electronic business XML (ebXML) Requirements Specification Version 1.04

ebXML Requirements Team

March 19, 2001

1   Status of this Document

This document specifies an ebXML DRAFT for the eBusiness community.

Distribution of this document is unlimited.

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

This version:

>   http://www.ebxml.org/project_teams/requirements/private/ebxmlRS104.doc

*Latest version***:**

>   http://www.ebxml.org/project_teams/requirements/private

Previous version:

>   http://www.ebxml.org/specdrafts/approved_specs.htm

37 2 ebXML participants

38 We would like to recognize the following for their significant participation to the
39 development of this document.
40
41 Mike Rawlins, Rawlins EC Consulting - Team Leader
42 Mark Crawford, Logistics Management Institute - Team Editor
43 Don Rudie, Dun & Bradstreet
44 Thomas Warner, The Boeing Company
45 Kenji Itoh, Japan Association for Simplification of International Trade Procedures
46 Jean Kubler, UN/Economic Commission for Europe
47 Kathleen Tyson-Quah, KTQ Consulting Limited
48 David R.R. Webber, XML Global
49 Garrett Minakawa, Oracle Corporation
50 Turochas Fuad, Sun Microsystems Incorporated
51 Murray Maloney, Muzmo
52 Dr. Marcia McLure, McLure-Moynihan, Inc.
53 Norbert Mikula, Data Channel
54 Christopher Lueder, Mitre Corporation
55 Scott Hinkelman, International Business Machines
56 Ravi Kackar, Kraft Foods
57 Doug Hopeman, XML Solutions
58 Gaile L. Spadin, Data Interchange Standards Association
59
60 Additionally, valuable input was provided from the Team Leaders and various members
61 of the other ebXML Project Teams.
62
63
64

64 **3 Table of Contents**

121

122

122 # 4   Document Introduction

123 ## *4.1   Summary of Contents of Document*

124 This *ebXML Requirements Specification* represents the work of the ebXML *Requirements*
125 *Project Team*. It defines ebXML and the ebXML effort, articulates business requirements
126 for ebXML, and defines specific requirements that shall be addressed by the various
127 ebXML project teams in preparing their deliverables.
128
129 The keywords MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD,
130 SHOULD NOT, RECOMMENDED, MAY, and OPTIONAL, when they appear in this
131 document, are to be interpreted as described in RFC 2119 [Bra97].
132

133 ## *4.2   Audience*
134 The target audiences for this document are:
135 • ebXML Project Teams, as a foundation for developing their technical specifications
136 • Other interested parties, as a means to convey the purpose, scope, and vision of
137   ebXML
138

139 ## *4.3   Related Documents*
140
141 ebXML Invitation - http://www.ebXML.org/documents/199909/ebXML_invitation.htm
142
143 ebXML Terms of Reference (TOR) -
144 http://www.ebXML.org/documents/199909/terms_of_reference.htm
145
146 Recommendations for ebXML Kickoff Meeting - UN/CEFACT/TMWG/N104 -
147   http://www.ebxml.org/documents/contributions/tm104.pdf
148
149 *Technical Reports and Publications,* World Wide Web Consortium*,*
150 http://www.w3.org/TR
151 *United Nations Layout Key for Trade Documents,* Recommendation No. 1, second
152 edition, adopted by the Working Party on Facilitation of International Trade Procedures,
153 Geneva, March 1981 Source: ECE/TRADE/137
154
155 *Authentication of Trade Documents by Means Other Than Signature*, Recommendation
156 No. 14, second edition, adopted by the Working Party on Facilitation of International
157 Trade Procedures, Geneva, March 1979 Source: TRADEWP.4/INF.63
158

159 *Information technology -- Specification and standardization of data elements* ISO/IEC
160 [ISO 11179]
161
162 *SIMAC Future Vision Statement* - UN/CEFACT Ad Hoc Working Group on Simple-EDI
163 and Forms and Web Based EDI (SIMAC) - document TRADE/CEFACT/1999/CRP.12,
164 http://www.unece.org/trade/untdid/download/99cp12.pdf
165

4.4 Documentation Conventions

167 The following highlighting is used for non-normative commentary in this document:
168
169   [Issue -]: A recorded issue.
170
171   [Ed. Note -]: Notes from the editors to themselves or the Working Group.
172
173   [NOTE -]: General comments directed to all readers.
174

5 General Introduction

176 Electronic Business Extensible Markup Language (ebXML) is an international initiative
177 established by the United Nations Centre for Trade Facilitation and Electronic Business
178 (UN/CEFACT) and the Organization for the Advancement of Structured Information
179 Standards (OASIS) with a mandate to undertake a 15-18 month program of work. As
180 identified in the ebXML Terms of Reference, the purpose of the ebXML initiative is to
181 research and identify the technical basis upon which the global implementation of XML
182 can be standardized. The goal is to provide an XML-based open technical framework to
183 enable XML to be utilized in a consistent and uniform manner for the exchange of
184 electronic business (eb) data in application to application, application to human, and
185 human to application environments—thus *creating a single global electronic market.*™ [1]
186
187 ebXML is based on international standards and is itself intended to become an
188 international standard. A key aspect for the success of the ebXML initiative is adherence
189 to the use of the W3C suite of XML and related Web technical specifications to the
190 maximum extent practical. Although these specifications may not provide the optimal
191 technical solution, acceptance of ebXML by the business community and technical
192 community is tied to XML. However, certain key elements of the ebXML technical
193 framework may require adopting alternative technologies and technical specifications—
194 such as those of the Internet Engineering Task Force (IETF), International Organization
195 for Standardization (ISO), Institute of Electrical and Electronics Engineers (IEEE),
196 International Electrotechnical Commission (IEC), UN/CEFACT, OASIS, and the Object
197 Management Group (OMG).
198

---

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

199 [NOTE - ebXML operates under the procedures identified in the ebXML Terms of
200 Reference]

5.1 ebXML Vision and Scope

5.1.1 ebXML Vision

203 The ebXML vision is to deliver:
204
205 *"A single set of internationally agreed upon technical specifications that consist of*
206 *common XML semantics and related document structures to facilitate global trade."*
207
208 This ebXML technical specifications are intended to create a *Single Global Electronic*
209 *Market.* ™ To create this single global electronic market, this single set of ebXML
210 technical specifications:
211

212 ♦   is fully compliant with W3C XML technical specifications holding a
213   recommended status

214 ♦   provides for interoperability within and between ebXML compliant trading partner
215   applications

216 ♦   maximizes interoperability and efficiency while providing a transition path from
217   accredited electronic data interchange (EDI) standards and developing XML
218   business standards

219 ♦   shall be submitted to an appropriate internationally recognized standards body for
220   accreditation as an international standard

5.1.2 ebXML Scope

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

5.2 ebXML Requirements Specification Purpose and Scope

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

5.2.1 ebXML Requirements Specification Purpose

232 This *Requirements Specification* has two primary purposes. The first of these is to
233 provide clearly articulated requirements from representatives of international business

234 and accredited standards organizations.   These requirements are intended to serve as a
235 foundation for all other ebXML specifications and should assist the ebXML project team
236 members in developing their deliverables in a consistent manner. This specification is
237 also intended to convey to interested parties the purpose, scope, and vision of ebXML.

