



Creating A Single Global Electronic Market

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Negotiation Requirements

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Preface

25

This document contains the requirements for a specification of the CPA negotiation process.

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59 **1 Goals**

60 **1.1 Long-range Goals**

61 The goals of this project are to develop a specification for an automated negotiation process.
62 This is a key step not only towards spontaneous e-commerce but also for established
63 relationships (for example, an organization with thousands of partners). The focus is on
64 negotiating long-term partner relationships as well as spontaneous relationships.

65
66 The negotiation process will be helpful for maintaining partner relationships, especially if an
67 organization has a large number (perhaps thousands) of partners. Automated negotiation reduces
68 the need for manual intervention, thereby simplifying life-cycle management of CPAs including
69 both creation of initial CPAs and renewal and modification of existing CPAs. Potentially, this
70 leads to significant cost reduction when there is a large number of partners.

71
72 While the initial goal is negotiating of a CPA, a long-term goal is to extend the negotiation
73 process to include negotiation of higher-level aspects of an agreement such as business
74 parameters and legal matters. The team should focus on the initial goal but keep higher level
75 aspects in mind so that the approaches chosen for CPA negotiation might later be extendible to
76 higher-level functions.

77
78 Another of goal is to extend the work to be applicable to Web Services. This goal is part of the
79 CPPA team's OASIS charter. Proposals for function applicable to Web Services could be
80 submitted as contributions to W3C. At this time, Web Services has no concept of electronic
81 agreements. Therefore, the goal of contributing to Web Services is a long-range goal.

82
83 Another possible application is negotiation of electronic service-level agreements should an
84 electronic service-level agreement be defined.

85
86 Consumers of the specification are developers of CPA composition and negotiation tools, users
87 of ebXML-based systems, and users of Web Services.

88 89 **1.2 High-Level Requirements for Version 1**

90 The initial goal is to develop a specification for an automated negotiation process whose purpose
91 is the composition/negotiation of a Collaboration Protocol Agreement (CPA) from the
92 Collaboration Protocol Profiles (CPPs) of two prospective trading partners or from one partner's
93 CPA template. This negotiation process may be viewed as an extension of an automated CPA-
94 composition tool that incorporates human representatives of the prospective trading partners into
95 the CPA-composition process.

96
97 Legal matters are out of scope for Version 1.

98
99 We should start with a fairly simple specification that will enable creation of an early prototype.

100
101 Following are details of the requirements.

- 102
- 103 • Partner discovery
- 104 ♦ Partner discovery is not in scope. The negotiation process starts with two prospective
- 105 partners' CPPs or a CPA template.
- 106 ♦ We will need to determine whether the negotiation process would impose some
- 107 requirements on the discovery process or whether a commonly used discovery process
- 108 might impose requirements on the negotiation process.
- 109 • Bootstrap of negotiation process
- 110 ♦ The negotiation process must be able to be executed without the negotiation process itself
- 111 having to be negotiated. We will therefore need a minimalist approach to the message
- 112 exchange for negotiation. Possibly, the bootstrap process can be built on WSDL and
- 113 SOAP. The team should also review what the Registry team has created as its bootstrap
- 114 process. Initially, the team will focus on what to negotiate and how to negotiate it,
- 115 leaving the specific bootstrap process for later.
- 116 NOTE: "Pure" SOAP at this time has no security functions. However, security
- 117 can be provided by signing the CPPs, NDDs, and CPA and by using SSL for
- 118 transport security. Only authentication is missing.
- 119 ♦ See also Sect. 2.8.1 , "Bootstrapping the negotiation process".
- 120 • Automated composition from two CPPs
- 121 • Automated composition of a CPA from a CPA template
- 122 ♦ A CPA template is a CPA that is written by one party for a business relationship with a
- 123 second party. It will generally be used when one party is dominant and dictates most of
- 124 the terms and conditions. In general, the party that creates the CPA template is proposing
- 125 a "take it or leave it" relationship, with respect to its own properties, with the other party.
- 126 The CPA template contains a complete description of the required properties of the other
- 127 party except for information as PartyId, endpoint addresses, and perhaps a small number
- 128 of other variables such as whether SSL client-side authentication is to be used. The
- 129 creator of the CPA template could fix the value of **CPAId** by generating a GUID when it
- 130 creates an instance of its CPA template.
- 131 ♦ Assuming that the CPA template belongs to a service provider, we need to define the
- 132 service consumer's input to the composition process
- 133 • Negotiation process
- 134 ♦ Start with a high level description, perhaps in UML or in simple flow charts and bullets.
- 135 ♦ Then compose BPSS instance document.
- 136 ▪ NOTE: THE BPSS specification includes production rules for generating the XML
- 137 from a UML model.
- 138 ♦ Definition of the messaging needed to support negotiation is included.
- 139 • Decide which negotiation functions must be normative.
- 140 ♦ Anything that involves interoperability
- 141 • Regarding composition/negotiation of a CPA from "basic" CPPs, can we identify some
- 142 criteria that, if met by both CPPs, allow a CPA to be derived without difficulty? Could we
- 143 develop some kind of rating of difficulty of composing/negotiating the CPA?
- 144 ♦ Evaluating the complexity of a counterproposal (in the negotiation) is important.
- 145 ♦ The specification should identify what should be (or not be) in a CPP to facilitate
- 146 (simplify) the negotiation. Examples: Provide multiple options for some elements,

