



Practical Universal Business Language Deployment

Crane Softwrights Ltd.
<http://www.CraneSoftwrights.com>





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Practical Universal Business Language Deployment (Prelude) (cont.)



Preface

This PDF publication is a living document

- the purchase of any edition entitles the purchaser to all future editions at no charge
- the plan is to publish new editions often
 - practices evolve and mature when working with new specifications
 - training and community mail lists will reveal the need to explain sections of the material differently or more thoroughly
 - customers of the book request new or expounded information in a new edition
- the paper rights for this publication are still available for an interested publisher
- this publishing model was honed on two earlier Crane books for XSLT and XSL-FO and has been well received by customers of both PDF and paper editions

The main content of this book is in an unconventional style primarily in bulleted form

- derivatives of the book are used for instructor-led training, requiring the succinct presentation
 - note the exercises used in instructor-led training sessions are not included here
- *this PDF book is accompanied by a ZIP file* with supplementary files
 - the number of supplementary files will grow with future editions
- derivatives of the book can be licensed and branded for customer use in delivering training
- the objective of this style is to convey the essence and details desired in a compact, easily perused form, thereby reducing the search for key words and phrases in lengthy paragraphs
- each chapter of the book corresponds to a module of the training
- each page of the book corresponds to a frame projected during the training

Practical Universal Business Language Deployment (Prelude) (cont.)



Much of the content is *hyperlinked both internally and externally* to the book in the 1-up full-page sized electronic renditions (not in the half-page renditions):

- note when using Acrobat Reader, the history "back" keystroke sequence is "Ctrl-Left"
- page references, e.g.: Chapter 5 - Documents and document models (page 49)
 - click on the title or page number above to test!
 - the back-of the book index is hyperlinked to the body of the book
 - the letter references at the bottom of each page are hyperlinked to the index
- references to sections of the specification are in parentheses, e.g.: (4.2.1.)
 - the section number linked in full-sized pages to the online specification
 - click on the "4.2.1." above to test!
- external references are in monospaced text (click on the following to test!)
 - e.g.: `http://docs.oasis-open.org/ubl/os-UBL-2.0/`
- chapter references in book summary
- section references in chapter summary
- subsection references in table of contents at the back of the book
- no hyperlinks are present in the cut, stacked, half-page, or 2-up renditions of the material

Diagram legend:

- triangle: a structured XML/SGML/HTML document or resource
- parallelogram: a non-structured document or resource in an arbitrary format
- box: a process in the work flow
- diamond: a decision in the workflow

Sample code fragments:

- included with the book purchase is a ZIP file of sample code fragments
- directory names referenced in the book are referencing subdirectories in the unpacked ZIP files
- the `readme.txt` file in the ZIP package documents the running of sample batch files and shell scripts

Practical Universal Business Language Deployment (Prelude) (cont.)



Important caveat regarding the information in this publication

- while the author, G. Ken Holman, is a co-editor of the UBL 2.0 specification, not all of the material in this publication is necessarily accepted by all UBL Technical Committee members
- all of the content in this book is written from the opinion of G. Ken Holman and Crane Softwrights Ltd. and does not necessarily represent official or agreed-upon content from the perspective of the UBL TC
- this content is not to be construed as legal advice of any kind, nor is it recommending that any particular methodology or process or tool be implemented, it only documents methodologies and technologies available to be considered

Entire chapters of this publication will undergo revision

- the UBL TC is debating the use of procedures, processes and data files in support of UBL
- some software being developed by Crane Softwrights Ltd. is being made freely available for anyone to download and use
- some software being developed by Crane Softwrights Ltd. will be made available only to customers of this publication
 - to supplement the software that is made freely available

The purchase of this publication is protected by the no-charge availability of all future editions

- all of the content in this publication is subject to revision and update and editions will get out of date
- early editions are expected to be created frequently and be short-lived as the community experience with UBL reveals various practices and experiences that will influence how to consider working with this standard

The purchase of this publication grants the legitimate owner no-charge access to accompanying software written by Crane Softwrights Ltd.

