



Creating A Single Global Electronic Market

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5 ebXML Requirements Specification
6 Version 1.06

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8 ebXML Requirements Team

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11 May 8, 2001
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18 **1 Status of this Document**

19
20 There are three categories of ebXML deliverables:

- 21 o *Technical Specifications* conform to the ebXML Requirements document.
22 o *Technical Reports* are either guidelines or catalogues.
23 o *White Papers* constitute a snapshot of on-going work within a Project Team.
24

25 This Technical Report has been approved by the Requirements Project Team and has
26 been accepted by the ebXML Plenary.
27

28 ~~This document specifies an ebXML (electronic business XML) DRAFT for the eBusiness~~
29 ~~community.~~
30

31 Distribution of this document is unlimited.

32
33 The document formatting is based on the Internet Society's Standard RFC format.

34
35 ***This version:***

36 <http://www.ebxml.org/specs/ebREQ.pdf>
 37 www.ebxml.org/project_teams/requirements/private/ebxmlRS106.doc

38
 39 **Latest version:**

40
 41 www.ebxml.org/specs/ebREQ.pdf
 42 http://www.ebxml.org/project_teams/requirements/private

43
 44 **Previous version:**
 45 http://www.ebxml.org/specdrafts/approved_specs.htm

46
 47

48 **2 ebXML participants**

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

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 72 of the other ebXML Project Teams.

73
 74
 75

75 **3 Table of Contents**

76 1 Status of this Document 1

77 2 ebXML participants 2

78 3 Table of Contents 3

79 4 Document Introduction 5

80 4.1 Summary of Contents of Document 5

81 4.2 Audience 5

82 1.1 Related Documents 5

83 4.3 5

84 4.4 Documentation Conventions 5

85 5 General Introduction 6

86 5.1 ebXML Vision and Scope 6

87 5.1.1 ebXML Vision 6

88 5.1.2 ebXML Scope 7

89 5.2 ebXML Requirements Specification Purpose and Scope 7

90 5.2.1 ebXML Requirements Specification Purpose 7

91 5.2.2 ebXML Requirements Specification Scope 7

92 5.3 General ebXML Principles 8

93 6 Business Requirements 940

94 6.1 General Business Requirements 940

95 6.2 Conducting Electronic Business using ebXML 1142

96 6.3 Globalization 1142

97 6.3.1 Openness 1243

98 6.3.2 Registry and Repository 1243

99 6.4 Usability/Interoperability 1344

100 6.4.1 Architecture 1344

101 6.4.2 Transport, Routing and Packaging 1415

102 6.4.3 Extensibility 1415

103 6.4.4 Leveraging Existing Technology 1415

104 6.5 Security 1546

105 6.5.1 Legal 1617

106 6.5.2 Digital Signatures 1618

107 6.6 Management 1749

108 6.6.1 Organizational Structure 1819

109 6.6.2 Participation 1819

110 7 ebXML Technical Framework Requirements 1920

111 7.1 General Requirements 1920

112 7.2 Requirements 2021

113 7.3 Business Process 2021

114 7.4 Technical Architecture 2223

115 7.5 Core Components 2324

116 7.6 Transport/Routing and Packaging 2325

117	<u>7.7 Registry and Repository.....</u>	<u>2425</u>
118	<u>7.7.1 Technical Specification Submission and management</u>	<u>2425</u>
119	<u>7.7.2 Required System Services.....</u>	<u>2526</u>
120	<u>7.8 Trading Partner</u>	<u>2526</u>
121	<u>7.9 Proof of Concept</u>	<u>2627</u>
122	<u>8 ebXML Organizational and Procedural Requirements</u>	<u>2728</u>
123	<u>8.1 Executive Committee Support</u>	<u>2829</u>
124	<u>8.1.1 Quality Review</u>	<u>2829</u>
125	<u>8.1.2 Marketing Awareness</u>	<u>3034</u>
126	<u>9 ebXML Project Team Deliverables</u>	<u>3034</u>
127	<u>9.1 Major ebXML Technical Specifications.....</u>	<u>3034</u>
128	<u>10 Disclaimer</u>	<u>3233</u>
129	<u>11 Contact Information.....</u>	<u>3334</u>
130	<u>12 References.....</u>	<u>3435</u>
131	<u>Copyright Statement</u>	<u>36</u>
132	<u>1 Status of this Document</u>	<u>1</u>
133	<u>2 ebXML participants</u>	<u>2</u>
134	<u>3 Table of Contents.....</u>	<u>3</u>
135	<u>4 Document Introduction.....</u>	<u>5</u>
136	<u>4.1 Summary of Contents of Document</u>	<u>5</u>
137	<u>4.2 Audience</u>	<u>5</u>
138	<u>4.3 Related Documents</u>	<u>5</u>
139	<u>4.4 Documentation Conventions.....</u>	<u>6</u>
140	<u>5 General Introduction.....</u>	<u>6</u>
141	<u>5.1 ebXML Vision and Scope.....</u>	<u>7</u>
142	<u>5.1.1 ebXML Vision</u>	<u>7</u>
143	<u>5.1.2 ebXML Scope</u>	<u>7</u>
144	<u>5.2 ebXML Requirements Specification Purpose and Scope.....</u>	<u>7</u>
145	<u>5.2.1 ebXML Requirements Specification Purpose.....</u>	<u>7</u>
146	<u>5.2.2 ebXML Requirements Specification Scope.....</u>	<u>8</u>
147	<u>5.3 General ebXML Principles</u>	<u>8</u>
148	<u>6 Business Requirements</u>	<u>10</u>
149	<u>6.1 General Business Requirements.....</u>	<u>10</u>
150	<u>6.2 Conducting Electronic Business using ebXML.....</u>	<u>12</u>
151	<u>6.3 Globalization.....</u>	<u>12</u>
152	<u>6.3.1 Openness</u>	<u>13</u>
153	<u>6.3.2 Registry and Repository.....</u>	<u>13</u>
154	<u>6.4 Usability/Interoperability.....</u>	<u>14</u>
155	<u>6.4.1 Architecture.....</u>	<u>14</u>
156	<u>6.4.2 Transport, Routing and Packaging.....</u>	<u>15</u>
157	<u>6.4.3 Extensibility</u>	<u>15</u>
158	<u>6.4.4 Leveraging Existing Technology.....</u>	<u>15</u>
159	<u>6.5 Security.....</u>	<u>16</u>

160	6.5.1	17
161	16	
162	6.5.2	17
163	6.6 Legal	17
164	6.7 Digital Signatures	18
165	6.8 Management	18
166	6.8.1 Organizational Structure	18
167	6.8.2 Participation	19
168	7 ebXML Technical Framework Requirements	20
169	7.1 General Requirements	20
170	7.2 Requirements	21
171	7.3 Business Process	21
172	7.4 Technical Architecture	23
173	7.5 Core Components	24
174	7.6 Transport, Routing and Packaging	25
175	7.7 Registry and Repository	25
176	7.7.1 Technical Specification Submission, Development, and Support	26
177	7.7.2 System Services	27
178	7.8 Trading Partner	27
179	7.9 Proof of Concept	28
180	8 ebXML Organizational and Procedural Requirements	29
181	8.1 Executive Committee Support	30
182	8.1.1 Quality Review	30
183	8.1.2 Marketing Awareness	30
184	8.1.3 Project Management	31
185	9 ebXML Project Team Deliverables	32
186	9.1 Major ebXML Technical Specifications	32
187		
188	10 Disclaimer	34
189	11 Contact Information	35
190	12 References	36
191	Copyright Statement	37
192		
193		

193 **4 Document Introduction**

194 **4.1 Summary of Contents of Document**

195 This *ebXML Requirements Specification* represents the work of the *ebXML Requirements*
196 *Project Team*. It defines ebXML and the ebXML effort, articulates business requirements
197 for ebXML, and defines specific requirements that SHALL be addressed by the various
198 ebXML project teams in preparing their deliverables.

