150

151 Process-related characteristics include such information as:

- 152 • Supported Collaborative Processes for a Party
- 153 • Messages that each Party may send to the other
- 154 • Identification of the schema that describes the message that goes with each
- 155 request
- 156 • Rules on the order in which requests can be issued
- 157 • Rules on message latency
- 158 • Constraints on message length

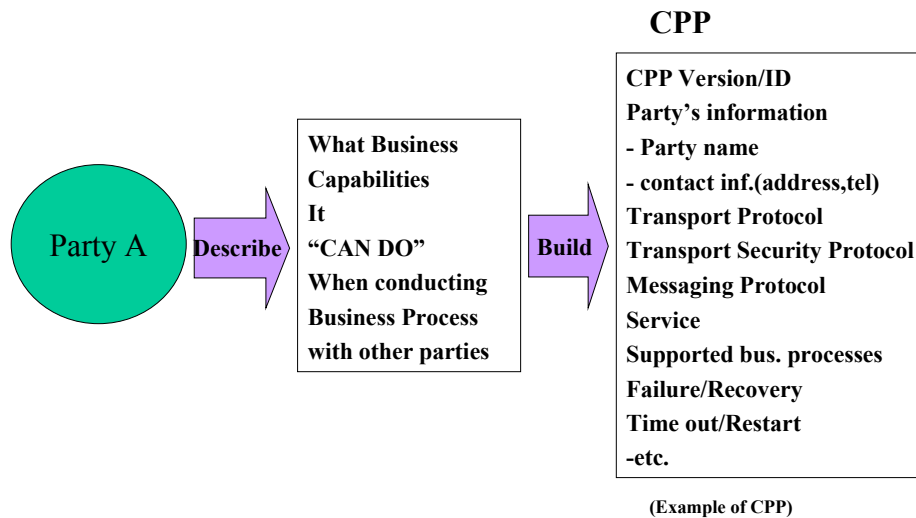
159
 160 While an electronic CPA may be associated with a traditional legal contract,
 161 particularly when used in a business relationship, the electronic CPA itself shall not
 162 include traditional legal terms and conditions.

163
 164 The following figures illustrate how CPPs and CPAs are used.

165
 166 The following figure illustrates forming a CPP. Party A tabulates the information to
 167 be placed in a repository for the discovery process, constructs a CPP that contains this
 168 information, and enters it into a repository.

169

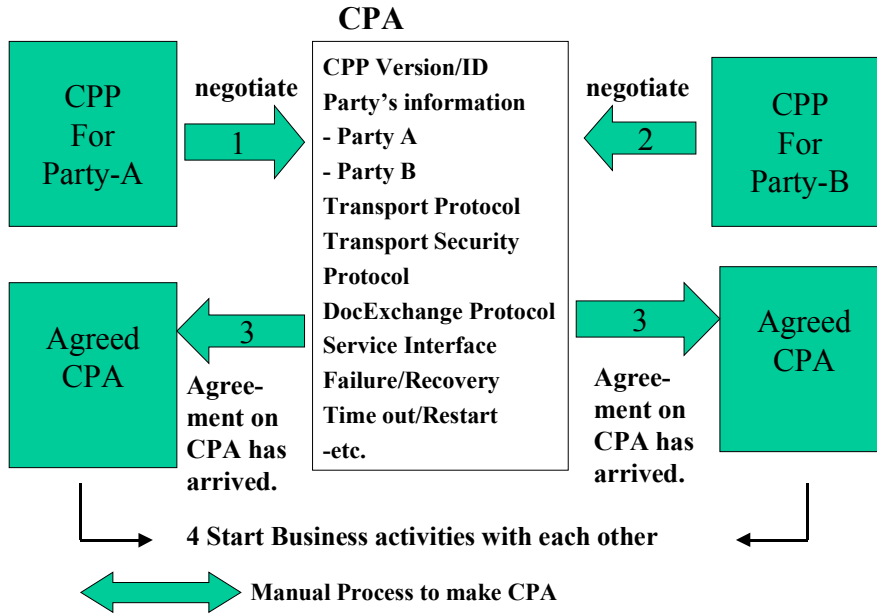
Overview of Collaboration-Protocol Profiles(CPP)