- there are no warranties expressed or implied regarding the use of the software; more details are found in the documentation for the software
- access details to download the software are found by registered users on <http://www.CraneSoftwrights.com/sales/publd/>
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The author welcomes any and all suggestions for improvements and additional content

- please do not hesitate to contribute ideas for improving on this publication
- all submissions to info@CraneSoftwrights.com will be acknowledged (though not necessarily accepted!)
 - please note that aggressive spam filters may make our email delivery difficult

Practical Universal Business Language Deployment



- Introduction - Practical Universal Business Language Deployment
- Chapter 1 - OASIS Universal Business Language (UBL)
- Chapter 2 - Parties, document types and profiles
- Chapter 3 - Information items
- Chapter 4 - Naming and design rules (NDR)
- Chapter 5 - Documents and document models
- Chapter 6 - Model semantics
- Chapter 7 - XPath enumerations
- Chapter 8 - Controlled vocabulary overview
- Chapter 9 - UBL customization
- Chapter 10 - Customization specification
- Chapter 11 - Conformance customization implementation
- Chapter 12 - Introduction to document engineering
- Chapter 13 - Customization extension
- Chapter 14 - Customization deployment
- Annex A - OpenOffice 3 UBL customization environment
- Conclusion - Where to go from here?

Series: Practical Universal Business Language Deployment

Reference: Electronic commerce

Outcome

- detailed review of the components of the Universal Business Language deliverables and supplementary packages

Practical Universal Business Language Deployment

Introduction - Practical Universal Business Language Deployment



The first and oldest documents created by mankind were business documents:

- early Bronze Age Sumerians invented writing from commercial inscriptions (3300BC)
 - transactions, inventories, etc.
- commerce and trade developed to fund the war machine to overcome invading empires

Paper business documents are the norm in commerce today

- most are ad-hoc presentations of purchase orders, invoices, etc. created by companies and software providers without regard to any standard layout or presentation
- paper layouts of business documents have been internationally-standardized
 - (cited from UNCTAD Trust Fund for Trade Facilitation Negotiations Technical Note No.13)
 - http://r0.unctad.org/ttl/technical-notes/TN13_Document%20Simplification.pdf
 - the UN Layout Key (UNLK) was first adopted in 1963
 - became UNECE recommendation No 1 in 1978
 - a master layout design from which other trade documents can be derived
 - organizes coded information (address, buyer, seller, documentation requirements for certain products, etc) in a box format in fixed locations on a document

Electronic business documents are available in commerce today

- most are ad-hoc representations of purchase orders, invoices, etc. created by companies and software providers without regard to any standard structure or content
- the Electronic Data Interchange (EDI) standard has long been in use by large companies
 - complex to deploy
 - cryptic machine-based representations of the information suitable for computers but not people
 - stovepipe implementations of EDI by different industries inhibits interoperability and message compatibility
 - expensive to operate and out of the reach of small- and medium-sized enterprises
 - EDI service providers often require a minimum utilization that far exceeds the needs of small business
- the OASIS Universal Business Language (UBL) has been internationally-standardized
 - the first royalty-free specification of XML-based business documents and business object library
 - a mature version 2.0 specification based on real-world experience with version 1.0
 - easy-to-digest XML format with human-legible labels on hierarchically-organized structures of information
 - well-defined approaches to customization and augmentation to meet tailored requirements for communities of users

Practical Universal Business Language Deployment (cont.)

Introduction - Practical Universal Business Language Deployment



This book takes the reader through the UBL 2.0 specification deliverables and artefacts

- the only normative component of UBL 2.0 is a set of W3C Schema XSD expressions of constraints on classes of XML documents
- the delivery package includes a number of supporting materials based upon the XSD normative document models

Not everything in this book has yet been adopted or agreed to by the UBL Technical Committee

- this is a book by and from the perspective of Crane Softwrights Ltd.
- G. Ken Holman is an active member participating on the UBL Technical Committee and a co-editor of the UBL 2.0 specification
- some of the materials described in this book are Ken's member submissions to the TC for consideration by the membership

Emerging methodologies and deployment approaches are described

- UBL 2.0 offers far more features than UBL 1.0 to address real-world requirements discovered in the deployment of UBL 1.0
- Crane and other vendors and volunteers are making resources available to the user community
 - Crane has a number of UBL-related resources available in the "Free resources" section of the web site linked from the right-hand marginalia of:
 - <http://www.CraneSoftwrights.com/links/trn-20090212.htm>