- 147 specify ranges for numeric parameters.
- 148 • Prospective trading partners must agree on the same negotiation business process (if more
149 than one exist).
- 150 ♦ NOTE: These negotiation processes are NOT the business processes that the CPP
151 identifies under the CollaborationRole element. They are a separate list of negotiation
152 processes.
- 153 ♦ This relates to the bootstrap issue and therefore, to a later phase of the creation of version
154 1. See also section 2.8.1, "Bootstrapping the negotiation process".
- 155 • The CPP could specify whether or not its owner is willing to negotiate details of a CPA.
- 156 ♦ An element or attribute indicates "negotiable", includes a list of one or more negotiation
157 processes that the owner is willing to use, and indicates whether 2-party or 3-party
158 negotiation is desired.
- 159 ♦ This list would be used in the process of initializing the negotiation. The negotiation
160 processes could be listed in decreasing order of preference, thus enabling two parties to
161 quickly initialize to use the highest priority negotiation process that both are willing to
162 perform.
- 163 ♦ The SOAP mustUnderstand and fault functions may be useful in implementing selection
164 of a negotiation process.
- 165 ▪ A party could use a SOAP fault to indicate that it does not understand the proposed
166 negotiation process.

167 **2 Negotiation Elements**

168 **2.1 Purpose of Automated Negotiation**

- 169 • Automate many of the tasks of negotiation of the contents of a CPA.
- 170 ◆ Negotiation of variables in composition of CPA from two CPPs
- 171 • The human will still be in the loop since the negotiation algorithm may not be capable of
- 172 evaluating and deciding to accept or reject some proposals or counterproposals. The
- 173 algorithm should decide when it is necessary to consult a human.
- 174

175 **2.2 Partner Profiles**

- 176 • A profile is a CPP with, perhaps additional information about the company that is out of
- 177 scope of this or other CPPA team activities.
- 178 • Profiles can be placed in public repositories
- 179 ◆ ebXML Registry or UDDI registry.
- 180

181 **2.3 Negotiation Descriptor Document**

- 182 • A Negotiation Descriptor Document (NDD) describes what is negotiable in the CPP or CPA
- 183 template.
- 184 ◆ Each party's NDD identifies the CPP and describes what is negotiable.
- 185 ◆ For a CPA template, there is a single NDD, provided by the creator of the CPA template.
- 186 It describes what a second party is permitted to alter in the parts of the CPA that pertain
- 187 to the second party, such as endpoint addresses and certificates.
- 188 • The NDD identifies the CPP or CPA template. The CPP or CPA template does not identify
- 189 the NDD since a party may have many different NDDs associated with the same CPP or CPA
- 190 template. These could be for different negotiation processes, different categories of partner,
- 191 etc.
- 192 • The NDDs are exchanged at the start of negotiation.
- 193 • An NDD might be placed in a registry to be found when discovering the CPP. Since the CPP
- 194 does not identify an NDD, there would have to be registry metadata to connect the CPP and
- 195 NDD. However, it is expected that in general, NDDs will not be placed in a registry.
- 196 Instead, a party will discover a potential trading partner's CPP. The two parties will then
- 197 exchange NDDs at the beginning of the negotiation process.
- 198

199 **2.4 Negotiation Messages**

200 The negotiation protocol will consist of exchanges of messages that contain the details of offers
201 and counter offers. The specification will define the schema and semantics of each message.