238 ### *5.2.2 ebXML Requirements Specification Scope*

239 This *ebXML Requirements Specification* applies to the work underway within the current
240 ebXML project teams. Each project team has provided input to this document to ensure
241 consensus with its contents. In addition to the *Requirements Project Team*, project teams
242 currently chartered by the ebXML steering committee are:

243 ♦ Business Process

244 ♦ Technical Architecture

245 ♦ Core Components

246 ♦ Transport/Routing and Packaging

247 ♦ Registry and Repository

248 ♦ Trading Partner

249 ♦ Proof of Concept

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

252 ♦   Quality Review

253 ♦ Marketing Awareness

254 ♦ Project Management

255 ## *5.3 General ebXML Principles*

256 General ebXML principles to be followed in developing ebXML deliverables are to
257 create technical specifications that:

258 ♦   Enable simple, easy and ubiquitous electronic business through use of XML

259 ♦ Use approved W3C XML technical specifications to the maximum extent
260   practicable

261 ♦ Provide a global cross-industry open/interoperable standard for business-to-
262   business and business-to-consumer trade

263   ♦   Coalesce the structure and content components of divergent XML initiatives into a
264   single useable XML business standard

265   ♦   Provide impetus so that common resources currently engaged in short-term
266   solutions shall be marshaled to reach a common long-term solution goal

267   ♦   Support vertical and horizontal segments of industry and business participants

268   ♦   Avoid proprietary solutions that impose financial or software requirements
269   constraints on ebXML users to buy, install or programmatically support any
270   ebXML unique software products in the conduct of business information exchange

271   ♦   Strive to minimize costs of doing business electronically

272   ♦   Provide multi-lingual support

273   ♦   Accommodate national and international trade requirements

274   ♦   Provide a migration path from accredited EDI and developing XML business
275   standards

276   ♦   Apply when possible the simplification principles of SIMAC Business
277   Requirements

278

278

6 Business Requirements

280 This section describes the business requirements for business to be conducted
281 electronically. The business requirements identified in this section are oriented toward
282 using XML for electronic business, but most of the requirements are applicable to
283 implementation with other technologies as well.
284
285 The scope of the ebXML business requirements is to meet the needs for the business side
286 of both business to business (B2B) and business to consumer (B2C) activities. Consumer
287 requirements of the B2C model are beyond the scope of the ebXML technical
288 specifications. Application-to-application (A2A) exchanges within an enterprise may also
289 be able to use the ebXML technical specifications, however ebXML A2A solutions shall
290 not be developed at the expense of simplified B2B and B2C solutions.
291
292 [NOTE - for ease of reading, the term business is to be interpreted as interchangeable
293 with for-profit, non-profit, not-for profit, and government entities.]
294
295 [NOTE - For the purposes of this document, Application-to-Application is defined as the
296 computer to computer exchange of business information without human intervention both
297 within and across enterprise boundaries.]
298
299 The business requirements to be addressed by the ebXML initiative are divided into nine
300 core areas - General Business, Electronic Business, Globalization, Openness ,
301 Usability/Interoperability, Security, Legal, Digital Signature, and Organizational. Each of
302 these requirements is identified in the following sections.

6.1 General Business Requirements

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

309 ♦ A single, consistent, simple approach to using XML for electronic business
310   processes in both the B2B and B2C environments

311 ♦ A process and recommendation for ebXML conformance

312 ♦ Support for both vertical (e.g. industry, functional, organizational) and horizontal
313   (e.g. cross-industry, multi-functional, organizationally neutral) solutions regardless
314   of the sophistication of the user

315   ♦   Support for a range of implementations from basic, low cost solutions appropriate
316   for Small and Medium Enterprise (SME) deployment, to comprehensive, complex
317   implementations using all optional features appropriate to large enterprises

318   ♦   A range of usage from using core features in ad hoc, informal exchanges to highly
319   formal, structured exchanges

320   ♦   A single consistent modeling language and methodology

321   ♦   Support for current business models and practices as well as new ones developed
322   through business process modeling

323   ♦   A superset business process metamodel that supports individually developed
324   business process models

325   ♦   Design rules for developing ebXML compliant XML documents that are based on
326   approved W3C schema specifications

327   ♦   Syntactically neutral core components

328   ♦   XML syntax based core schema's and tags to support individual trading partner
329   business processes that -

330   ↗ eliminate duplication of effort

331   ↗ provide support for XML metadata

332   ↗ clearly identify core, mandatory features, and optional features

333   ↗ provide a mechanism for full specification of semantic meaning

334   ♦   Fully interoperable transport, routing, and packaging solutions

335   ♦   Security solutions that meet business confidentiality requirements

336   ♦   A single recognized international standards organization to oversee continued
337   ebXML work

338   ♦   An open development process with no barriers to entry

339   ♦   Open, readily accessible, perpetually free technical specifications and standards

340   ♦   A solution that minimizes costs for development, maintenance, and use

341   [NOTE - Business looks to XML as a means of gaining competitive advantage through
342   leveraging new technology. Minimizing the cost of doing business electronically is a key
343   element in achieving a competitive advantage. The cost of doing business electronically

344 can be grouped into acquisition, development, deployment and customization, integration
345 with business applications, and operations and support. It is expected that using XML for
346 electronic business will be less costly than traditional forms of EDI and other existing
347 electronic commerce technologies in each of these areas. This expected cost reduction is
348 a driving force for considering XML over traditional EDI technologies.]