Important caveat regarding the objectives of the material

- this is a book describing the available UBL 2.0 materials and technical implementation issues for deploying the specification
- this is not a book with which to interpret specific UBL information items in a business context or to assess the adaptation of financial systems to the semantics of UBL
- this book cannot be interpreted as providing financial or legal advice regarding the application or suitability of UBL to any particular scenario or purpose

This book will evolve through multiple future editions

- based on feedback from students taking training derived from this material
- based on UBL TC developments and decisions and publications
- based on Crane's own deployment experience of using UBL
- based on Crane's consulting customers' experience of using UBL
- based on publicly-available case studies of the successful use of UBL 2.0
- in particular the chapters on customization will be embellished
- Crane's other electronic books began with many early editions before quieting down to less-frequent free updates as the content matured

Enjoy!

Chapter 1 - OASIS Universal Business Language (UBL)



- Section 1 - OASIS Universal Business Language (UBL)
- Section 2 - ebXML context
- Section 3 - UBL applicability
- Section 4 - UBL 2.0 specification contents

Outcomes

- gain an overview of the UBL specification
- be aware of the standardization committee structure
- understand the role of UBL in the ebXML context
- understand the expectations of applicability for UBL and what it tries to accomplish
- be aware of some existing deployments of UBL and thoughts for the future of UBL

OASIS Universal Business Language (UBL)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 1 - OASIS Universal Business Language (UBL)



UBL is an international effort to develop open royalty-free standards for the machine-processing of business information

- the UBL committee has worldwide committee membership
 - vendor members
 - consultant and trainer members
 - business expert and user members
- there are worldwide deployments active or in the works
- the intellectual property is owned by the Organization for the Advancement of Structured Information System (OASIS)
 - <http://www.oasis-open.org/who/intellectualproperty.php>
 - UBL is licensed under "RF on Limited Terms"
 - limiting the contributors' IP obligations, not the users' ability to use
 - as a requirement of membership all developers and participants in the technical committees transfer the intellectual property of their contributions to the organization
 - <http://lists.oasis-open.org/archives/ubl/200610/msg00047.html>
 - the intellectual property is not tied up by any one vendor or user

Entry point for e-commerce for small- and medium-sized businesses

- inevitably to be used by large businesses as well due to mandated requirements by large users and governments

Supplants the need to use existing or develop one's own proprietary electronic format

- proprietary software is under the control of a vendor or the software developer
- proprietary formats have limited (if any) interoperability with systems created by other vendors
- no leverage of available implementations for re-use

Opportunity to move quickly from business process modeling to active messaging

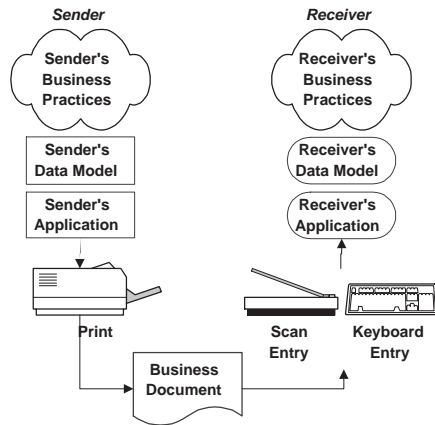
- use your own methods to determine your own business processes
- when done map your information model components to off-the-shelf UBL business objects
- utilize off-the-shelf UBL document models for information interchange in the modeled business process
- customization approaches provide for unique requirements

OASIS Universal Business Language (UBL) (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 1 - OASIS Universal Business Language (UBL)

UBL is designed to eliminate re-keying of data

- supplant existing fax- and paper-based supply chains



The sender prepares a business document for sending:

- the information components of the sender's business practices are expressed in a data model supporting the specific business practices of the sender
- the sender's application accesses the information in the data model and prints off the business document in hard copy

The receiver receives a business document:

- the document information components are scanned or manually entered into the receiver's application, running a risk of a possible scanning or entry error
- the receiver's application stores the information components in the receiver's data model
- the receiver's business practices act on the presence of expected information found in the data model