199

200 The keywords MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD,
201 SHOULD NOT, RECOMMENDED, MAY, and OPTIONAL, when they appear in this
202 document, are to be interpreted as described in Internet Engineering Task Force (IETF)
203 Request For Comments (RFC) 2119.¹

204

205 **4.2 Audience**

206 The target audiences for this document are:

207 ◆ ebXML Project Teams, as a foundation for developing their technical
208 specifications

209 —Other interested parties, as a means to convey the purpose, scope, and vision of
210 ebXML

211



212 **4.3 Related Documents**

213 **4.3**

214 ebXML Invitation - http://www.ebXML.org/documents/199909/ebXML_invitation.htm

215

216 ebXML Terms of Reference (TOR) -

217 http://www.ebXML.org/documents/199909/terms_of_reference.htm

218

219 Recommendations for ebXML Kickoff Meeting - UN/CEFACT/TMWG/N104 -

220 <http://www.ebxml.org/documents/contributions/tm104.pdf>

221

222 *Technical Reports and Publications*, World Wide Web Consortium,

223 <http://www.w3.org/TR>

224

225
226

227 **4.4 Documentation Conventions**

228 The following highlighting is used for non-normative commentary in this document:

229
230
231

[NOTE -]: General comments directed to all readers.

232 **5 General Introduction**

233 Electronic Business Extensible Markup Language (ebXML) is an international initiative
234 established by the United Nations Centre for Trade Facilitation and Electronic Business
235 (UN/CEFACT) and the Organization for the Advancement of Structured Information
236 Standards (OASIS) with a mandate to undertake a 15-18 month program of work. As
237 identified in the ebXML Terms of Reference, the purpose of the ebXML initiative is to
238 research and identify the technical basis upon which the global implementation of XML
239 can be standardized. The goal is to provide an XML-based open technical framework to
240 enable XML to be utilized in a consistent and uniform manner for the exchange of
241 electronic business (eb) data in application to application, application to human, and
242 human to application environments—thus *creating a single global electronic market*.¹

243

244 ebXML is based on international standards and is itself intended to become an
245 international standard. A key aspect for the success of the ebXML initiative is adherence
246 to the use of the W3C suite of XML and related Web technical specifications to the
247 maximum extent practical. Although these specifications may not provide the optimal
248 technical solution, acceptance of ebXML by the business community and technical
249 community is tied to XML. However, certain key elements of the ebXML technical
250 framework may require adopting alternative technologies and technical specifications—
251 such as those of the Internet Engineering Task Force (IETF), International Organization
252 for Standardization (ISO), Institute of Electrical and Electronics Engineers (IEEE),
253 International Electrotechnical Commission (IEC), UN/CEFACT, OASIS, and the Object
254 Management Group (OMG).

255

256 [NOTE - ebXML operates under the procedures identified in the ebXML Terms of
257 Reference]

258 **5.1 ebXML Vision and Scope**

259 **5.1.1 ebXML Vision**

260 The ebXML vision is to deliver:

¹ "creating a single global electronic market" is a trademark of the ebXML Working Group

261

262 "A single set of internationally agreed upon technical specifications that consist of
263 common XML semantics and related document structures to facilitate global trade."

264

265 These ebXML technical specifications are intended to create a *Single Global Electronic*
266 *Market*.™ To create this single global electronic market, this single set of ebXML
267 technical specifications:

268

269 ◆ SHALL be fully compliant with W3C XML technical specifications holding a
270 recommended status²

271 ◆ SHALL provide for interoperability within and between ebXML compliant trading
272 partner applications

273 ◆ SHALL maximize interoperability and efficiency while providing a transition path
274 from accredited electronic data interchange (EDI) standards and developing XML
275 business standards

276 ◆ SHALL be submitted to an appropriate internationally recognized accredited
277 standards body for publication as an international standard

278 **5.1.2 ebXML Scope**

279 The ebXML initiative is targeted at every sector of the business community, from
280 international conglomerate to small and medium sized enterprises engaged in business-to-
281 business and business-to-consumer trade. With that audience in mind, the ebXML
282 initiative is committed to developing and delivering specifications that will be used by all
283 trading partners interested in maximizing XML interoperability within and across trading
284 partner communities.

285 **5.2 ebXML Requirements Specification Purpose and Scope**

286 The *ebXML Requirements Specification* purpose and scope are defined in the following
287 sub-sections.

288 **5.2.1 ebXML Requirements Specification Purpose**

289 This *Requirements Specification* has two primary purposes. The first of these is to
290 provide clearly articulated requirements from representatives of international business
291 and accredited standards organizations. These requirements are intended to serve as a
292 foundation for all other ebXML specifications and SHOULD assist the ebXML project
293 team members in developing their deliverables in a consistent manner. This specification
294 is also intended to convey to interested parties the purpose, scope, and vision of ebXML.

295 **5.2.2 ebXML Requirements Specification Scope**

296 This *ebXML Requirements Specification* applies to the work underway within the current
297 ebXML project teams. Each project team has provided input to this document to ensure
298 consensus with its contents. In addition to the *Requirements Project Team*, project teams
299 currently chartered by the ebXML Steering Committee are:

- 300 ◆ Business Process
- 301 ◆ Technical Architecture
- 302 ◆ Core Components
- 303 ◆ Transport/Routing and Packaging
- 304 ◆ Registry and Repository
- 305 ◆ Trading Partner
- 306 ◆ Proof of Concept

307 In addition, the following special management support teams are chartered by the
308 ebXML Executive Committee:

- 309 ◆ Quality Review
- 310 —Marketing Awareness
- 311 ◆

312 **5.3 General ebXML Principles**

313 General ebXML principles to be followed in developing ebXML deliverables are to
314 create technical specifications that:

- 315 ◆ Enable simple, easy and ubiquitous electronic business through the use of XML
- 316 ◆ Use W3C XML technical specifications holding recommended status to the
317 maximum extent practicable
- 318 ◆ Provide a global cross-industry open, interoperable standard for business-to-
319 business and business-to-consumer trade
- 320 ◆ Coalesce the structure and content components of divergent XML initiatives into a
321 single useable XML business standard

- 322 ◆ Provide impetus so that common resources currently engaged in short-term
323 vertical solutions SHALL be marshaled to reach a common long-term, horizontal
324 solution
- 325 ◆ Support vertical and horizontal segments of industry and business participants
- 326 ◆ Avoid proprietary solutions that impose financial or software requirements
327 constraints on ebXML users to buy, install or programmatically support any
328 ebXML unique software products in the conduct of business information exchange
- 329 ◆ Strive to minimize costs of doing business electronically
- 330 ◆ Provide multi-lingual support
- 331 ◆ Accommodate national and international trade requirements
- 332 ◆ Provide a migration path from accredited EDI and developing XML business
333 standards
- 334 ◆ Apply when possible the simplification principles of SIMAC Business
335 Requirements³
- 336

336

337 **6 Business Requirements**

338 This section describes the business requirements for business to be conducted
339 electronically. The business requirements identified in this section are oriented toward
340 using XML for electronic business, but most of the requirements are applicable to
341 implementation with other technologies as well.