349 ## *6.2 Conducting Electronic Business using ebXML*

350 Business applications need to be able to exchange structured business documents
351 (encoded in XML) with a corresponding application of another enterprise to support a
352 business process. This exchange may either be completely without human intervention,
353 as is the case with traditional EDI, or with some level of human intervention to correct
354 missing or erroneous data. Business applications may also need to exchange structured
355 business documents with intermediaries such as portals and brokers. Because a majority
356 of businesses do not have sophisticated IT architectures, business applications will need
357 to exchange structured business documents with trading partners who will be limited to
358 viewing and manually processing both inbound and outbound transactions. Business
359 applications also require information exchange mechanisms that provide for the exchange
360 of pure XML payloads but may also support plug and play, shrink wrapped, syntactically
361 neutral solutions.

362 Additionally, business applications may also need to:

363 ♦ Be able to generate XML encoded business documents that can be used in
364   traditional computer to computer exchanges as well as being displayed using an
365   associated style sheet keyed to a specific presentation format; such as the
366   appropriate U.N. Layout Key for Trade Documents or a trading partner specified
367   format

368 ♦ Enable data entry of business documents using a specified presentation format;
369   such as the appropriate U.N. Layout Key for Trade Documents or a trading partner
370   specified format. The data entry shall result in an ebXML compliant encoded
371   document representing the business information.

372 ## *6.3 Globalization*
373 Global solutions are critical in today's ever expanding marketplace. The underlying
374 purpose of ebXML is to facilitate international trade. To achieve "*a single global*
375 *electronic market*" that such facilitation implies, it is critical to simplify existing
376 exchange standards methodologies and harmonize divergent approaches. This
377 simplification and harmonization can be achieved through developing a business
378 metamodel in conjunction with syntax neutral core components. Both of these
379 deliverables shall accommodate divergent national and multi-national process
380 requirements, and should support backward compatibility with the developing ebXML
381 technical framework.
382

383   To simplify development efforts, all work shall use English. To support globalization, all
384   ebXML technical specifications shall be translatable into other natural languages.
385   Translation into other natural languages is the responsibility of the intended user,
386   although such translations should be supported in the ebXML repository. Regardless of
387   language, and in keeping with the requirements of XML 1.0, all work shall be compliant
388   with Unicode and ISO/IEC 10646 for characters, Internet RFC 1766 for language
389   identification tags, ISO 639 for language name codes, and ISO 3166 for country name
390   codes.

391   6.3.1   Openness

392   Openness is a critical aspect of ebXML. Business requires the ability to easily access
393   ebXML technical specifications without regard to "membership", or payment of access
394   and/or use fees. ebXML technical specifications shall be completely open to all potential
395   users so as to eliminate the barriers for entry. Openness requires several key components
396   to ensure viability. Chief among these is an open, easily accessible registry and repository
397   for the ebXML technical specifications.

398   6.3.2   Registry and Repository

399   A registry is required to allow process owners to submit, classify, register and update
400   mapping templates, business process specifications, and data interchange specifications.
401   This registry must have an interface that supports access by humans as well as computer
402   applications. This registry must support an agreed upon security protocol.
403
404   A repository is required for storage and retrieval of various items that support performing
405   business electronically. There are two distinct sets of business requirements on the
406   repository: a set dealing with managing the workflow of developing standard components
407   that are stored in the repository, and a set dealing with application usage of the
408   repository. Additionally, the repository must support the information needs of the
409   ebXML work group and project teams, as well as ebXML technical specification users
410   with respect to glossaries and products.
411
412   [NOTE - A registry is a mechanism whereby relevant documents and metadata about
413   them can be registered such that a pointer to their location, and all their metadata, can be
414   retrieved as the result of a query. A repository is a location or a set of distributed
415   locations where documents pointed at by the registry reside and from which they can be
416   retrieved by conventional (http / ftp) means, perhaps with additional
417   authentication/permission layers.]
418
419   The ebXML Registry and Repository shall support the concept of a network of registries
420   and repositories that can intercommunicate via the interfaces specified by the ebXML
421   *Registry and Repository Project Team*. A registry can be established by an industry group
422   or standards organization and can intercommunicate with any number of repositories. In
423   addition, context with a repository can reference content within another repository. The
424   concept of a single repository is not scalable, nor does it promote the idea of a global
425   web.

ebXML Requirements Specification   Page 13 of 13

426
427   If ebXML is to exist beyond its initial 18-month timeframe, then ebXML should maintain
428   responsibility for ebXML technical specifications, ebXML work group deliverables, and
429   ebXML glossaries in an ebXML-supported repository. However, if the decision is made
430   that ebXML will not exist after the initial set of deliverables, or that ebXML will not
431   maintain or support its own repository, then ebXML must determine if repository
432   oversight responsibilities for ebXML technical specifications should transition to
433   UN/CEFACT, OASIS, XML.ORG, BizTalk, or some other existing XML business
434   standards organization or consortium

435   *6.4 Usability/Interoperability*

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

440   *6.4.1 Architecture*

441   This is a primary requirement of the ebXML initiative. To maximize interoperability, the
442   ebXML architecture should support

443   ♦   Common Business Processes - Both entities involved in the exchange of data must
444   be engaged in executing the same transaction in the context of a business process

445   ♦   Common Semantics – Common meaning, as distinct from words, expression, or
446   presentation

447   ♦   Common Vocabulary - A direct correspondence between words and meaning

448   ♦   Common Character Encoding

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

451   ♦   Common Expression - Common set of XML element names, attributes and
452   common usage of those attributes, common approach to document structure

453   ♦   Common Security Implementations

454   ♦   Common Data Transfer Protocol

455   ♦   Common Network Layer

456   [NOTE - As with other non-functional requirements, some aspects of achieving
457   interoperability may conflict with other non-functional requirements. Where a
458   requirement is not met, software can usually be developed to provide a bridge. However,
459   such bridges may increase costs of development, implementation, or both, and conflict

460   with cost minimization. In other cases, achieving interoperability enhances other
461   requirements. For example, maximizing interoperability helps to achieve platform
462   independence.]