The sender's and receiver's business practices are probably very similar, though they do not have to be

- the data models could be quite different in structure, but probably have similar components
- the applications could be very different, on different platforms and obtained from different vendors

OASIS Universal Business Language (UBL) (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 1 - OASIS Universal Business Language (UBL)

The basis of UBL is the use of the Extensible Markup Language (XML)

- <http://www.w3.org/TR/xml>
- web standard for the representation of hierarchically-structured text-based information
- platform-, application- and vendor-independent standard based on the use of international Unicode characters
- widespread and growing support in development tools and developer skills

Contrast the XML format with the commonly-known CSV format

- Comma separated values (CSV) is a commonly-used expression of information
 - no declaration of the character set encoding of the characters in the file
 - information maintained in a set of flat comma-delimited text records
 - no concepts of data types for the declarative lexical validation of values
 - labeling of position-oriented fields optional based on presence of first line of labels
 - all labels are unique without the use of context to distinguish similar items
- XML is a richly-featured specification of an expression of information
 - provides for specification of a character encoding of Unicode characters
 - information is well organized in a strict hierarchy under a single "top" element (called the "document element") of an upside down tree structure
 - W3C Schema XSD 1.0 layers a type-based hierarchy of data types on top of XML text strings in order to govern lexical (character-level) validation of the information
 - <http://www.w3.org/XML/Schema>
 - all information at every branch of the tree is unambiguously labeled
 - hierarchical document context allows the same label to be used in different branches of the tree
 - validating tools can confirm the appropriate use of labels and the lexical structure of text beneath the labels according to the data types
- programs and applications can identify the information in an arbitrary XML document with more precision and without the burden of the validation provided for by outboard validation tools

Just using XML is not a panacea

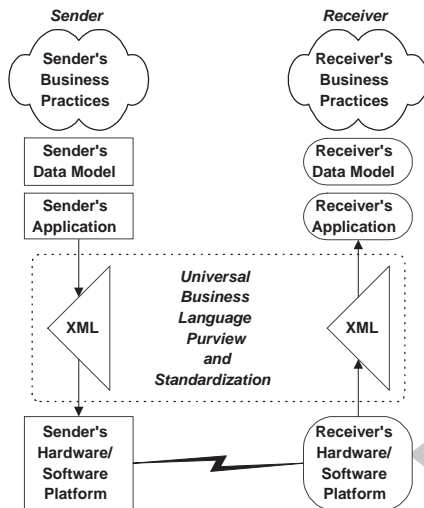
- using markup to label information in and of itself is platform independent
- labeling the information in markup using a particular vocabulary (set of labels) enables applications to access the information so labeled
- without an agreed-upon vocabulary, applications do not know under which labels particular information items can be identified
- an arbitrary, vendor-defined vocabulary is as proprietary as a non-markup-based system for labeling information

OASIS Universal Business Language (UBL) (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 1 - OASIS Universal Business Language (UBL)

Objective: enable interoperability between dissimilar systems using open standards

- using XML for all of the benefits of platform, vendor and application independence
- using an agreed-upon vocabulary ensures that all users of the XML can identify the same information items using the agreed-upon labels
- the XML document of a known vocabulary can then be understood by different applications on different platforms
- free tools are available to work with the documents
 - document creation, vocabulary validation, web and print formatting, etc.



UBL does not attempt to redefine anyone's business practices

- UBL is only addressing the representation of business information in a standardized format for the purposes of interchange
- businesses may wish to modify their expectations for information transfer in order to take advantage of UBL formats

UBL does not attempt to redefine anyone's back-end data models

- the interchange of information is distinct from anyone's internal storage representation
- UBL only describes the document model of the actual interchange artefact

OASIS Universal Business Language (UBL) (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 1 - OASIS Universal Business Language (UBL)

UBL is an extensible royalty-free library of standard electronic XML business documents

- e.g. documents for the transaction of business: purchase order, invoice, etc.
- customization model provides for a community creating one's own profile of existing UBL document models
- extension model provides for a community extending UBL document models with additional information items not standardized by UBL
- a common library of objects enables a community to build additional document models not standardized by UBL