203 **2.5 Automation of CPA Life Cycle**

- 204 • Discovery is out of scope for V 1.
- 205 • Approaches

- 206 ♦ Automated composition of initial CPA from the two CPPs
- 207 ▪ See [CPPCPA-F]
- 208 ♦ Negotiation based on a CPA template supplied by one partner or some third party such as
- 209 a negotiation service.
- 210 ▪ Other partner fills in its PartyInfo details and may suggest changes
- 211 • Negotiation of CPA details between partners
- 212 • Build CPA from CPPs or CPA template and negotiation results
- 213 • Deploy negotiated CPA at partner sites
- 214 • Do business

215

216 **2.6 Assessment of Likelihood of Success**

- 217 • Specification should state some preconditions for composition followed by negotiation
- 218 ♦ Minimum level of compatibility necessary to achieve a match after reasonable
- 219 negotiation.
- 220 ♦ Possibilities for simplification. Examples:
- 221 ▪ Reasonably matched delivery channels
- 222 ▪ Rules for how to select from multiple possibilities that are supported by both parties
- 223 ♦ Indicate "no go" if the CPPs are too mismatched
- 224 • Provide guidelines for the structure and content of the initial CPA created by the
- 225 composition process.

226

227 **2.7 Automated Composition of CPA from two CPPs**

- 228 • Update (improve) existing automated composition appendix in CPP-CPA spec.
- 229 • Move automated composition appendix from CPP-CPA specification to negotiation
- 230 specification, make some material normative.

231

232 **2.8 Automated Negotiation Process**

- 233 • Automated CPA negotiation is a business process
- 234 ♦ Start by defining one such process; eventually there might be more than one such process
- 235 ♦ Automated negotiation is neither required nor prohibited
- 236 ♦ The CPP indicates that the party is willing to negotiate, what negotiation processes it
- 237 uses, and whether it prefers 2-party negotiation or a third-party negotiation service.
- 238 NOTE: This information cannot be in the NDD since different NDDs might be
- 239 required for the different negotiation processes and for 2-party or 3-party negotiation.
- 240 ▪ Is there a bootstrap problem because this information is embedded in the CPP?
- 241 • Controlled by a negotiation CPA (NCPA)
- 242 ♦ Between partners
- 243 ♦ Between each partner and a negotiation service
- 244 ♦ This relates to the bootstrap issues. See also sect. 2.8.1, "Bootstrapping the negotiation
- 245 process".
- 246 • Consider a layered approach such as that in the CPP-CPA composition appendix.

247 **2.8.1 Bootstrapping the negotiation process**

- 248 • Avoid a complex process of negotiation of the NCPA before negotiating the CPA.
 - 249 ♦ The NCPA should not have to be negotiated. It should describe a minimal configuration
 - 250 that all parties can support.
 - 251 ▪ The NCPA might be a "virtual" CPA, just a set of simple rules in the specification.
 - 252 ♦ The bootstrap process could be predefined in middleware in all parties, so that it can
 - 253 always run without a configuration process.
 - 254 ♦ If bootstrap is based on SOAP, add a SOAPBinding element to the delivery channel as an
 - 255 alternative to the EBXMLBinding element.
 - 256 ▪ In an NCPA, any choices within the SOAPBinding element would be defined such
 - 257 that any party can send and receive messages without having to negotiate details with
 - 258 other parties.
 - 259 ♦ Provide one or a very small number of NCPAs with each negotiation BPSS instance
 - 260 document.
 - 261 ▪ Provide multiple NCPAs only if it is not possible for all parties to agree on the same
 - 262 configuration description.
 - 263 ♦ The bootstrap process involves
 - 264 ▪ Exchange of CPPs and NDDs (or one party sends a CPA template and an NDD to the
 - 265 other party).
 - 266 ▪ Selection of an NCPA (see below) and installing it at both parties.
 - 267 ♦ The pre-negotiation process should preferably consist simply of agreeing on which
 - 268 negotiation process and which of its NCPAs to use.
 - 269 ▪ There should be no, or very few choices to be made among the CPA elements in the
 - 270 NCPA.
 - 271 ♦ Using a synchronous response to a proposed CPA doesn't even requiring knowing a
 - 272 response URL.