463   ### 6.4.2 Transport, Routing, & Packaging

464   Any exchange of business information requires fully described transport, routing, and
465   packaging methodologies. These descriptions must be based on a program language
466   definition independent of the service interface required for systems to control the
467   messaging system for the purpose of sending and receiving messages. These descriptions
468   should identify the behavior of the messaging system required to:
469

470   ♦   Realize reliable secure sending and receiving of messages over any network
471   capable of carrying XML

472   ♦   Support syntax neutral definition of the information that needs to be held in the
473   supporting messaging policy repository

474   ♦   Detail the format and structure of the wrapper, header, and any other data within
475   the message - to include signatures and encryption

476   ♦   Query ebXML servers (such as ebXML compliant message handling systems or
477   registries) for the services they support

478   ### 6.4.3 Extensibility

479   Businesses seek solutions that provide for a certain level of customization beyond core
480   standards. This extensibility is necessary to ensure internally unique business process
481   requirements can be addressed beyond the scope of standards used for information
482   exchanges between businesses. One example of this requirement is customization beyond
483   core standards to support exchanges within an enterprise. Another is customization to
484   support application/database to human exchanges. ebXML must ensure extensibility is
485   facilitated while ensuring conformance with core standards.

486   ### 6.4.4 Leveraging Existing Technology

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

490   #### 6.4.4.1 Compatibility with existing Technology and EB standards and practices

491   Businesses already have in place extensive EDI architectures and business solutions
492   based on accredited EDI standards; and customized sub-sets in the form of
493   implementation conventions based on those standards. Additionally, many businesses are
494   implementing XML solutions that are based on the technical specifications issued by the
495   World Wide Web Consortium (W3C) and the XML-based business standards of various
496   competing XML groups—such as RosettaNet, BizTalk, XML.ORG, the Open
497   Applications Group (OAG). Although the ebXML solution will facilitate a single global

498   electronic market, and although its technical framework will provide a single set of
499   technical specifications, businesses will still require the ability to inter-operate their
500   existing EDI and XML solutions with solutions built on the ebXML framework.
501
502   As part of compatibility, businesses require a technical framework that reuses common
503   elements regardless of syntax. To ensure a syntax neutral solution, ebXML must identify
504   and define those items considered common across XML business data exchanges.
505   Common items are semantic units at any level that stay consistent across contexts, and
506   therefore are reusable both within and between business exchange messages. Business
507   process models will help define common items and provide their context. This context
508   will in turn define the precise use of common items in messages exchanged among
509   parties. ebXML must describe these items in terms that are independent of
510   implementation syntax. This syntax neutral approach will enable their reuse for not only
511   XML documents, but other syntax-based transactions as well. The ebXML technical
512   framework must adopt—or if needed, develop—a methodology to consistently build or
513   derive core components, including methods to encourage reuse and provide for
514   extensions. ebXML must identify element names that can apply across business processes
515   and contexts yet still allow for translation into leading spoken languages. All ebXML
516   work shall generate the content of core components independent of implementation
517   syntax, but with references to data structures in XML messages and EDI transactions.
518   The ebXML solution shall identify attributes that describe the context of the components
519   also in terms independent of syntax.

520   *6.4.4.2   Migration from existing EDI and XML solutions*

521   Businesses seek maximum interoperability between their applications and trading partner
522   applications. This can be achieved by a single way of doing business electronically, i.e., a
523   single standard for using XML for electronic business. However, many businesses also
524   have a considerable investment in existing standards based EDI and emerging XML
525   business approaches. These businesses require a mechanism and migration path for
526   accommodating legacy EDI solutions based on accredited standards and XML solutions
527   already in progress or implemented. Although migration from existing EDI and XML
528   solutions is a key element of ebXML, the ebXML solution will ensure maximizing
529   interoperability takes precedence in developing the ebXML technical specifications.
530
531   [NOTE - It is beyond the current scope of the ebXML initiative to develop specific
532   migration and transformation methods to include mapping services, communication
533   channels, and architecture support from traditional EDI architectures.]

534   *6.5 Security*

535   Aspects of security may be required at both a session layer (i.e., for the duration of a
536   network session in which data is exchanged) or be applied to a single, stand-alone
537   document instance. In addition, application of security to a particular exchange or
538   document instance must be determined by the business needs, and allow unrestricted and
539   unsecured interchanges as the default. All, some, or no security features may be required

540 in any particular exchange of business information. Additionally, the following
541 requirements must be addressed:

542 ♦ Confidentiality - Only sender and receiver can interpret document contents

543 ♦ Authentication of sender - Assurance of the sender's identity

544 ♦ Authentication of receiver - Assurance of the receiver's identity

545 ♦ Integrity - Assurance that the message contents have not been altered

546 ♦ Non-repudiation of Origin - The sender can not deny having sent the message

547 ♦ Non-repudiation of Receipt - The receiver can not deny having received the
548   message

549 ♦ Archiving - It must be possible to reconstruct the semantic intent of a document
550   several years after the creation of the document

551 [NOTE - The archiving, Authentication and Non-Repudiation of Origin and Receipt may
552 be performed by a trusted third party through which the Parties to a transaction agree to
553 channel transaction messages in order to provide independent historical proof that the
554 transaction took place at a specific time and on specific terms.]

555 [NOTE - This time period is subject to the archiving and record retention requirements of
556 particular situations. In general, businesses might require archiving and retrieval of up to
557 30 years after document creation.]

558 ## 6.6 Legal

559 Beyond the security requirements identified in section 2.6, the following additional legal
560 requirements exist:

561 ♦ Comply with the requirements of UN/CEFACT recommendation 14 -
562   *Authentication of Trade Documents by Means Other Than Signature*

563 ♦ Provide versioning support to facilitate reconstructing the semantic meaning of
564   transactions in accordance with the underlying transaction format used