170

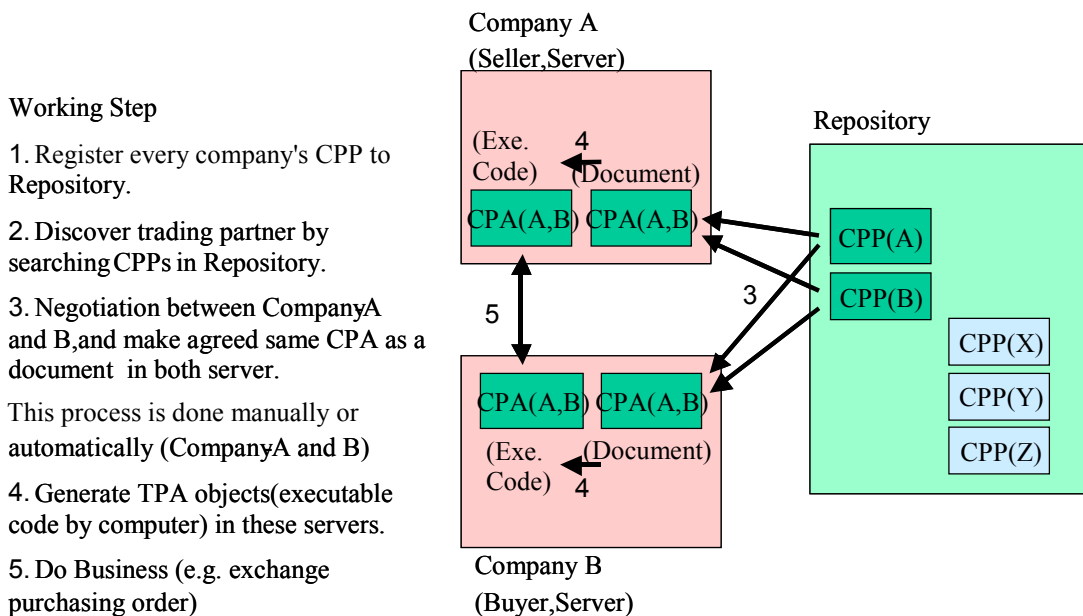
171 In the next figure, party A and party B use their CPPs to construct a CPA by
 172 calculating the intersection of the information in their CPPs. The resulting CPA
 173 defines how the two parties will behave in performing their collaborative process.

Overview of Collaboration-Protocol Agreements(CPA)



174 The final figure illustrates the entire process. The steps are listed at the left.
 175
 176
 177

Overview of Working Architecture of CPP/CPA with Repository



178 **6 Requirements**

179 **6.1 The Specification shall define CPP and CPA documents** 180 **that:**

181

182 **Doc. 1.** Specify the information (in a CPP) about a given Party that the Party
183 wishes to make known to other Parties that may be interested in engaging in a
184 Collaborative Process with this Party.

- 185 • NOTE: If it is necessary for a Party to specify characteristics of the other
186 Party in a Collaborative Process, this may be done by expressing the profile
187 as a CPA template between the Party and an arbitrary Party.

188 **Doc. 2.** Specify the information (in a CPA) that must be shared between Parties in
189 order for those Parties to successfully carry out:

- 190 • a shared Collaborative Process;
- 191 • the exchange of documents over a variety of data communication protocols,
192 that meets the requirements of the TRP, R&R and BP/CC project teams.

193 **Doc. 3.** Describe how :

- 194 • a CPP can be used in a Party Discovery Process.
- 195 • NOTE: Defining the Party Discovery Process itself is not within the scope of
196 the TP team.
- 197 • a CPA specifies how two (or more) Parties shall carry out a Collaborative
198 Process, including the possible use of intermediaries

199 **Doc. 4.** Facilitate the automatic configuration of two (or more) Parties to
200 electronically exchange documents.

201

202 **Doc. 5.** Specify the relationship between a CPP or CPA and a pre-defined model
203 of a Collaborative Process (e.g. RosettaNet PIPs – Partner Interface Processes ---
204 and others).

205 **Doc. 6.** Are independent of the internal processes of any of the Parties.

- 206 • NOTE: The term "internal processes" refers to what are sometimes called
207 "back end processes" such as workflow, enterprise resource planning, and
208 message-exchange systems. These are distinguished from the Collaborative
209 Processes, whose overall definitions and Collaboration Protocol are defined in
210 a CPP visible to both Parties in a CPA.

211 **Doc. 7.** Support the capability for each Party in a 2-Party Collaborative Process to
212 send messages to and receive messages from the other Party.

213 **Doc. 8.** Define processing of error conditions detected by the messaging service.

214 **Doc. 9.** Support for use of reliable messages. For example, specifying whether
215 reliable messaging is used and which mode is desired.

216 **Doc. 10.** Specify security profiles and parameters in a way that cannot cause
217 conflicts with properly conceived local security policies.