273 **2.8.2 Negotiation involving a negotiation service**

- 274 • Is third party service in scope for V 1?
 - 275 ♦ Probably not if it requires a different BPSS instance from the two-party case.
 - 276 ♦ We probably first need to make progress in defining the two-party case in order to
 - 277 understand how negotiation works.
 - 278 ♦ Consider it for a later phase of developing V1 or beyond V1.
- 279 • Decide on purpose of using a third-party negotiation service
 - 280 ♦ Adversarial situations
 - 281 ▪ The third party service enables a partner to give negotiation information to the third
 - 282 party that it might not want to reveal directly to the other party. For third-party
 - 283 negotiation, the NDDs would be given only to the negotiation service and not
 - 284 exchanged between partners.
- 285 • Negotiation service might be a web service accessed via UDDI/WSDL/SOAP. Such a service
- 286 could choose between:
 - 287 ♦ Dynamic service that supports spontaneous eCommerce by automatically composing,
 - 288 negotiating, and activating the CPA at each Party
 - 289 ♦ Somewhat less spontaneous process in which the negotiation service provider takes two
 - 290 CPPs (or references to them), constructs a CPA, and offers it to the two parties via a

291 SubmitProposedCPA service port supported by each party. The SubmitProposedCPA
292 service invocation would the start of a negotiation process that involves negotiation
293 function at each party including possible human intervention.

294 ♦ More manual process that negotiates with the aid of human input

295 **2.8.3 Direct Negotiation between two Parties**

- 296 • One party composes a CPA with certain terms
 - 297 ♦ Including indicating specific items that are non-negotiable
- 298 • Sends CPA to other party for consideration
- 299 • Other party can
 - 300 ♦ Reject and propose changes
 - 301 ♦ Accept for automated install
 - 302 ♦ Accept for manual install
- 303 • Iterate over negotiation until complete
 - 304 ♦ Offer-counter-offer
 - 305 ♦ Etc...

306

307 **2.9 Negotiable items in CPP**

308 The negotiable items in the CPP fall into the following categories:

309

- 310 • Numeric values: The initial value stated in the CPP can be any valid value that can be used
311 without negotiation.
- 312 • Alternatives: The CPP contains all acceptable alternatives for a particular element in
313 preference order. The CPP composition process will select the highest-preference item that
314 is common to both CPPs.

315

316 NOTE: The CPP-CPA specification already prescribes preference order for some elements
317 and will have to be extended to prescribe preference order everywhere this is appropriate.

318

319 Following are some items of negotiation information that might be defined.

- 320 • Indications of what is negotiable.
- 321 • Numeric values such as number of retries
 - 322 ♦ Indicate acceptable minimum and maximum values
 - 323 ♦ Step sizes to be used in offer and counter-offer messages.

324

325 NOTE: There are very few numeric values in the CPP at this time; extension to the
326 application domain would add more numeric values (e.g. prices).

327

- 328 • More complex relationships between parameters. Variation of delivery channel details is an
329 example.
- 330 • Agreement on certificate authorities (i.e. which are acceptable?)
 - 331 ♦ More work is needed in the CPP-CPA specification in the areas of PKI and chain of trust.
 - 332
 - 333 ♦ Part of this relates to whether self-signed certificates will be allowed. If so, the

334 negotiation process should include negotiating over whether self-signed certificates are
335 acceptable to the two parties.

336 ♦ Version 1.1 of the CPP-CPA specification will include a set of trust anchors. If two
337 parties' sets of trust anchors are incompatible, one could ask the other to add an additional
338 trust anchor in order to achieve compatibility. The specification should cover the person
339 to person aspects of negotiation.

340
341 • Delivery channels

342 ♦ Can't prioritize delivery channels as such since can have lots of combinations and
343 delivery channels can be reused

344 ♦ Instead, the same business process can be offered with alternative DeliveryChannel
345 elements, using multiple ActionBinding elements that can be listed in order of preference.