565 ♦ Ensure full audit capability is supported

566 ♦ Ensure all transmitted data is well defined by a minimal set of metadata

567 ♦ Ensure a mechanism provides for identifying completeness of a transaction

568 ### *6.7 Digital Signatures*

569 Digital signatures, or electronic signatures, have security and legal implications that
570 directly impact on electronic business requirements. As more and more government
571 bodies define digital signatures, and enact legislation that adopts such techniques as
572 having the same force of law as traditional signatures, new technology solutions must
573 accommodate these business requirements.
574
575 The following definition and statement of compliance requirements is taken from Article
576 6 of UN Commission on International Trade Law, Working Group on Electronic
577 Commerce, Draft Guide to Enactment of the UNCITRAL Model Law on Electronic
578 Signatures (A/CN.9/WG.IV/WP.88)
579
580 (1) Where the law requires a signature of a person, that requirement is met in relation to a
581   data message if an electronic signature is used which is as reliable as was appropriate
582   for the purpose for which the data message was generated or communicated, in light
583   of all the circumstances, including any relevant agreement.
584 (2) Paragraph (1) applies whether the requirement referred to therein is in the form of an
585   obligation or whether the law simply provides consequences for the absence of a
586   signature.
587 (3) An electronic signature is considered to be reliable for the purpose of satisfying the
588   requirement referred to in paragraph (1) if:
589   (a) the signature creation data are, within the context in which they are used,
590   linked to the signatory and to no other person;
591   (b) the signature creation data were, at the time of signing, under the control
592   of the signatory and of no other person
593   (c) any alteration to the electronic signature, made after the time of signing, is
594   detectable; and
595   (d) where a purpose of the legal requirement for a signature is to provide
596   assurance as to the integrity of the information to which it relates, any
597   alteration made to that information after the time of signing is detectable.
598
599 The ebXML technical framework must support electronic transactions that provide for
600 electronic signatures at an appropriate level within the transaction to meet requirements
601 of both the sender and receiver in keeping with the forgoing definition and attributes.

602 ### *6.8 Management*

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

607 #### *6.8.1 Organizational Structure*

608 The ebXML initiative is an eighteen-month effort to develop a technical framework. To
609 ensure efficiency of operation and success in achieving the ebXML vision, sufficient

610   organizational controls must be put in-place as quickly as possible. Further, there exists
611   the possibility that ebXML will become more than a short term initiative. As such, long
612   term requirements for managing ebXML must be defined and addressed in the near term
613   to ensure a smooth transition from short to long term management. Further, if such a
614   long-term organization becomes reality, processes must be adopted for recasting ebXML
615   as an internationally accredited standards body.

616   ### *6.8.2 Participation*

617   The ebXML initiative relies heavily on technical expert participation. This participation
618   must be free of organizational requirements that restrict or otherwise inhibit participation
619   of anyone. Further, participation should be limited to the individual and not at the
620   organizational level. This will ensure each technical expert is given an equal footing in
621   the organization, management, and work effort of ebXML.
622

622

7   ebXML Technical Framework Requirements

624   This section identifies specific requirements for achieving the ebXML technical
625   framework through the work of each of the ebXML project teams. These requirements
626   have been developed in close coordination with those project teams to ensure consensus
627   on their content. These high level requirements are closely aligned with the business
628   requirements in section two of this document and are consistent with the vision, purpose,
629   scope and guiding principles contained in section one. These high level requirements are
630   carefully designed to provide a road map for the respective project teams as they drill
631   down to more detailed requirements in preparation for developing their ebXML
632   deliverables. As each of these deliverables becomes a reality, they will contribute to the
633   developing ebXML technical specifications as part of building the ebXML technical
634   framework as illustrated in Figure 3-1.

635

636   **Figure 3-1 ebXML Technical Framework**
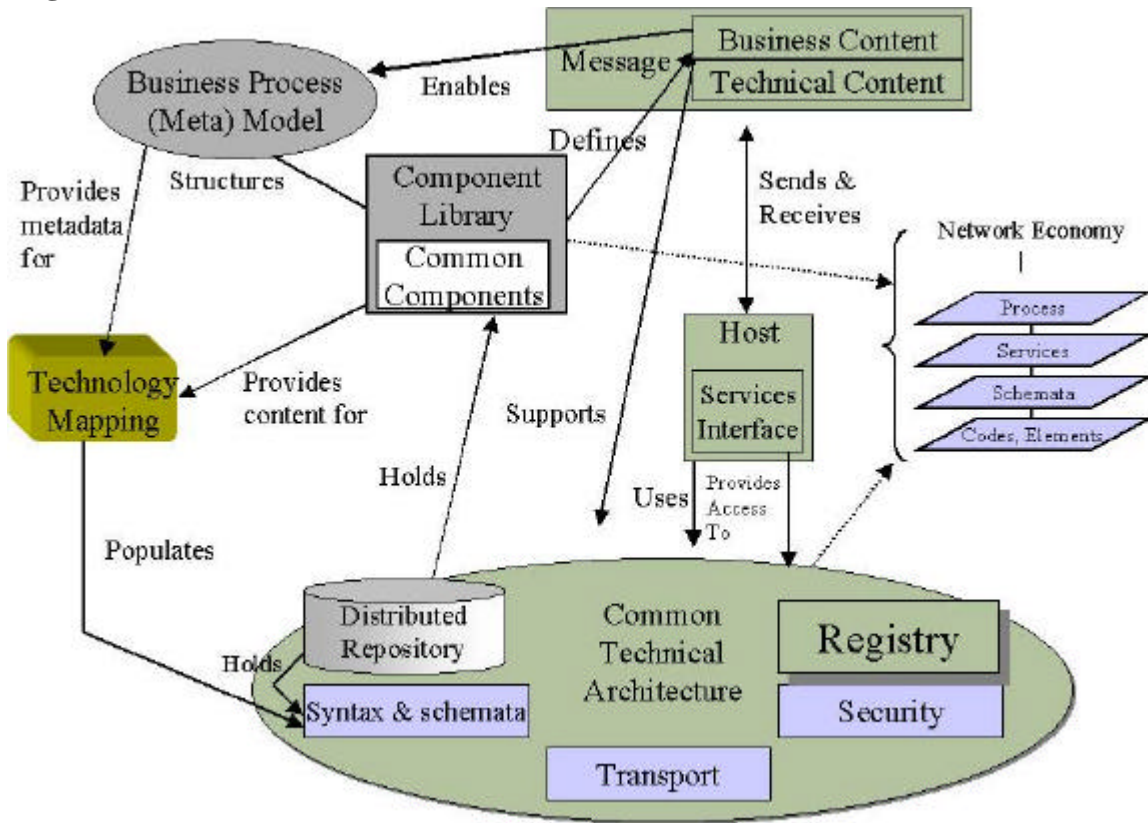
7.1   General Requirements

638   The following general requirements, in conjunction with the business requirements stated
639   in section two, apply to each project team. Deliverables for each of the project teams
640   must -

641   ♦   Be developed in compliance with the purpose, scope, and guiding principles
642   identified in Section 1

643   ♦   Meet the business needs articulated in section two

644   ♦   Be fully compliant with approved ebXML technical specifications

645   ♦   Clearly identify core, mandatory features, and optional features

646   ♦   Clearly define conformance requirements

647   ♦   Support the requirements of each project team as identified in the following sub-
648   sections.