342

343 The scope of the ebXML business requirements is to meet the needs for the business side
344 of both business-to-business (B2B) and business-to-consumer (B2C) activities. Consumer
345 requirements of the B2C model are beyond the scope of the ebXML technical
346 specifications. Application-to-application (A2A) exchanges within an enterprise may also
347 be able to use the ebXML technical specifications, however ebXML A2A solutions
348 SHALL not be developed at the expense of simplified B2B and B2C solutions.

349

350 [NOTE - for ease of reading, the term business is to be interpreted as interchangeable
351 with for-profit, non-profit, not-for profit, and government entities.]

352

353 [NOTE - For the purposes of this document, Application-to-Application is defined as the
354 computer-to-computer exchange of business information without human intervention
355 both within and across enterprise boundaries.]

356

357 The business requirements to be addressed by the ebXML initiative are divided into nine
358 core areas - General Business, Electronic Business, Globalization, Openness,
359 Usability/Interoperability, Security, Legal, Digital Signatures, and Organizational. Each
360 of these requirements is identified in the following sections.

361 **6.1 General Business Requirements**

362 Business has a real need to use new technology with minimized investment to gain
363 competitive advantage. The advent of the Internet and World Wide Web has proven to
364 offer such benefits. However, realizing these benefits requires a functionally neutral
365 standard method of exchanging data. Specifically, business needs a solution that
366 provides:

- 367 ◆ A single, consistent, simple approach to using XML for electronic business
368 processes in both the B2B and B2C environments
- 369 ◆ A process and recommendation for ebXML conformance
- 370 ◆ Support for both vertical (e.g. industry, functional, organizational) and horizontal
371 (e.g. cross-industry, multi-functional, organizationally neutral) solutions regardless
372 of the sophistication of the user

- 373 ♦ Support for a range of implementations from basic, low cost solutions appropriate
374 for Small and Medium Enterprise (SME) deployment, to comprehensive, complex
375 implementations using all optional features appropriate to large enterprises
- 376 ♦ A range of usage from using core features in ad hoc, informal exchanges to highly
377 formal, structured exchanges
- 378 ♦ A single consistent modeling language and methodology
- 379 ♦ Support for current business models and practices as well as new ones developed
380 through business process modeling
- 381 ♦ A business process metamodel that supports individually developed business
382 process models
- 383 ♦ Design rules for developing ebXML compliant XML documents that are based on
384 approved W3C schema specifications
- 385 ♦ Syntactically neutral core components
- 386 ♦ XML syntax based boilerplate schemas and tags to support individual trading
387 partner business processes that -
 - 388 - eliminate duplication of effort
 - 389 - provide support for XML metadata
 - 390 - clearly identify core, mandatory features, and optional features
 - 391 - provide a mechanism for full specification of semantic meaning
- 392 ♦ Fully interoperable transport, routing, and packaging solutions
- 393 ♦ Security solutions that meet business confidentiality requirements
- 394 ♦ A single recognized international standards organization to oversee continued
395 ebXML work
- 396 ♦ An open development process with no barriers to entry
- 397 ♦ Open, readily accessible, perpetually free technical specifications and standards
- 398 ♦ A solution that minimizes costs for development, maintenance, and use

399 [NOTE - Business looks to XML as a means of gaining competitive advantage through
400 leveraging new technology. Minimizing the cost of doing business electronically is a key

401 element in achieving a competitive advantage. The cost of doing business electronically
402 can be grouped into acquisition, development, deployment and customization, integration
403 with business applications, and operations and support. It is expected that using XML for
404 electronic business will be less costly than traditional forms of EDI and other existing
405 electronic commerce technologies in each of these areas. This expected cost reduction is
406 a driving force for considering XML over traditional EDI technologies.]

407 **6.2 Conducting Electronic Business using ebXML**

408 Business applications need to be able to exchange structured business documents
409 (encoded in XML) with a corresponding application of another enterprise to support a
410 business process. This exchange may either be completely without human intervention,
411 as is the case with traditional EDI, or with some level of human intervention to correct
412 missing or erroneous data.— Business applications may also need to exchange structured
413 business documents with intermediaries such as portals and brokers. Because a majority
414 of businesses do not have sophisticated IT architectures, business applications will need
415 to exchange structured business documents with trading partners who will be limited to
416 viewing and manually processing both inbound and outbound transactions. Business
417 applications also require information exchange mechanisms that provide for the exchange
418 of pure XML payloads but may also support plug-and-play, shrink-wrapped,
419 syntactically-neutral solutions.

420 Additionally, business applications may also need to:

- 421 ◆ Be able to generate business documents encoded in XML and other syntax
422 structures that can be used in traditional computer to computer exchanges as well
423 as being displayed using an associated style sheet keyed to a specific presentation
424 format; such as the appropriate U.N. Layout Key for Trade Documents or a trading
425 partner specified format.⁴
- 426 ◆ Enable data entry of business documents using a specified presentation format;
427 such as the appropriate U.N. Layout Key for Trade Documents or a trading partner
428 specified format. The data entry SHALL result in an ebXML compliant encoded
429 document representing the business information.

430 **6.3 Globalization**

431 Global solutions are critical in today's ever expanding marketplace. The underlying
432 purpose of ebXML is to facilitate international trade. To achieve "*a single global*
433 *electronic market*" that such facilitation implies, it is critical to simplify existing
434 exchange standards methodologies and harmonize divergent approaches. This
435 simplification and harmonization can be achieved through developing a business
436 metamodel in conjunction with syntax neutral core components. Both of these
437 deliverables SHALL accommodate divergent national and multi-national process

438 requirements, and SHOULD support backward compatibility with the developing
439 ebXML technical framework.

440

441 To simplify development efforts, all work SHALL use English. To support globalization,
442 all ebXML technical specifications SHALL be translatable into other natural languages.
443 Translation into other natural languages is the responsibility of the intended user,
444 although such translations SHOULD be supported in the ebXML repository. Regardless
445 of language, and in keeping with the requirements of W3C XML 1.0, all work SHALL be
446 compliant with Unicode and ISO/IEC 10646 for characters, IETF RFC 1766 for language
447 identification tags, ISO 639 for language name codes, and ISO 3166 for country name
448 codes.^{5,6,7,8,9,10,11,12}

449 **6.3.1 Openness**

450 Openness is a critical aspect of ebXML. Business requires the ability to easily access
451 ebXML technical specifications without regard to "membership", or payment of access
452 and/or use fees. ebXML technical specifications SHALL be completely open to all
453 potential users so as to eliminate the barriers for entry. Openness requires several key
454 components to ensure viability. Chief among these is an open, easily accessible registry
455 and repository for the ebXML technical specifications.