XML instances express all of the information of the business document

- all calculations represented in the numbers in the XML instance
 - each community of users may have their own calculation models
 - recipient knows that all of the information found in the document already has all of the calculation models applied
- no stylesheet or processing required by the receiving application to "complete" unspecified values
 - a receiving application may choose to do completeness and consistency checking

The UBL specification was developed under an open and accountable process

- governed by OASIS Technical Committee procedures
 - <http://www.oasis-open.org/committees/process.php>
 - includes use of Roberts Rules of Order for committee process
- all committee mail list archives and both intermediate and final work products are publicly available
 - <http://lists.oasis-open.org/archives/ubl/>

Vendors can compete on product differentiation around a standardized interchange

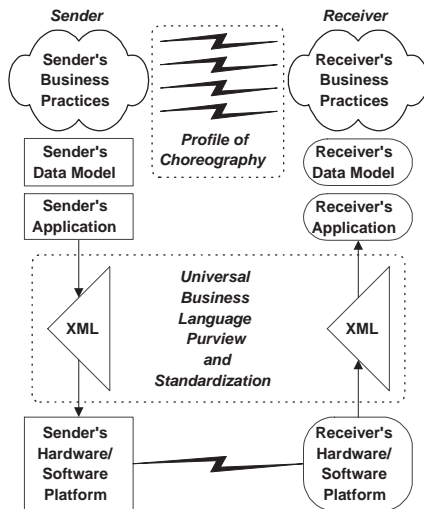
- standardization opens up a market for vendors to compete with their own innovations
 - features of implementation
 - e.g. ease of use, documentation, etc.
- it can be considered undesirable to be innovative with the document format
 - e.g. no need to reinvent an invoice that already works sufficiently well even if it is not perfect

OASIS Universal Business Language (UBL) (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 1 - OASIS Universal Business Language (UBL)

Communities of users have the opportunity to define a common use of UBL

- includes profiles of choreography of documents to meet arbitrary business processes
- includes modifications to the XML specifications of the UBL documents as appropriate to the needs of the community



Furthermore, individuals in the community can layer content constraints

- within any community of users, two trading partners can agree to utilize the community definition of UBL with an individual's requirements for code list values, identifier values and business rules
- note this is not depicted in the diagram but discussed later on in the material

UBL history

Chapter 1 - OASIS Universal Business Language (UBL)
Section 1 - OASIS Universal Business Language (UBL)

Long history of development:

- distinguishes UBL from other standards by not starting from scratch with only a set of requirements
- 1997 - Veo Systems builds Common Business Language (CBL) 1.0
 - funding from NIST
 - first release in public domain (no licensing ownership)
- 1998 - Commerce One acquired Veo and builds CBL 2.0
 - for Commerce One electronic marketplaces
- 2000 - Commerce One partners with SAP to build xCBL 3.0
 - based on review of EDIFACT and X.12 to support EDI-type functionality
- April 2001 - UBL started with contribution of xCBL 3.0
- January 2003 - UBL 0.7 released for public review
 - 7 document types for procurement
 - utilized by some early-adopters
- September/November 2004 - UBL 1.0 released as Committee Specification and OASIS standard
 - 8 document types for procurement
- October 12, 2006 - UBL 2.0 finalized as a Committee Specification
 - 31 document types for procurement and for transport
- December 12, 2006 - UBL 2.0 standardized as an OASIS Standard
 - <http://docs.oasis-open.org/ubl/os-UBL-2.0/>
 - zero technical differences from the committee specification of the materials
 - the only difference is the wording on the cover page
 - any instances and implementations based on the committee specification need not change to support the final standard
- May 26, 2008 - UBL 2.0 Update published as errata
 - <http://docs.oasis-open.org/ubl/os-UBL-2.0-update/>
 - zero changes to document constraints
 - republished code lists to latest version of genericcode
 - repaired definitions and meta data

UBL FAQ

Chapter 1 - OASIS Universal Business Language (UBL)
Section 1 - OASIS Universal Business Language (UBL)



<http://www.oasis-open.org/committees/ubl/faq.php>

Highlights:

- "provide the world with standards for the electronic versions of traditional business documents"
- "recognizes established commercial and legal practices"
- "working toward the establishment of an international ecommerce infrastructure"
- "some similarities between UBL and other XML business data initiatives, but taken together, UBL's attributes make it unique"
- "UBL does not seek to compete with any existing XML business vocabularies but rather to meet a set of needs that are not being adequately met by any of them."