649   *7.2 Requirements*

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

652   ♦   Develop follow-on requirements documents in support of the ebXML Executive
653   Committee and ebXML Steering Committee that meet the requirements contained
654   in section 4 of this document

655   ♦   Review, evaluate, and assimilate follow-on requirements submitted by external
656   organizations for consideration by ebXML

657   Provide assistance as required to the *Quality ReviewSupport Team* on ebXML
658   requirements issues to include at a minimum a requirements traceability matrix

659   *7.3 Business Process*

660   The *Business Process Project Team* detailed requirements and deliverables shall:
661

662   ♦   Provide a technical specification for business process definition (BPDS), enabling
663   an organization to express its business processes so that they are understandable by
664   other organizations, thereby enabling integration of business processes (See for
665   example eCo strategic framework- services and interactions)

666   ♦   Provide an explicitly specified process metamodel that is not merely implied by
667   instantiations or derivations

668   ↗ the metamodel shall provide set of rules to define the business processes—rules,
669   semantics and syntax

670   ♦   Provide a BPDS that is usable -

671   ↗ globally

672   ↗ cross-industry

673   ↗ by small, medium, and large organizations

674   ↗ by for-profit and government and/or non-profit organizations

675   ♦   Provide a BPDS that enables an organization to express its business processes to
676   such an extent that other organizations can discover -

677   ↗ the kind of organization the process belongs to

678   ↗ the business processes belonging to an organization

679   ↗ the interaction points in the organization's business process in order to determine
680   whether and how to engage in business

681   ↗ the kinds of information exchanges required to conduct a particular interaction in
682   the business process

683   ↗ company interactions and services and categorizations of them

684   ♦   Provide for BPDS compatibility by -

685   -   allowing for forward migration from existing frameworks to the degree possible

686   ↗ carrying forward accumulated best of breed experience such as—OAG,
687   RosettaNet, HL7—into the ebXML "superset"

688   -   enabling mapability between content provider defined processes

689   -   enabling organizations or industry verticals to be able to compare business
690   processes

691   ♦   Provide for BPDS re-usability/extensibility by -

692   ↗ allowing a company to 're-use' and extend standard, template, or actual business
693   processes as starting points for definition of specific business processes

694   ↗ encouraging industry verticals to base their model on the high level framework

695   ↗ supporting re-usable data components

696   ↗ supporting re-usable process components

697   ♦   Enable business processes to be accessible and readable by -

698   ↗ making BPDS-based processes machine readable

699   ↗ expressing processes defined under BPDS in parsable, navigable XML

700   ↗ making processes defined under BPDS visually (diagrammatically) viewable

701   ↗ Identifying at least one industry standard based tool or technique, through which
702   BPDS compliant processes can be defined through diagrammatic drawing

703   ♦   Provide a process to create and maintain a -

704   [NOTE - this process shall be developed in coordination with the *Core Components*
705   *Project Team's* developing process for identifying core components.]

706   ↗ glossary of terms related to business process methodology vocabulary such as—
707   functional, non-functional, vertical, message, segment, data type—using TMWG
708   Unified Modeling Methodology document Annex 1 as a starting point

709   ↗ glossary of terms specific to each business process to be modeled

710   ↗ glossary of XML tags

711   ↗ library of documents based on identified services and interactions

712   ↗ web site for ready access to glossaries

713   ♦   Be developed in conjunction with the *Registry and Repository Project Team* to
714   incorporate technical specifications, models, and required glossaries into the
715   ebXML repository

7.4 Technical Architecture

717   The *Technical Architecture Project Team* detailed requirements and deliverables shall:
718

719   ♦   Provide a view for integration of business processes among ad-hoc or established
720   independent business partners by electronic means

721   ♦   Reduce the need for collaborative business partners to have individual and
722   expensive prior agreement on how to integrate business processes

723   ♦   Provide a high-level business-centric view of distributed e-business processes

724   ♦   Specify the roles, interactions, and interfaces among the various ebXML
725   specification components such as—the business process metamodel, core
726   components, registry and repository, message handling, and collaboration profiles
727   and agreements.

728   ♦   Allow for both business processes and enabling technologies to evolve
729   independently while retaining long-term investments in both

730   ♦   Integrate with new and legacy systems throughout the enterprise

731   ♦   Leverage existing technologies and standards

732   ♦   In coordination with BP process specification and core components identification,
733   provide for naming conventions for technical and business content in the technical
734   architecture

735   ♦   Provide design guidelines for ebXML compliant messages

736   *7.5 Core Components*

737   The *Core Components Project Team* detailed requirements and deliverables shall:

738   ♦   Be developed in conjunction with the *Business Process Project Team*

739   ♦   Identify a methodology for describing core components within the framework of
740   the Business Process metamodel

741   ♦   Define core component content and structure

742   ♦   Support reuse and extensibility

743   ♦   Provide methodology and examples for XML and EDI instantiation

744   ♦   Enable creation of XML business standards

745   The *Core Components Project Team* shall develop core components that shall:

746   ♦   Be syntax independent

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

749   ♦   Be defined to ensure separation of common core components versus new
750   extensions

751   ♦   Incorporate where appropriate ISO/IEC 11179 rules

752   ♦   Use semantics solutions that accommodate currently defined accredited EDI
753   semantics where they add value

754   ♦   Use a single consistent set of terminology

755   ♦   Support context sensitive core components

756 ## *7.6 Transport/Routing and Packaging*

757 The *Transport/Routing and Packaging Project Team* detailed requirements and
758 deliverables shall:

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

760 ↗ related messages in a collection

761 ↗ physical and/or logical addressing of destination for messages

762 ♦   Specify exchange at the application level

763 ♦   Provide for flexible transaction boundaries

764 ♦   Provide for reliable messaging and error handling

765 ♦   Identify messaging routing

766 ♦   Meet security requirements

767 ♦   Provide for audit trails

768 ♦   Define and meet acceptable levels of quality of service

769 ♦   Support platform independent interoperability

770 ♦   Support restart and recovery

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

773 ## *7.7 Registry and Repository*

774 The *Registry and Repository Project Team* detailed requirements and deliverables shall:

775 ♦   Develop detailed blueprints for an ebXML repository that

776 ↗ uses open management processes

777 ↗ has open and perpetually free access

778 ↗ has interfaces with other existing and planned XML business standards
779   repositories