456 **6.3.2 Registry and Repository**

457 A registry is required to allow process owners to submit, classify, register and update
458 mapping templates, business process specifications, and data interchange specifications.
459 This registry MUST have an interface that supports access by humans as well as
460 computer applications. This registry MUST support an agreed upon security protocol.

461

462 A repository is required for storage and retrieval of various items that support performing
463 business electronically. There are two distinct sets of business requirements on the
464 repository: a set dealing with managing the workflow of developing standard components
465 that are stored in the repository, and a set dealing with application usage of the
466 repository. Additionally, the repository MUST support the information needs of the
467 ebXML work group and project teams, as well as ebXML technical specification users
468 with respect to glossaries and products.

469

470 [NOTE - A registry is a mechanism whereby relevant documents and metadata about
471 them can be registered such that a pointer to their location, and all their metadata, can be
472 retrieved as the result of a query. A repository is a location or a set of distributed
473 locations where documents pointed at by the registry reside and from which they can be
474 retrieved by conventional (http / ftp) means, perhaps with additional
475 authentication/permission layers.]

476

477 The ebXML Registry and Repository SHALL support the concept of a network of
478 registries and repositories that can intercommunicate via the interfaces specified by the

479 ebXML *Registry and Repository Project Team*. A registry can be established by an
480 industry group or standards organization and can intercommunicate with any number of
481 repositories. In addition, content within a repository can reference content within another
482 repository. The concept of a single repository is not scalable, nor does it promote the idea
483 of a global web.

484
485 If ebXML is to exist beyond its initial 18-month timeframe, then ebXML SHOULD
486 maintain responsibility for ebXML technical specifications, ebXML work group
487 deliverables, and ebXML glossaries in an ebXML-supported repository. However, if the
488 decision is made that ebXML will not exist after the initial set of deliverables, or that
489 ebXML will not maintain or support its own repository, then ebXML MUST determine if
490 repository oversight responsibilities for ebXML technical specifications SHOULD
491 transition to UN/CEFACT, OASIS, or some other existing XML business standards
492 organization or consortium.

493 **6.4 Usability/Interoperability**

494 Usability and interoperability of the ebXML technical framework are critical business
495 requirements. Components of usability and interoperability are architecture; transport,
496 routing, and packaging; extensibility; and leveraging existing technology. Each of these
497 is addressed in the following sub-sections.

498 **6.4.1 Architecture**

499 This is a primary requirement of the ebXML initiative. To maximize interoperability, the
500 ebXML architecture SHOULD support

- 501 ♦ Common Business Processes - Both entities involved in the exchange of data
502 MUST be engaged in executing the same transaction in the context of a business
503 process
- 504 ♦ Common Semantics - Common meaning, as distinct from words, expression, or
505 presentation
- 506 ♦ Common Vocabulary - A direct correspondence between words and meaning
- 507 ♦ Common Character Encoding

508 [NOTE - UNICODE, which is specified in the W3C XML Version 1.0 technical
509 specification, provides this.]

- 510 ♦ Common Expression - Common set of XML element names, attributes and
511 common usage of those attributes, common approach to document structure
- 512 ♦ Common Security Implementations

513 ◆ Common Data Transfer Protocol

514 ◆ Common Network Layer

515 [NOTE - As with other non-functional requirements, some aspects of achieving
516 interoperability may conflict with other non-functional requirements.—Where a
517 requirement is not met, software can usually be developed to provide a bridge. However,
518 such bridges may increase costs of development, implementation, or both, and conflict
519 with cost minimization. In other cases, achieving interoperability enhances other
520 requirements. For example, maximizing interoperability helps to achieve platform
521 independence.]

522 **6.4.2 Transport, Routing, and Packaging**

523 Any exchange of business information requires fully described transport, routing, and
524 packaging methodologies. These descriptions **MUST** be based on a program language
525 definition independent of the service interface required for systems to control the
526 messaging system for the purpose of sending and receiving messages. These descriptions
527 **SHOULD** identify the behavior of the messaging system required to:
528

529 ◆ Realize reliable secure sending and receiving of messages over any network
530 capable of carrying XML

531 ◆ Support syntax-neutral definition of the information that needs to be retained

532 ◆ Detail the format and structure of the wrapper, header, and any other data within
533 the message - to include signatures and encryption

534 ◆ Query ebXML servers (such as ebXML compliant message handling systems or
535 registries) for the services they support

536 **6.4.3 Extensibility**

537 Businesses seek solutions that provide for a certain level of customization beyond core
538 standards. This extensibility is necessary to ensure internally unique business process
539 requirements can be addressed beyond the scope of standards used for information
540 exchanges between businesses. One example of this requirement is customization beyond
541 core standards to support exchanges within an enterprise. Another is customization to
542 support application/database to human exchanges. ebXML **MUST** ensure extensibility is
543 facilitated while ensuring conformance with core standards.

544 **6.4.4 Leveraging Existing Technology**

545 Leveraging existing technology encompasses both the ability to inter-operate with
546 existing technology as well as the ability to migrate to the new technology. Each of these
547 is discussed in the following sub-sections.

548 6.4.4.1 Compatibility with existing Technology and EB standards and practices

549 Businesses already have in place extensive EDI architectures and business solutions
550 based on accredited EDI standards; and customized sub-sets in the form of
551 implementation conventions based on those standards. Additionally, many businesses are
552 implementing XML solutions that are based on the technical specifications issued by the
553 World Wide Web Consortium (W3C) and the XML-based business standards of various
554 competing XML groups—such as RosettaNet, BizTalk, XML.ORG, the Open
555 Applications Group (OAG). Although the ebXML solution will facilitate a single global
556 electronic market, and although its technical framework will provide a single set of
557 technical specifications, businesses will still require the ability to inter-operate their
558 existing EDI and XML solutions with solutions built on the ebXML framework.

559
560 As part of compatibility, businesses require a technical framework that reuses common
561 elements regardless of syntax. To ensure a syntax neutral solution, ebXML MUST
562 identify and define those items considered common across XML business data
563 exchanges. Common items are semantic units at any level that stay consistent across
564 contexts, and therefore are reusable both within and between business exchange
565 messages. Business process models will help define common items and provide their
566 context. This context will in turn define the precise use of common items in messages
567 exchanged among parties. ebXML MUST describe these items in terms that are
568 independent of implementation syntax. This syntax neutral approach will enable their
569 reuse for not only XML documents, but other syntax-based transactions as well.

570
571 The ebXML technical framework MUST adopt—or if needed, develop—a methodology
572 to consistently build or derive core components, including methods to encourage reuse
573 and provide for extensions. ebXML MUST identify element names that can apply across
574 business processes and contexts yet still allow for translation into leading spoken
575 languages. All ebXML work SHALL generate the content of core components
576 independent of implementation syntax, but with references to data structures in XML
577 messages and EDI transactions. The ebXML solution SHALL identify attributes that
578 describe the context of the components also in terms independent of syntax.