346
347 NOTE: The details of this depend on the resolution of the ActionBinding proposal that is
348 being discussed in the CPPA team.

349 **2.10 Negotiation Progress Indicator**

350 • The Status element in the CPA can be used as a negotiation progress indicator.

351 ♦ Value is an enumeration of `proposed`, `agreed`, and `signed`.

352 ♦ Additional values could be added, if needed, to express states prior to `agreed` with finer
353 granularity. However it may be better to express such states, if needed, within the
354 messages exchanged during the negotiation process.

355

356 **2.11 Basic Components of Negotiation**

357 See "Negotiation involving a negotiation service", above, for a simple web-service approach.

358

359 • Define negotiation protocol as a business process

360 ♦ Negotiation patterns

361 ♦ Negotiation verbs as business transactions

362 ♦ Possibly different variants such as for ebXML messaging and for SMTP, assuming that
363 the Process Specification document would be different for these variants.

364 ♦ BP team has already done some work. See [ECOMMPATT].

365 ♦ Duane Nickull (XML Global) distributed a proposal[NICKULL] in Feb. 2001 that has
366 been posted to the Negotiation listserver.

367 • NCPA

368 ♦ Ordinary CPA for the negotiation process

369 ▪ Points to negotiation business process (Process Specification Document)

370 ▪ Controls negotiation process between prospective trading partners

371 ▪ All negotiation-specific definitions (e.g. negotiation verbs and flows) should be in
372 Process Specification document.

373 NOTE: When a party discovers an NCPA in a registry or receives one from a potential
374 trading partner, the NCPA is actually a CPA template. The party that discovers or
375 receives one must fill in minimal information, such as its endpoint address, before it can
376 be used to control the negotiation process.

377 ♦ Which party can initially propose an NCPA?

- 378 ▪ The party whose CPP is discovered in the registry?
- 379 ▪ The party who discovers the CPP of a potential business partner?
- 380 ▪ Either party?
- 381 "Either party" is probably the right answer. However there is a potential race condition in
- 382 which each proposes a different NCPA. If "either party" is accepted as the answer, the
- 383 negotiation specification will have to include a protocol for NCPA acceptance that
- 384 resolves the race condition.
- 385 ◆ Open questions to consider
- 386 ▪ Can **CPAId** be a fixed value for all NCPAs? Probably not because it has to be
- 387 unique among all CPAs concurrently installed or in use by the same partners at the
- 388 same time. Conceivably, an NCPA-generating tool could generate a unique **CPAId**
- 389 for each NCPA.
- 390 ▪ Can **partyIds** have fixed values in all NCPAs? Probably not since the MSH might be
- 391 using **partyId** as part of its message-routing information.
- 392 ◆ See also section 2.8.1, "Bootstrapping the negotiation process".
- 393 • Negotiation Descriptor Document (NDD)
- 394 ◆ Describes what is negotiable: ranges of parameters and prioritization of choices in a CPP
- 395 or CPA template.
- 396 ◆ Written to go with a particular CPP or CPA template since it describes choices etc. in that
- 397 particular CPP or CPA template.
- 398 • Two parties' CPPs or one party's CPA template
- 399 • Proposed Process-Specification document (BPSS instance document) under which the two
- 400 parties will do business.
- 401 ◆ Prospective trading partners must agree on this before much more negotiation is done
- 402 ▪ Agree on which Process-Specification (BPSS instance) document will be used
- 403 ▪ Agree on some modifiable attribute values within it (e.g. security attribute values).
- 404 The attribute values are modified by setting the values of the correspond override
- 405 attributes in the CPA.
- 406
- 407 NOTE: Modification of the BPSS instance document itself is out of scope for version
- 408 1.
- 409

410 **2.12 Negotiation Configurations**

- 411 • One on one between prospective trading partners
- 412 ◆ Negotiation CPA between the prospective trading partners
- 413 • Negotiation intermediary
- 414 ◆ Each prospective trading partner has a negotiation CPA with the intermediary
- 415 ◆ The negotiation intermediary plays an active role in the negotiation. It is NOT just a
- 416 message-forwarding intermediary. It may function like a broker. Each party may tell it
- 417 things that are not to be told to the other party. Examples are upper and lower limits of
- 418 negotiable values, what a party is really in the market for.
- 419 ◆ A CPA template may or may not be useful with a negotiation intermediary since with a
- 420 CPA template, one party dictates most of the terms and conditions and the modifiable
- 421 items are few and simple. On the other hand, use of a CPA template with an intermediary
- 422 is not excluded.