780 ↗ supports technical specification submission, development, and support

781 ↗ supports required and desired systems services

782   ↗ identifies the long-term strategy for ensuring the continued availability of the
783   repository

7.7.1 Technical Specification Submission, Development, and Support

785   The registry and repository specifications shall address:

786   ♦   Technical specification storage and retrieval for development and runtime views

787   ♦   Support for mapping templates—enabling a migration path from existing standards
788   to future ebXML standards

789   ♦   Storage—the ability to store objects in their original form, not limited to -

790   ↗ transaction definition, e.g., purchase Item

791   ↗ document definition, e.g., purchase order

792   ↗ classification schemes

793   ↗ ontology sub-trees

794   ↗ trading partner profile instances

795   ↗ code lists

796   ↗ related data, example instances of document definitions, executable code, style
797   sheets

798   ↗ relationships between objects, e.g., storage of semantically equivalent objects

799   ↗ business models

800   ♦   A flexible workflow to allow an existing specification to progress through varying
801   sequences of classifications, e.g., progressing a company standard into an industry
802   group and finally into an ebXML technical specification

803   ♦   A method for defining what context data is being used in the business process,
804   which may reside within the original package submission

805   ♦   Change management facilities

806   ♦   Enable hooks into a variety of modeling and development tools

807   ♦   Support a role-based security model

808   ♦   Support for work request submissions to store associated supporting materials in
809   any electronic format, e.g., PowerPoint documents, audio files, images

810   ♦   Indexing of data elements across all the specifications and vertical domains in the
811   repository

7.7.2   System Services

813   System services consist of required and desired services. The registry and repository
814   specifications shall address both types.
815

7.7.2.1   Required Services

817   Required services include:

818   ♦   Query services—the ability to send a request and retrieve results from a physical
819   storage mechanism, e.g., exact or similar matches and navigation

820   ♦   Workflow services—the ability to assign, route, sign-off, and define rules to
821   support the workflow

822   ♦   Logging services—the ability to store transactional events, query events, and
823   metrics

824   ♦   Repository Interface Discovery service—the ability to expose (sub)set of ebXML
825   interfaces implemented by a repository

826   ♦   Quality Assurance Service—the ability to validate content based on its
827   classification

7.7.2.2   Desired Services

829   Desired services include:

830   ♦   Transformation services—the ability to transform objects into another form. (e.g.,
831   IDEF-1X to XMI, XMI to XML Schema)

832   ♦   ebXML information services

833   ↗ Archives of previous ebXML technical specifications

834   ↗ Online access requirements of the other ebXML project teams as defined by their
835   requirements and deliverables

7.8 Trading Partners

837   The *Trading Partners* Project Team detailed requirements and deliverables shall:
838

839   ♦   Define a collaboration-protocol profile (CPP) by which a party can be found
840   through a discovery process. The profile indicates what kind of electronic
841   business to business interactions the party is capable of. The CPP defines the
842   technical components of the interactions, such as supported communication

843   profiles, security information, general messaging specifications, and the definition
844   of the collaborative processes that the party supports in interactions with other
845   parties
846   ▪ The discovery process itself as a business process that is not within the scope
847   of the Trading-Partners team.
848   ♦ Define a collaboration-protocol agreement (CPA), which records agreement
849   between two parties on how to do electronic business with each other. The CPA
850   can be viewed as the intersection of the two parties' CPPs. It defines the common
851   technical capabilities and the particular services that each provides to the other.
852   ▪ It is a long-term goal to extend the CPA to define multiparty interactions.
853   ♦ Define the content of the CPP such that a software process can compose a CPA
854   from the CPPs of the two parties.
855   ♦ Define the CPA such that it serves the purpose of a configuration document which
856   can be used to configure the two parties' run-time systems to perform the desired
857   business.
858   ♦ Work with the Transport-Routing-Packaging team to ensure that the CPP/CPA
859   provides the needed support for message exchanges and that the message header
860   provides the fields needed to support electronic business under control of a CPA.
861   ♦ Define the collaborative processes that the party can engage in with another party
862   based on the ebXML model for the business process. Elements of the definition
863   include:
864   ▪ The requests that can be sent to the party
865   ▪ The business document schema for each request
866   ▪ The response messages that can be sent as a result of each request
867   ▪ The choreography of the message exchanges

868   *7.9   Proof of Concept*

869 The *Proof of Concept* Project Team detailed requirements and deliverables shall facilitate
870 developing prototype demonstrations for ebXML technical specifications. These
871 prototype demonstrations shall:

872   ♦ demonstrate feasability and interoperability of each of the ebXML technical
873   specifications within a business domain

874   ♦ demonstrate viability of overall ebXML technical framework

875

875

8 ebXML Organizational and Procedural Requirements

877 The ebXML executive committee must put in place organizational and procedural
878 processes as soon as possible. These organizational and procedural processes are critical
879 to enable the various ebXML project teams to make sound decisions in developing their
880 requirements and deliverables. These organizational and procedural processes must:

881 ♦ Facilitate the efforts of the *Requirements* project team and the various executive
882   committee support teams identified in section 4.1.

883 ♦ Support each of the functional project teams to meet their requirements

884 In developing these organizational and procedural processes, the executive committee
885 shall

886 ♦ Follow the purpose, scope, and guiding principles identified in Section 1

887 ♦ Meet the business needs articulated in section two

888 ♦ Facilitate the general requirements in section 3.1

889 ♦ Support the requirements of each project team as identified in section 3

890 These organizational and procedural processes must provide for

891 ♦ An open and consensus driven ebXML management process

892 ♦ An open, timely, and consensus driven ebXML products development process that

893   ↗ is responsive to business needs

894   ↗ has sufficient controls to prevent creation of equivalent components

895 ♦ An open, timely, and consensus-driven ebXML technical specifications approval
896   process that is responsive to business needs

897 Additionally, the Executive and Steering Committees, in conjunction with the full
898 ebXML Work Group must determine:

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

901   ♦   The requirements for short and long term ebXML relationships with OASIS,
902   BizTalk, , RosettaNet, OAG, and other XML business standards bodies

903   ♦   A common ebXML technical specification template to be utilized by each of the
904   project teams in developing their technical specifications

905   ♦   The appropriateness of moving ebXML technical specifications to recognized
906   international standards under the cognizance of an international standards body

907   ♦   The single body that is responsible for long term maintenance of the ebXML
908   technical specifications, repository, and supporting mechanisms - OASIS,
909   UN/CEFACT, or ebXML

910   ♦   The process for long term maintenance of the ebXML technical specifications

911   ♦   ebXML funding methodology

912   ♦   The need for and definition of measures of success

913   ## 8.1 Executive Committee Support

914   To help meet the requirements identified above, the executive committee has established
915   three executive committee support teams. The requirements for these support teams are
916   contained in the following subsections.