579 6.4.4.2 Migration from existing EDI and XML solutions

580 Businesses seek maximum interoperability between their applications and trading partner
581 applications. This can be achieved by a single way of doing business electronically, i.e., a
582 single standard for using XML for electronic business. However, many businesses also
583 have a considerable investment in existing standards-based EDI and emerging XML
584 business approaches. These businesses require a mechanism and migration path for
585 accommodating legacy EDI solutions based on accredited standards and XML solutions
586 already in progress or implemented. Although migration from existing EDI and XML
587 solutions is a key element of ebXML, the ebXML solution will ensure maximizing
588 interoperability takes precedence in developing the ebXML technical specifications.
589

590 [NOTE - It is beyond the current scope of the ebXML initiative to develop specific
591 migration and transformation methods to include mapping services, communication
592 channels, and architecture support from traditional EDI architectures.]

593 **6.5 Security**

594

595 Businesses have a high level requirement that appropriate security technology be applied
596 to protect information involved in business processes. Aspects of security may be
597 required at various layers of a business process; at an outsourcing/transaction layer, at a
598 session layer (i.e., for the duration of a network session in which data is exchanged) or
599 applied to a single, stand-alone document instance. In addition, application of security to
600 a particular exchange or document instance **MUST** be determined by the business needs,
601 and allow unrestricted and unsecured interchanges if the business process requires this.
602 All, some, or no security features may be required in any particular exchange of business
603 information. The following requirements are general security definitions:

- 604 ◆ Confidentiality - Only sender and receiver can interpret document contents
- 605 ◆ Authentication of sender - Assurance of the sender's identity
- 606 ◆ Authentication of receiver - Assurance of the receiver's identity
- 607 ◆ Integrity - Assurance that the message contents have not been altered
- 608 ◆ Non-repudiation of Origin - The sender can not deny having sent the message
- 609 ◆ Non-repudiation of Receipt - The receiver can not deny having received the
610 message
- 611 ◆ Archiving - It **MUST** be possible to reconstruct the semantic intent of
612 —a document several years after the creation of the document

613

614 ◆ The understanding of these security requirements is also subject to the following related
615 requirements; Legal, Digital Signatures, Interoperability, and Third Party Trust
616 relationships. For example; The Archiving, Authentication, and Non-Repudiation of
617 Origin and Receipt may be performed by a trusted third party through which the Parties
618 to a transaction agree to channel transaction messages in order to provide independent
619 historical proof that the transaction took place at a specific time and on specific terms.
620 This time period is subject to the archiving and record retention requirements of
621 particular situations. In general, businesses might require archiving and retrieval of up to
622 30 years after document creation.

623

624 **6.5.1 Legal**

625 Beyond the security requirements identified in section 6.5, the following additional legal
626 requirements exist:

- 627 ◆ Comply with the requirements of UN/CEFACT recommendation 14 -
628 Authentication of Trade Documents by Means Other Than Signature¹⁰³
- 629 ◆ Provide versioning support to facilitate reconstructing the semantic meaning of
630 transactions in accordance with the underlying transaction format used
- 631 ◆ Ensure full audit capability is supported
- 632 ◆ Ensure all transmitted data is well defined by a minimal set of metadata
- 633 ◆ Ensure a mechanism provides for identifying completeness of a transaction

634 **6.5.2 Digital Signatures**

635 Digital signatures, or electronic signatures, have security and legal implications that
636 directly ~~impact on~~ affect electronic business requirements. As more and more government
637 bodies define digital signatures, and enact legislation that adopts such techniques as
638 having the same force of law as traditional signatures, new technology solutions MUST
639 accommodate these business requirements.

640

641 The following definition and statement of compliance requirements is taken from Article
642 6 of UN Commission on International Trade Law, Working Group on Electronic
643 Commerce, Draft Guide to Enactment of the UNCITRAL Model Law on Electronic
644 Signatures (A/CN.9/WG.IV/WP.88):

645

- 646 *(1) Where the law requires a signature of a person, that requirement is met in*
647 *relation to a data message if an electronic signature is used which is as reliable*
648 *as was appropriate for the purpose for which the data message was generated or*
649 *communicated, in light of all the circumstances, including any relevant*
650 *agreement.*
- 651
- 652 *(2) Paragraph (1) applies whether the requirement referred to therein is in the form*
653 *of an obligation or whether the law simply provides consequences for the absence*
654 *of a signature.*
- 655
- 656 *(3) An electronic signature is considered to be reliable for the purpose of satisfying*
657 *the requirement referred to in paragraph (1) if:*
- 658

658

- 659 (a) the signature creation data are, within the context in which they are used,
660 linked to the signatory and to no other person;
- 661 (b) the signature creation data were, at the time of signing, under the control
662 of the signatory and of no other person
- 663 (c) any alteration to the electronic signature, made after the time of signing,
664 is detectable; and
- 665 (d) where a purpose of the legal requirement for a signature is to provide
666 assurance as to the integrity of the information to which it relates, any
667 alteration made to that information after the time of signing is detectable.

672 The ebXML technical framework MUST support electronic transactions that provide for
673 electronic signatures at an appropriate level within the transaction to meet requirements
674 of both the sender and receiver in keeping with the forgoing definition and attributes.

675 **6.6 Management**

676 If ebXML is to be successful in both the short and long term, and if the ebXML technical
677 framework is to be adopted by the international business community, then management
678 issues associated with both organizational structure and participation MUST be
679 addressed. The following sub-sections identify the business requirements for each of
680 these areas.

681 **6.6.1 Organizational Structure**

682 The ebXML initiative is an eighteen-month effort to develop a technical framework. To
683 ensure efficiency of operation and success in achieving the ebXML vision, sufficient
684 organizational controls MUST be put in-place as quickly as possible. Further, there exists
685 the possibility that ebXML will become more than a short term initiative. As such, long-
686 term requirements for managing ebXML MUST be defined and addressed in the near
687 term to ensure a smooth transition from short- to long-term management. Further, if such
688 a long-term organization becomes reality, processes MUST be adopted for recasting
689 ebXML as an internationally accredited standards body.

690 **6.6.2 Participation**

691 The ebXML initiative relies heavily on technical expert participation. This participation
692 MUST be free of organizational requirements that restrict or otherwise inhibit
693 participation of anyone. Further, participation SHOULD be limited to the individual and
694 not at the organizational level. This will ensure each technical expert is given an equal
695 footing in the organization, management, and work effort of ebXML.
696