423 **3 Requirements Related to Implementation**

424 This section is to be determined. It might actually consist of requirements that avoid
425 constraining implementations unnecessarily.

426 **4 Deliverables**

- 427 • Specification of the negotiation process
- 428 ◆ UML activity diagram or equivalent graphical representation
- 429 ◆ Definition of negotiation verbs
- 430 ◆ Message envelope structure
- 431 ◆ Message schema
- 432 ◆ Autonegotiation BPSS instance document (choreography)
- 433 ◆ NDD schema
- 434 ◆ Specification of the NCPA. This would identify the minimal CPA contents needed to
- 435 enable the negotiation process without having to negotiate the NCPA beyond supplying
- 436 endpoint addresses.
- 437 • Sample NCPA
- 438 • Sample NDD
- 439 • SOAP binding for using vanilla SOAP for message exchange
- 440 • Possible additions to or revisions of the appendix on composition of a CPA from two CPPs
- 441 that is in the CPP-CPA specification.
- 442 ◆ Consider moving that appendix to the negotiation specification or publishing it
- 443 separately.
- 444 • Tutorial for implementers
- 445 • Best-practices document if appropriate

446 **5 Subjects for Future Versions**

447 The following subjects appear to be out of scope for Version 1 but might be considered for future
448 versions.
449

450 **5.1.1 Negotiating Delivery Channels**

- 451 • May want to provide for negotiating new delivery channels, i.e. new combinations of the
452 Transport and DocExchange elements that are in the CPPs.
 - 453 ♦ This would involve dynamic reconfiguration of the server, which may or may not be
454 possible. If reconfiguration is possible, it may involve software changes, etc., in order to
455 accommodate the change.

456 **5.1.2 Interrelations Between Different Numeric Parameters**

- 457 • One commenter suggested an example of interrelation between price ranges and quantity
458 ranges. This example is only applicable if and when the team includes business-level
459 quantities in the negotiation process.

460 **5.1.3 Alternative Specifications of Collaborative Protocol**

- 461 • Future versions of the specification could support alternative forms of specifying either the
462 negotiation collaboration or the business collaboration protocol that the parties will execute in
463 addition to BPSS. One possibility is the collaboration protocol used with Web services.

464 **5.1.4 Direct Modification of BPSS Instance Document**

- 465 • Direct modification of the BPSS instance document could be supported as part of the
466 negotiation process if the BPSS team defines how to do it.

467 **5.1.5 Negotiation Intermediary**

- 468 • Consider the case where one or both parties don't want their identities known to the other
469 party during the course of negotiation.

470 **6 Glossary**

471 This section should later be included in the specification.

472

473 **CPA Negotiation Process:** The process by which a Collaboration Protocol Agreement (CPA) is formed based on
474 information provided by two parties interested doing business. The CPA negotiation
475 process should be (potentially) automated. The negotiation process is defined in a BPSS
476 instance document.

477 **CPA Template:** A CPA template is a CPA with open fields. The schema for a CPA template is the normal
478 CPP-CPA schema. The means of identifying open fields in the CPA template will be
479 defined by the main CPPA working group.

480 **NCPA – Negotiation CPA:** The CPA that governs the negotiation process. The NCPA refers to the negotiation
481 process BPSS.

482 **NDD – Negotiation Descriptor Document:** A Negotiation Descriptor Document (NDD) describes what is
483 negotiable in a CPP or a CPA template.

484 **Negotiation BPSS Instance Document:** The representation of the negotiation-protocol process by means of an
485 XML instance document that conforms to the ebXML Business Process Specification
486 Schema specification.

487 **Negotiation Protocol:** The negotiation process requires the exchange of data between both parties in the
488 negotiation (and perhaps with a negotiation service). The format of these messages and
489 the choreography of their exchanged is defined by a negotiation CPA and its
490 corresponding BPSS.