917   ### 8.1.1 Quality Review

918   The *Quality Review Support Team* shall review all candidate technical specifications
919   prior to each public review period and final vote and shall identify via clear, concise
920   written documentation:

921   ♦   Deviations from the overall requirements specifications

922   ♦   Deviations from the ebXML traceability matrix

923   ♦   Completeness

924   ♦   Technical consistency within the overall ebXML technical framework.

925   ♦   Proposed solutions to identifed problems or gaps where deemed appropriate by the
926   QR team

927   ### 8.1.2 Marketing Awareness

928   The true measure of success for ebXML will be in its adoption by the business
929   community. To help facilitate that adoption, the *Marketing Awareness Support Team*
930   shall

931   ♦   Create an ebXML awareness program

932   ♦   Define general ebXML web site content and management approaches

933   ♦   Define allowable content of ebXML Project Team public pages

934   ♦   Define and execute ebXML marketing communications

935   ♦   Promote and support regional ebXML promotion efforts

936   *8.1.3   Project Management*

937   The *Project Management Support Team* shall:

938   ♦   Capture the deliverables from the project teams

939   ♦   Use the deliverable information to create and maintain a project plan that identifies
940   the critical milestones and deliverables of the ebXML initiative

941   ♦   Facilitate visibility to all ebXML project teams of the relationships between the
942   critical ebXML deliverables

943   ♦   Provide risk assessment analysis for the Executive Committee on any critical area
944   that may impact meeting the ebXML timeline

945

946

946

9   ebXML Project Team Deliverables

948   This section identifies the major specifications that shall be delivered by each of the
949   ebXML project teams. It also describes in general terms the expected nature of the
950   various ebXML project team deliverables to guide each team in developing those
951   deliverables and ensure a single consistent approach.
952

9.1 Major ebXML Technical Specifications

954   The major ebXML technical specifications to be delivered consist of the:
955

956   ♦   Technical Architecture Specification - contains an overview of the technical
957   infrastructure that comprises ebXML and itemize the design rules and guidelines

958   ♦   Repository and Registry Specification - includes functional specification and
959   technical design, interfaces, services

960   ♦   Transport, Routing and Packaging Specification - addresses transport of ebXML
961   messages, the means of security employed, and the physical construction of the
962   messaging used within the scope of the ebXML system. Specific deliverables shall
963   include -

964   ↗ message structure specification

965   ↗ message header specification

966   ↗ a textual API example

967   ↗ choreographic of messages

968   ↗ security specification

969   ♦   Business Process Modeling Specification - the business process metamodel and
970   the recommended methodology for using it

971   ♦   Core Components Specification - The set of ebXML core components and the
972   prescribed methodology for deriving them

973   ♦   Trading Partner Specification - A collaboration profile template that supports
974   manual and electronic discovery and agreement

975   To assist in visualizing the above Figure 5-1 is a conceptual model of overall ebXML
976   stack interactions.
977

978   **Figure 5-1. ebXML Stack Interactions**

979
980

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)

981

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

982
983

984   ## *9.2 High Level Deliverables Descriptions*

985   The following high level deliverables descriptions are intended to facilitate the efforts of
986   the *Technical Coordination and Support Project Team* in ensuring consistency in the
987   output of the various functional project teams. These high-level deliverables descriptions
988   are identified in Figure 5-2.

989
990   **Figure 5-2. ebXML Project Team Deliverable Content**

991

FOCUS AREA	WHAT IT DOES	HOW IT'S USED
Project Team Business Requirement What is the contribution of the group to ebXML?	Picture Model of the Project Team Deliverables	Business Method - How the deliverables will be used

992

993 To ensure consistency across all deliverables, each project team shall use the ebXML
994 technical specification template developed by the Executive Committee. Further, each
995 project team shall submit, for Steering Committee approval, a list of all proposed
996 deliverables. That list, once approved by the Steering Committee, shall be included as
997 part of this document.
998

999 # 10 Disclaimer

1000 The views and specification expressed in this document are those of the authors and are
1001 not necessarily those of their employers. The authors and their employers specifically
1002 disclaim responsibility for any problems arising from correct or incorrect implementation
1003 or use of this design.

1004

11 Contact Information

1004

1005
1006 Team Leader
1007   Michael C. Rawlins
1008   Rawlins EC Consulting
1009   PMB 29
1010   14 Canyon Creek Village
1011   Richardson, TX 75080-1602
1012   USA
1013
1014   Phone: 972-783-8573
1015   EMail: rawlins@metronet.com
1016
1017
1018 Editor
1019   Mark Crawford
1020   Logistics Management Institute
1021 [ed note. To be completed before final submission]
1022   Street
1023   city, state, zip/other
1024   USA
1025
1026   Phone:
1027   EMail:
1028

1028

1029   **Copyright Statement**

1030
1031   Copyright © ebXML 2001. All Rights Reserved.

1032
1033   This document and translations of it MAY be copied and furnished to others, and
1034   derivative works that comment on or otherwise explain it or assist in its implementation
1035   MAY be prepared, copied, published and distributed, in whole or in part, without
1036   restriction of any kind, provided that the above copyright notice and this paragraph are
1037   included on all such copies and derivative works. However, this document itself MAY
1038   not be modified in any way, such as by removing the copyright notice or references to
1039   ebXML, UN/CEFACT, or OASIS, except as required to translate it into languages other
1040   than English.

1041
1042   The limited permissions granted above are perpetual and will not be revoked by ebXML
1043   or its successors or assigns.

1044
1045   This document and the information contained herein is provided on an "AS IS" basis and
1046   ebXML DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING
1047   BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE
1048   INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED
1049   WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR
1050   PURPOSE.
1051