218 **Doc. 11.** Include a means to identify the Collaborative Process(es) that the CPP or
219 CPA supports. For example, the means may be the URL of a Collaborative
220 Process definition or a keyword whose meaning is agreed to by the two Parties to
221 a CPA.

222 **Doc. 12.** Include a means to identify the definition of the messaging protocol that

- 223 supports the exchange of messages between two Parties. Examples are the
224 ebXML Messaging Service and messaging protocols defined by pre-existing
225 collaborative processes such as RosettaNet.
- 226 **Doc. 13.** Include a means of specifying the choreography of the interaction among
227 Parties.
- 228 **Doc. 14.** Facilitate extracting from a CPA its component CPPs.
- 229 • NOTE: A situation in which it might be desirable to extract one or both CPPs
230 from a CPA is where two Parties initially constructed a custom CPA and then
231 one or both decide to produce CPPs, for future use, from the contents of the
232 CPA.
 - 233 • NOTE: It should be understood that unless alternatives in the original CPPs
234 that are not chosen in a particular CPA are preserved within the CPA in an
235 inactive form, such extracted CPPs are limited to the functions defined in the
236 source CPA and do not have the range of options that might be present in
237 other CPPs.
- 238 **Doc. 15.** Specify information in accepted international formats (for example, dates,
239 times, addresses, and phone numbers).
- 240 **Doc. 16.** Contain sufficient information to enable either or both Parties to use a
241 CPA to automatically configure their run-time systems to perform the specified
242 Collaboration Protocol between the Parties.
- 243 • NOTE: This requirement is stated specifically for a CPA because a CPP
244 describes capabilities and may contain alternatives for some functions from
245 which two Parties must choose in composing a CPA.
- 246 **Doc. 17.** Provide XML vocabularies that can be easily comprehended by humans
247 and yet is precise enough for enforcement by computer.
248

249 **6.2 The specification shall:**

- 250
- 251 **Spec. 1.** Shall include a technology-independent representation of the CPP and
252 CPA as a UML class model.
- 253 **Spec. 2.** Use the ebXML Collaboration Model, where appropriate, as a source
254 for deriving the Collaboration Protocol (e.g. message definitions and
255 choreography) in the Service definition in a CPP or CPA.
- 256 • NOTE: Using the ebXML Collaboration Model improves the capability for
257 broadening the scope for interoperability.
- 258 **Spec. 3.** Permit the Parties to define their Collaboration Protocol in any agreed
259 way either using an alternative process model or by ad-hoc means.
- 260 • NOTE: with this approach, interoperability is restricted to interactions
261 between the two Parties.
- 262 **Spec. 4.** Use the Core Components data definitions, where appropriate, as the
263 basis for the data structures in the CPP and CPA.
- 264 **Spec. 5.** Define XML representations of a CPA and CPP.
- 265 **Spec. 6.** Harmonize with other ebXML specifications while being able to be
266 used independently of them.
- 267 **Spec. 7.** Define the CPP and CPA as consisting of components that can be
268 linked together by means of URLs or XML linking grammars. Specifically,
269 the information that defines the Collaboration Protocol (the inter-Party action

- 270 names, message names, and choreography or equivalent) shall be expressed in
271 a separate document that is linked to the portion of the CPP or CPA that
272 contains the Messaging Capabilities of the Party or Parties.
- 273 • Encourage implementation of CPA composition tools that provide a composite
274 view of both components that are joined together in order to simplify the
275 process of making consistent choices in the two components.
 - 276 • Ensure that for linked documents, the consistency of the linked parts and the
277 derived composite document is preserved in case of changes. This may be
278 solved via versioning.
- 279 **Spec. 8.** Define how a CPA may be composed from two CPPs. This refers to
280 the nature of the composition rather than the process of arriving at the
281 composition.
- 282 **Spec. 9.** Not preclude two Parties from directly composing a CPA without
283 having prior CPPs.
- 284 **Spec. 10.** Specify how a pre-defined model of a Collaborative Process is used in
285 a specific instance of a Collaboration Protocol between two Parties.
- 286 **Spec. 11.** Specify how two-Party configuration mechanisms may be used in
287 multi-Party relationships
- 288 **Spec. 12.** Describe the different ways that may be used to communicate Party
289 information between Parties, for example:
- 290 • Once in a way that is applicable to all Collaborative Processes carried out
291 between Parties (e.g. by referencing a standard generic CPA for those
292 processes).
 - 293 • Once in a way that is specific to two Parties (e.g. by negotiating an individual
294 CPA).
 - 295 • Dynamically (without previously creating a CPA).
- 296 **Spec. 13.** Benefit from function provided by existing standards for Trading
297 Partner Agreements (e.g. US Federal Government Contractor Registration
298 agreement (CCR), X12 Trading Partner Profile (838), United Nations
299 recommendations nos. 26 Interchange Agreement for EDI and 31 Electronic
300 Commerce Agreement)
301

302 **6.3 Possible Requirements for Later Phases**

303 The following list is not intended as a formal set of requirements but rather as a list of
304 functions which have been suggested and which are appropriate for later phases of
305 development of the specification. The order is not significant.