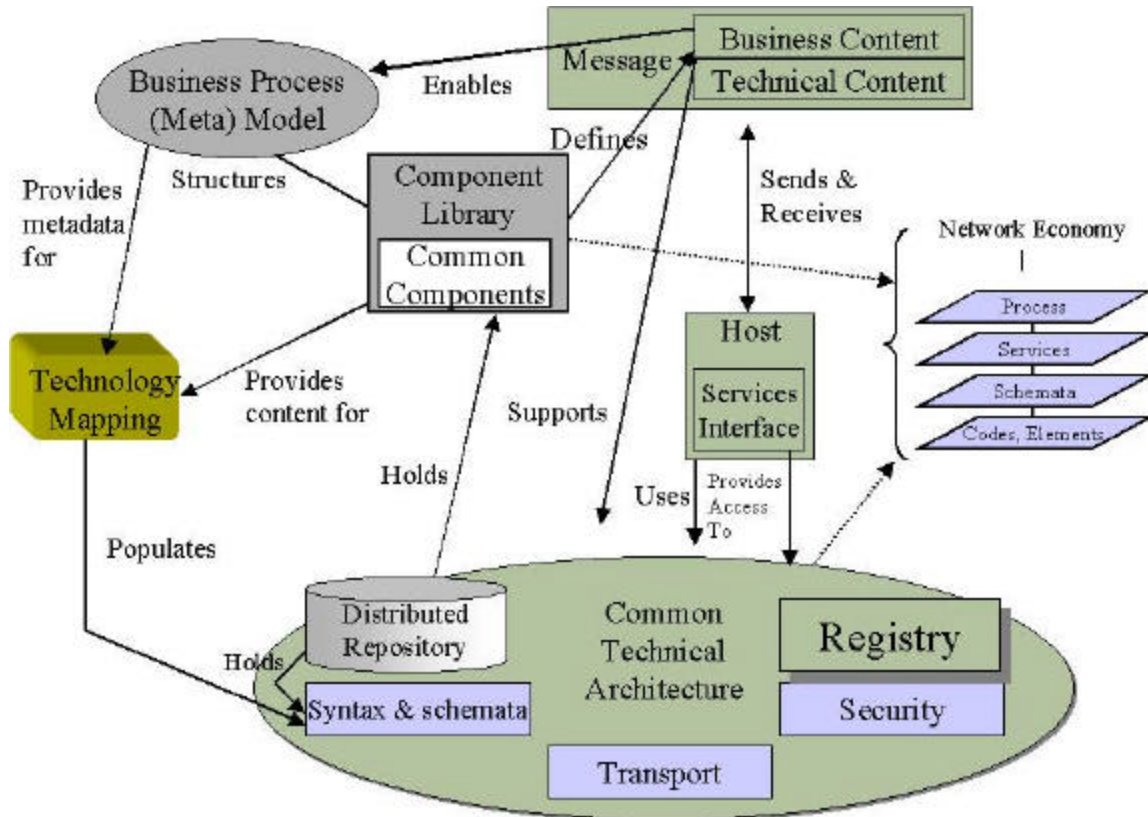
696

697 **7 ebXML Technical Framework Requirements**

698 This section identifies specific requirements for achieving the ebXML technical
699 framework through the work of each of the ebXML project teams. These requirements
700 have been developed in close coordination with those project teams to ensure consensus
701 on their content. These high level requirements are closely aligned with the business
702 requirements in section two of this document and are consistent with the vision, purpose,
703 scope and guiding principles contained in Section Five. These high level requirements are
704 carefully designed to provide a road map for the respective project teams as they drill
705 down to more detailed requirements in preparation for developing their ebXML
706 deliverables. As each of these deliverables becomes a reality, they will contribute to the
707 developing ebXML technical specifications as part of building the ebXML technical
708 framework as illustrated in Figure [73-1](#).

709

710 **Figure [73-1](#) ebXML Technical Framework**



711 **7.1 General Requirements**

712 The following general requirements, in conjunction with the business requirements stated
 713 in Section Six, apply to each project team. Deliverables for each of the project teams
 714 MUST -

- 715 ◆ Be developed in compliance with the purpose, scope, and guiding principles
- 716 identified in Section Five
- 717 ◆ Meet the business needs articulated in Section Two
- 718 ◆ Be fully compliant with approved ebXML technical specifications
- 719 ◆ Clearly identify core, mandatory features, and optional features
- 720 ◆ Clearly define conformance requirements
- 721 ◆ Support the requirements of each project team as identified in the following sub-
- 722 sections.

7.2 Requirements

The *Requirements Project Team's* initial task was to produce this *ebXML Requirements Specification*. In addition, the *Requirements Project Team* SHALL:

- ◆ Develop follow-on requirements documents in support of the ebXML Executive Committee and ebXML Steering Committee that meet the requirements contained in section 4 of this document
- ◆ Review, evaluate, and assimilate follow-on requirements submitted by external organizations for consideration by ebXML
- ◆ Provide assistance as required to the *Quality Review Team* on ebXML requirements issues to include at a minimum a requirements traceability matrix

7.3 Business Process

The *Business Process Project Team* detailed requirements and deliverables SHALL:

- ◆ Provide a technical specification for business process definition (BPDS), enabling an organization to express its business processes so that they are understandable by other organizations, thereby enabling integration of business processes (See for example eCo strategic framework - services and interactions)
- ◆ Provide an explicitly specified process metamodel that is not merely implied by instantiations or derivations
 - the metamodel SHALL provide set of rules to define the business processes—rules, semantics and syntax
- ◆ Provide a BPDS that is usable -
 - globally
 - cross-industry
 - by small, medium, and large organizations
 - by for-profit, government, and non-profit organizations
- ◆ Provide a BPDS that enables an organization to express its business processes to such an extent that other organizations can discover -
 - the kind of organization the process belongs to
 - the business processes belonging to an organization

- 753 - the interaction points in the organization's business process in order to determine
- 754 whether and how to engage in business
- 755 - the kinds of information exchanges required to conduct a particular interaction in
- 756 the business process
- 757 - company interactions, and services and categorizations of them
- 758 ◆ Provide for BPDS compatibility by -
- 759 - allowing for forward migration from existing frameworks to the degree possible
- 760 - carrying forward accumulated best of breed experience such as—OAG,
- 761 RosettaNet, HL7—into the ebXML "superset"
- 762 - enabling mapability between content provider defined processes
- 763 - enabling organizations or industry verticals to be able to compare business
- 764 processes
- 765 ◆ Provide for BPDS re-usability/extensibility by -
- 766 - allowing a company to 're-use' and extend standard, template, or actual business
- 767 processes as starting points for definition of specific business processes
- 768 - encouraging industry verticals to base their model on the high level framework
- 769 - supporting re-usable data components
- 770 - supporting re-usable process components
- 771 ◆ Enable business processes to be accessible and readable by -
- 772 - making BPDS-based processes machine readable
- 773 - expressing processes defined under BPDS in parsable, navigable XML
- 774 - making processes defined under BPDS visually (diagrammatically) viewable
- 775 - identifying at least one industry standard based tool or technique, through which
- 776 BPDS compliant processes can be defined through diagrammatic drawing
- 777 ◆ Provide a process to create and maintain a -
- 778 [NOTE - this process SHALL be developed in coordination with the *Core Components*
- 779 *Project Team's* developing process for identifying core components.]