The committee attempts to keep the FAQ up to date with the latest information

Committee structure

Chapter 1 - OASIS Universal Business Language (UBL)
Section 1 - OASIS Universal Business Language (UBL)



UBL Technical Committee

- <http://www.oasis-open.org/committees/ubl/>
- international membership (active members in Asia, Australia, Europe, North America)
 - most members have a business perspective on the use of business documents
 - few members have a technical perspective on the technology of XML and markup
 - the combination worked well to keep the focus on the business need and ensuring the role of the technical members was to support the business members
- company and individual memberships
- the intellectual property of member contributions is transferred to OASIS through the membership agreement
 - this restricts ad hoc contributions from outside the committee, thus assuring the provenance of the information that comprises the specifications

UBL Subcommittees (alphabetical)

- OASIS UBL Adoption SC
 - comprises the editorial board for <http://ubl.xml.org>
- OASIS UBL Human Interface SC
 - developing formatted output specifications
 - developing input form specifications
 - the subcommittee is not creating implementations, only detailed specifications sufficient for developers to implement
 - thought to promote the broad development of a number of available implementations
- OASIS UBL Procurement SC
 - developing, documenting and maintaining the conceptual models for the UBL document types related to the procurement process
- OASIS UBL Small Business SC
 - determining a formalized subset of UBL suitable for use by small businesses not needing the full functionality available in the entire UBL package
 - developing expressions suitable for machine-processing of the subset
- OASIS UBL Transportation SC
 - developing, documenting and maintaining the conceptual models for the UBL document types related to transportation

Committee structure (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 1 - OASIS Universal Business Language (UBL)



Localization subcommittees develop UBL-related projects with translation objectives

- semantic descriptions
- user interfaces
- OASIS UBL Chinese Localization Subcommittee
- OASIS UBL Danish Localization Subcommittee
- OASIS UBL German Localization Subcommittee
- OASIS UBL Italian Localization Subcommittee
- OASIS UBL Japanese Localization Subcommittee
- OASIS UBL Korean Localization Subcommittee
- OASIS UBL Spanish Localization Subcommittee
- OASIS UBL Turkish Localization Subcommittee

Community driven collaboration for supporting new localizations

- for any language of interest, publicly-edited spreadsheets are created for a community to build with localized definitions of UBL constructs
- <http://ubl.xml.org/forums/ubl-international-data-dictionary-idd-contributions>
- at any point a localization committee can then be formed to take ownership of the definitions and submit them for inclusion in the UBL International Data Dictionary (IDD)
- see Chapter 6 - Model semantics (page 52) for more details

ebXML - Electronic business using XML

Chapter 1 - OASIS Universal Business Language (UBL)
Section 2 - ebXML context



Modular suite of specifications of infrastructure that enables electronic commerce

- <http://www.ebxml.org>
- suitable for implementation by enterprises of any size
- suitable for use by enterprises in any geographical location
- designed for use over the Internet
 - "builds on the experience and strengths of existing EDI knowledge"

Globally-developed and open XML-based standards

- provides for plug-and-play shrink-wrapped solutions
- implementations of ebXML components are freely available

Collaborative global project

- OASIS
 - Organization for the Advancement of Structured Information Standards
- United Nations/ECE agency CEFAC
 - ECE - Economic Commission for Europe
 - CEFAC - Centre for Trade Facilitation and Electronic Business

ebXML - Electronic business using XML (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 2 - ebXML context



ebXML standards that are also ISO/IEC standards

ebXML CPPA V 2.0 - ISO/IEC 15000-1

- ebXML Collaboration Protocol Profile and Agreement
- definitions of the sets of information used in business collaboration
- business partner definitions of capabilities
- profile - data regarding technical abilities to engage in electronic business collaboration
- agreement - data agreed to configure the public, shared aspects of protocols
 - aligned with ebBPSS and ebMS