- 306
- 307 **Future Req. 1.** Signing of CPP and CPA.
- 308 **Future Req. 2.** Multiparty CPA.
- 309 **Future Req. 3.** Decomposing of the CPP and CPA into additional functional
310 components that can be linked.
- 311 **Future Req. 4.** Define elements to support automated negotiation of composition
312 of CPAs from CPPs. These elements may be within the CPP or in an associated
313 document.
- 314 **Future Req. 5.** Versioning of CPP and CPA.
- 315 **Future Req. 6.** Multiple Services in a single CPP or CPA. For example, a single
316 CPP or CPA might include multiple related RosettaNet PIPs, each one defined in

317 a separate pair of Services (one for each Party).
318 **Future Req. 7.** Specify more general message flows in the CPA than the
319 sequencing rules defined in the initial version of the specification. An example is
320 an event-condition-action state machine. This model will be aligned with the
321 business flows defined in the XML layer of the ebXML Business-Process model.
322 **Future Req. 8.** Specify the name of an applicable repository.
323 **Future Req. 9.** Specify higher-level function in the TPA such as business-process
324 constraints.

325 **7 Notes**

326 **8 References**

327
328 [Bra97] Bradner, S., "Key words for use in RFCs to Indicate
329 Requirement Level", BCP 14, RFC 2119, March 1997.
330
331

332 **9 Disclaimer**

333 The views and specification expressed in this document are those of the authors and
334 are not necessarily those of their employers. The authors and their employers
335 specifically disclaim responsibility for any problems arising from correct or incorrect
336 implementation or use of this design.

337 10 Contact Information

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352 11 Glossary

353

- 354 1) **Document.** A Document is any data that can be represented in a digital form.
- 355 2) **Party.** A Party is an entity such as a company, department, organization or individual that
356 can generate, send, receive or relay Documents.
- 357 3) **Document exchange.** An exchange of documents between two parties.
- 358 4) **Collaborative Process.** A shared process by which two Parties work together in order to
359 carry out a process. The Collaborative Process may be defined by an ebXML
360 Collaboration Model.
- 361 5) **Message.** The movement of a document from one party to another.
- 362 6) **Messaging Capabilities.** The set of capabilities that support exchange of Documents
363 between Parties. Examples are the communication protocol and its parameters, security
364 definitions, and general properties of ending and receiving messages.
- 365 7) **Collaboration.** Two or more parties working together under a defined set of rules.
- 366 8) **Collaboration Protocol.** The protocol that defines for a Collaborative Process:
- 367 a) The sequence, dependencies and semantics of the Documents that are exchanged
368 between Parties in order to carry out that Collaborative Process, and
- 369 b) The Messaging Capabilities used when sending documents between those Parties.
- 370 Note that a Collaborative Process may have more than one Collaboration Protocol by
371 which it may be implemented.
- 372 9) **Collaboration-Protocol Profile (CPP).** A Collaboration-Protocol Profile is information
373 about a Party that can be used to describe one or more Collaborative Processes and
374 associated Collaborative Protocols that the Party supports. A CPP indicates what a Party
375 “can” do in order to carry out a Collaborative Process. A CPP must be representable by a
376 Document. While logically, a CPP is a single document, in practice, the CPP may be a set
377 of linked documents that express various aspects of the capabilities. A CPP is not an
378 agreement. It represents the capabilities of a Party.
- 379 10) **Collaboration-Protocol Agreement (CPA).** A CPA is information agreed between
380 two (or more) Parties that identifies or describes the specific Collaboration Protocol that
381 they have agreed to use. A CPA indicates what the involved Parties “will” do when
382 carrying out a Collaborative Process. A CPA must be representable by a Document.
- 383 11) **Party Discovery Process.** A Collaborative Process by which one Party can discover
384 CPP information about other Parties.
- 385 12) **Service.** A Service is the representation, in the CPP and CPA, of a set of services
386 provided by a given Party. A Party may define more than one Service when appropriate.

387

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