- 780 - glossary of terms related to business process methodology vocabulary such as—
- 781 functional, non-functional, vertical, message, segment, data type—using TMWG
- 782 Unified Modeling Methodology document Annex 1 as a starting point
- 783 - glossary of terms specific to each business process to be modeled
- 784 - glossary of XML tags
- 785 - library of documents based on identified services and interactions
- 786 - web site for ready access to glossaries
- 787 ◆ Be developed in conjunction with the *Registry and Repository Project Team* to
- 788 incorporate technical specifications, models, and required glossaries into the
- 789 ebXML repository

790 **7.4 Technical Architecture**

791 The *Technical Architecture Project Team* detailed requirements and deliverables
 792 SHALL:

- 794 ◆ Provide a view for integration of business processes among ad-hoc or established
- 795 independent business partners by electronic means
- 796 ◆ Reduce the need for collaborative business partners to have individual and
- 797 expensive prior agreement on how to integrate business processes
- 798 ◆ Provide a high-level business-centric view of distributed e-business processes
- 799 ◆ Specify the roles, interactions, and interfaces among the various ebXML
- 800 specification components such as—the business process metamodel, core
- 801 components, registry and repository, message handling, and collaboration profiles
- 802 and agreements.
- 803 ◆ Allow for both business processes and enabling technologies to evolve
- 804 independently while retaining long-term investments in both
- 805 ◆ Integrate with new and legacy systems throughout the enterprise
- 806 ◆ Leverage existing technologies and standards
- 807 ◆ In coordination with BP process specification and core components identification,
- 808 provide for naming conventions for technical and business content in the technical
- 809 architecture

- 810 ♦ Provide design guidelines for ebXML compliant messages

811 **7.5 Core Components**

812 The *Core Components Project Team* detailed requirements and deliverables SHALL:

- 813 ♦ Be developed in conjunction with the *Business Process Project Team*
- 814 ♦ Identify a methodology for describing core components within the framework of
815 the Business Process metamodel
- 816 ♦ Define core component content and structure
- 817 ♦ Support “re-use” and extensibility
- 818 ♦ Provide methodology and examples for XML and EDI instantiation
- 819 ♦ Enable creation of XML business standards

820 The *Core Components Project Team* SHALL develop core components that SHALL:

- 821 ♦ Be syntax independent

822 [NOTE - Core components SHALL not be specifically aligned with any existing syntax
823 based semantics such as ANSI ASC X12 or UN/EDIFACT]

- 824 ♦ Be defined to ensure separation of common core components versus new
825 extensions

- 826 ♦ Incorporate where appropriate ISO/IEC 11179 rules^{14.15.16.17.18.19+}

- 827 ♦ Use semantics solutions that accommodate currently defined accredited EDI
828 semantics where they add value

- 829 ♦ Use a single consistent set of terminology

- 830 ♦ Support context sensitive core components

831 **7.6 Transport/Routing and Packaging**

832 The *Transport/Routing and Packaging Project Team* detailed requirements and
833 deliverables SHALL:

- 834 ♦ Specify how to envelope business documents in regard to -

- 835 - related messages in a collection

- 836 - physical and/or logical addressing of destination for messages
- 837 ◆ Specify exchange at the application level
- 838 ◆ Provide for flexible transaction boundaries
- 839 ◆ Provide for reliable messaging and error handling
- 840 ◆ Identify messaging routing
- 841 ◆ Meet security requirements
- 842 ◆ Provide for audit trails
- 843 ◆ Define and meet acceptable levels of quality of service
- 844 ◆ Support platform independent interoperability
- 845 ◆ Support restart and recovery

846 [NOTE - for additional technical details, see the Transport, Routing, and Packaging detail
847 requirements specification.]

848 **7.7 Registry and Repository**

849 The Registry and Repository Project Team detailed requirements and deliverables
850 SHALL develop detailed blueprints for an ebXML Registry that:

- 851 ◆ Uses an open management processes
- 852 ◆ Has open and perpetually free access
- 853 ◆ Supports technical specification submission and management
- 854 —Supports required system services

855 ◆

856 **7.7.1 ~~7.7.1~~ Technical Specification Submission and management**

857
858 The registry and repository specifications SHALL address:
859

- 860 ◆ Technical specification storage and retrieval for development and run-time views
- 861 ◆ Object Storage - the ability to store objects in their original form, not limited to -
ebXML Requirements Specification

- 862
- 863 - ebXML CPP/CPA/Business Process Schema
- 864 - classification schemes
- 865 - code lists
- 866 - related data, example instances of document definitions, executable code, style
- 867 sheets
- 868 - relationships between objects, e.g., storage of semantically equivalent objects
- 869
- 870 ◆ A flexible life cycle management, e.g., deprecation and removal
- 871 ◆ Support for a role-based security model
- 872 ◆ Support for work request submissions to store associated supporting materials in
- 873 any electronic format, e.g., PowerPoint documents, audio files, images
- 874 —Indexing of metadata across all entries in Registry

875 ◆

876 **7.7.2 7.7.2 Required System Services**

877 The Registry and Repository specifications SHALL address the following required

878 services.

879

- 880 ◆ Query services the ability to send a request and retrieve results from a physical
- 881 storage mechanism, e.g., exact or similar matches and navigation
- 882 ◆ Logging services the ability to store transactional events, query events, and metrics

883

884 ~~**-SHALLSHALLSHALL**~~

885 **7.8 Trading Partner**

886 The *Trading Partner Project Team* detailed requirements and deliverables SHALL:

887

- 888 ◆ Define a collaboration-protocol profile (CPP) by which a party can be found
- 889 through a discovery process. The profile indicates what kind of electronic
- 890 business-to-business interactions the party is capable of conducting. The CPP
- 891 defines the technical components of the interactions, such as supported
- 892 communication profiles, security information, general messaging specifications,
- 893 and the definition of the collaborative processes that the party supports in
- 894 interactions with other parties. Multiple profiles for specific processes, locations,
- 895 individuals, and systems can exist within a single organization.

896

897 [NOTE: The discovery process itself as a business process that is not within the scope of

898 the Trading-Partner team.]

899

- 900 ◆ Define a collaboration-protocol agreement (CPA), which records agreement
- 901 between two parties on how to do electronic business with each other. The CPA
- 902 can be viewed as the intersection of the two parties' CPPs. It defines the common
- 903 technical capabilities and the particular services that each provides to the other.

904 [NOTE: It is a long-term goal to extend the CPA to define multiparty interactions.]

905

- 906 ◆ Define the content of the CPP such that a software process can compose a CPA
- 907 from the CPPs of the two parties.

- 908 ◆ Define the CPA such that it serves the purpose of a configuration document that
- 909 can be used to configure the two parties' run-time systems to perform the desired
- 910 business.

- 911 ◆ Work with the Transport-Routing-Packaging team to ensure that the CPP/CPA
- 912 provides the needed support for message exchanges and that the message header
- 913 provides the fields needed to support electronic business under control of a CPA.

- 914 ◆ Define the collaborative processes that the party can engage in with another party
- 915 based on the ebXML model for the business process. Elements of the definition
- 916 include:

917 — The requests that can be sent to the party

918 — The business document schema for each request

919 — The response messages that can be sent as a result of each request

920 — The choreography of the message exchanges

921 **7.9 Proof of Concept**

922 The *Proof of Concept Project Team* detailed requirements and deliverables SHALL
923 facilitate developing prototype demonstrations for ebXML technical specifications.