491 **Negotiation Message:** The negotiation protocol will consist of exchanges of messages that contain the details of
492 offers and counter offers. The specification will define the schema and semantics of each
493 message.

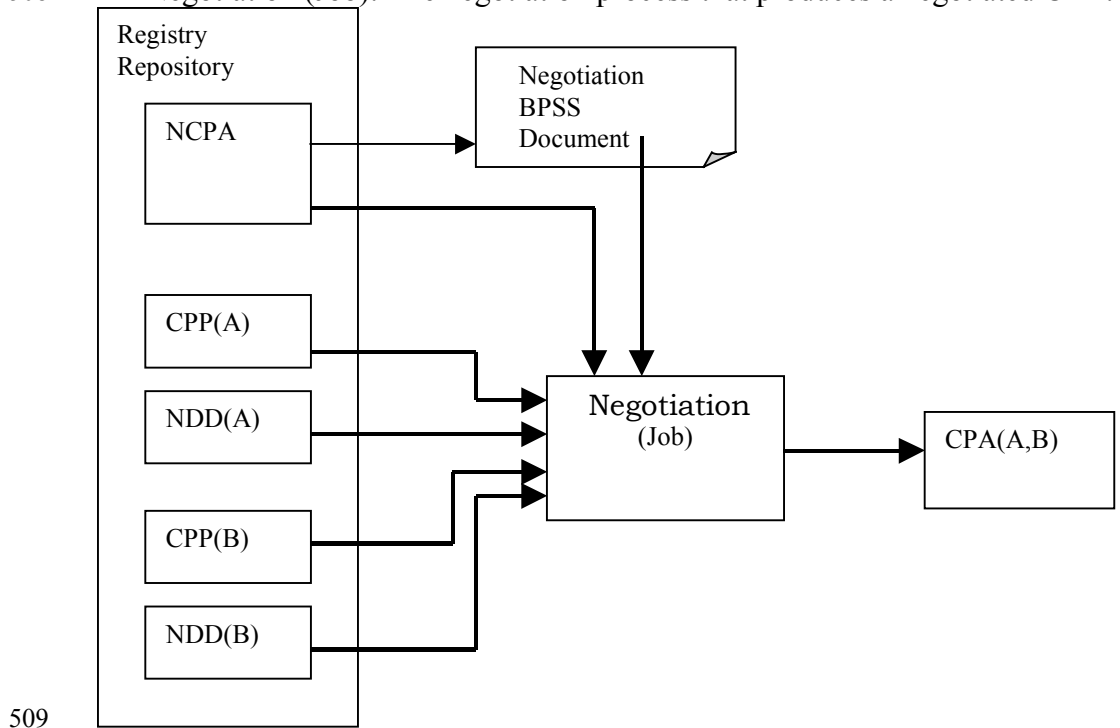
494

495 **7 Material that may be Useful in writing an introduction to**
496 **the specification**

497 The following overview of CPA negotiation was contributed by Yukinori Saito. The illustrated
498 process negotiates a CPA from two CPPs. This material will need revision based on the final
499 content of the specification.

500
501 Following are the definitions of terms. These are discussed in more detail in the rest of this
502 document.

- 503
504 • NCPA: A negotiation CPA that controls the negotiation process.
505 • Negotiation BPSS Document: defines the negotiation collaborative protocol.
506 • NDD: a document associated with the CPP that defines what is negotiable, ranges of numeric
507 values, etc.
508 • Negotiation (Job): The negotiation process that produces a negotiated CPA.



510 **8 References**

511 [CPPCPA] Collaboration-Protocol Profile and Agreement Specification, Version 1.0
512
513 [CPPCPA-F] Appendix F, "Composing a CPA from Two CPPs", of [CPPCPA] discusses
514 technical issues for a CPP-CPA composition tool.
515
516 [ECOMMPATT] ebXML E-Commerce Patterns v1.0 technical report. This report includes
517 chapters on contract-formation and automated contract-negotiation patterns for ebXML.
518
519 [NICKULL] ebXML Automatic CPA Negotiation, 14 February 2001 (not published).