924 These prototype demonstrations SHALL:

925 ◆ ~~demonstrate~~Demonstrate feasibility and interoperability of each of the ebXML
926 technical specifications within a business domain

927 ◆ Ddemonstrate viability of overall ebXML technical framework

928

928

929 **8 ebXML Organizational and Procedural Requirements**

930 The ebXML Executive Committee MUST put in place organizational and procedural
931 processes as soon as possible. These organizational and procedural processes are critical
932 to enable the various ebXML project teams to make sound decisions in developing their
933 requirements and deliverables. These organizational and procedural processes MUST:

- 934 ♦ Facilitate the efforts of the *Requirements Project Team* and the various Executive
935 Committee support teams identified in Section Seven.
- 936 ♦ Support each of the functional project teams to meet their requirements

937 In developing these organizational and procedural processes, the Executive Committee
938 SHALL:

- 939 ♦ Follow the purpose, scope, and guiding principles identified in Section Five
- 940 ♦ Meet the business needs articulated in Section Six
- 941 ♦ Facilitate the general requirements in Section Seven
- 942 ♦ Support the requirements of each project team as identified in Section Seven

943 These organizational and procedural processes MUST provide for

- 944 ♦ An open and consensus driven ebXML management process
- 945 ♦ An open, timely, and consensus driven ebXML products development process that
946 - is responsive to business needs
947 - has sufficient controls to prevent creation of equivalent components
- 948 ♦ An open, timely, and consensus-driven ebXML technical specifications approval
949 process that is responsive to business needs

950 Additionally, the Executive and Steering Committees, in conjunction with the full
951 ebXML Working Group MUST determine:

- 952 ♦ The requirements for short- and long-term ebXML relationships with
953 UN/CEFACT, W3C, ANSI, ISO and other standards bodies

- 954 ♦ The requirements for short- and long-term ebXML relationships with OASIS,
955 BizTalk, RosettaNet, OAG, and other XML business standards bodies
- 956 ♦ A common ebXML technical specification template to be utilized by each of the
957 project teams in developing their technical specifications
- 958 ♦ The appropriateness of moving ebXML technical specifications to recognized
959 international standards under the cognizance of an international standards body
- 960 ♦ The single body that is responsible for long term maintenance of the ebXML
961 technical specifications, repository, and supporting mechanisms - OASIS,
962 UN/CEFACT, or ebXML
- 963 ♦ The process for long term maintenance of the ebXML technical specifications
- 964 ♦ ebXML funding methodology
- 965 ♦ The need for and definition of measures of success

966 **8.1 Executive Committee Support**

967 To help meet the requirements identified above, the Executive Committee has established
968 three Executive Committee support teams.—The requirements for these support teams are
969 contained in the following subsections.

970 **8.1.1 Quality Review**

971 The *Quality Review Team* SHALL review all candidate technical specifications prior to
972 each public review period and final vote and SHALL identify via clear, concise written
973 documentation:

- 974 ♦ Deviations from the overall requirements specifications
- 975 ♦ Deviations from the ebXML traceability matrix
- 976 ♦ Completeness
- 977 ♦ Technical consistency within the overall ebXML technical framework.
- 978 ♦ Proposed solutions to identified problems or gaps where deemed appropriate by
979 the QR team

980 The *Quality Review Team* SHALL consider the following features of the candidate
981 material:

- 982 ♦ Scope and alignment with ebXML vision

- 983 ◆ Completeness
- 984 ◆ Satisfies ebXML requirements
- 985 ◆ Consistency with Technical Architecture
- 986 ◆ Consistency with component naming rules
- 987 ◆ Addresses Security Risk Assessment document
- 988 ◆ Editorial quality, that is...
- 989 - uses ebXML template
- 990 - adheres to the ebXML documentation style guidelines
- 991 - uses consistent language (glossary)
- 992 - uses correct grammar
- 993 - uses correct spelling
- 994 - avoids unsubstantiated rhetoric
- 995 - contains no logical inconsistencies
- 996 - contains no 'placeholders' for future content
- 997 - provides adequate exposition and clarity of meaning
- 998 - uses appropriate diagrams, examples and sample source code
- 999 - maintains a structural integrity
- 1000 - avoids ambiguity
- 1001 In addition, the Quality Review Team SHALL be responsible for project management
- 1002 support to include:
- 1003 ◆ Capturing the deliverables from the project teams
- 1004 ◆ Using the deliverable information to create and maintain a project plan that
- 1005 identifies the critical milestones and deliverables of the ebXML initiative
- 1006 ◆ Facilitating visibility to all ebXML project teams of the relationships between the
- 1007 critical ebXML deliverables

- 1008 ◆ Providing risk assessment analysis for the Executive Committee on any critical
- 1009 area that may impact meeting the ebXML timeline

1010 **8.1.2 Marketing Awareness**

1011 The true measure of success for ebXML will be in its adoption by the business
 1012 community. To help facilitate that adoption, the *Marketing Awareness Support Team*
 1013 SHALL:

- 1014 ◆ Create an ebXML awareness program
- 1015 ◆ Define general ebXML web site content and management approaches
- 1016 ◆ Define allowable content of ebXML Project Team public pages
- 1017 ◆ Define and execute ebXML marketing communications
- 1018 ◆ Promote and support regional ebXML promotion efforts

1019

1020

1021

1021

1022 **9 ebXML Project Team Deliverables**

1023 This section identifies the major specifications that SHALL be delivered by each of the
1024 ebXML project teams. It also describes in general terms the expected nature of the
1025 various ebXML project team deliverables to guide each team in developing those
1026 deliverables and ensure a single consistent approach.
1027

1028 **9.1 Major ebXML Technical Specifications**

1029 The major ebXML technical specifications to be delivered SHALL consist of the:
1030

- 1031 ◆ Technical Architecture Specification - contains an overview of the technical
1032 infrastructure that comprises ebXML and itemize the design rules and guidelines
- 1033 ◆ Repository and Registry Specification - includes functional specification and
1034 technical design, interfaces, services
- 1035 ◆ Transport, Routing and Packaging Specification - addresses transport of ebXML
1036 messages, the means of security employed, and the physical construction of the
1037 messaging used within the scope of the ebXML system. Specific deliverables
1038 SHALL include -
 - 1039 - message structure specification
 - 1040 - message header specification
 - 1041 - a textual API example
 - 1042 - choreographic of messages
 - 1043 - security specification
- 1044 ◆ Business Process Modeling Specification - the business process metamodel and
1045 the recommended methodology for using it
- 1046 ◆ Core Components Specification - The set of ebXML core components and the
1047 prescribed methodology for deriving them
- 1048 ◆ Trading Partner Specification - A collaboration profile template that supports
1049 manual and electronic discovery and agreement

1050 To assist in visualizing the above, Figure 9-1 is a conceptual model of overall ebXML
1051 stack interactions.
1052
1053 |

1053 **Figure 9-1. ebXML Stack Interactions**
 1054
 1055

Business Applications and Delivery Systems (external to ebXML)
Business Process Methodology
Core Components
Registry and Repository
Collaboration Protocol Profile and Agreement
Transport/Routing and Packaging
Technical Architecture
Technology Base (external to ebXML)

1056

Executive Committee
Steering Committee
Proof of Concept
Quality Review
Requirements
Project Management
Marketing Awareness

1057

1057

1058

1059

1060 **10 Disclaimer**

1061 The views and specification expressed in this document are those of the authors and are
1062 not necessarily those of their employers.—The authors and their employers specifically
1063 disclaim responsibility for any problems arising from correct or incorrect implementation
1064 or use of this design.

1065

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1066 **11**

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