ebXML MS V 2.0 - ISO/IEC 15000-2

- ebXML Message Service
- develop and recommend technology for the transport, routing and packaging of business transactions using standard Internet technologies
- communication-protocol neutral method for exchanging electronic business messages
- enveloping constructs supporting reliable, secure delivery
- contain payloads of any format type
- XML framework that leverages common Internet standards
- message consumption outside of the scope of ebMS

ebXML RIM V 2.0 - ISO/IEC 15000-3

- ebXML Registry Information Model
- information model for the ebXML Registry for definition of content and meta data
- stable store of information in a federated architecture
- facilitate ebXML-based partnerships and transactions
- e.g. schemata, documents, process descriptions, context descriptions, UBL models, parties, software components, etc.
 - identified by URN identifiers
- could be viewed simply as an online distributed data base store

ebXML RS V 2.0 - ISO/IEC 15000-4

- ebXML Registry Services
- services specification for the ebXML Registry for access to content
- interaction protocols, message definitions, message schemata, etc.
- enable sharing of information between interested parties to enable business process integration
- could be viewed simply as the methods and functions of online access to the repository

ebXML - Electronic business using XML (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 2 - ebXML context



ebXML standards that are also ISO/IEC standards (cont.)

ebXML CCTS V2.01 (under aegis of UN/CEFACT TMG) - ISO/IEC 15000-5

- ebXML Core Components Technical Specification
- syntax-neutral information about real-world business concepts
 - basing two syntactic on the same semantic concept leads to interoperability
- a methodology for defining messages
 - defines what you should call and how you should structure your components in your documents
- based on legacy EDI perspective of business concepts
- basis for implementing interoperable XML business standards
 - or EDIFACT, or X12, or whatever actual syntax
- human-readable and machine-processed representations
- work led by UN/CEFACT Techniques and Methodology Group (TMG)

Other ebXML specifications

ebXML BPSS

- technical business process specification
- standard language with which business systems can be configured to support business collaboration between trading partners
- for peer-to-peer interchange that crosses domains of control

Free implementations of some components of ebXML are already available

- <http://www.freeebxml.org/> from Hong Kong

No actual message payloads being standardized in ebXML

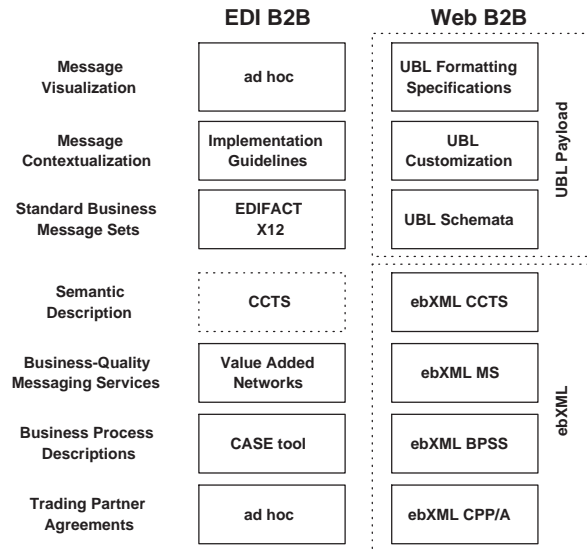
- the "payload" is the meat of the message with the actual information being conveyed by the message infrastructure
- decision in May 2000 to not include payload syntax from initial set of deliverables
 - lead to the formation of the Universal Business Language Technical Committee
- UBL documents are suitable as payloads for ebXML messages

ebXML - Electronic business using XML (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 2 - ebXML context



Comparing the EDI and UBL standards stacks:



Opportunity for semantic interoperability using CCTS

- UN/CEFACT Core Component Technical Specification used to define a core component library of semantic constructs
- the information items in the EDI messages will be based on the same core component library as the information items in the UBL schemata
- active harmonization effort underway in UN/CEFACT TBG-17 Harmonization group to find and catalogue all UBL semantics in the core component library

The role of UBL in e-commerce

Chapter 1 - OASIS Universal Business Language (UBL)
Section 3 - UBL applicability



UBL does not try to address every electronic business interchange problem

- business needs are as unique as the entities doing business
- a wide range of candidate uses of UBL documents is described in the specification

UBL does not try to define or constrain any business process

- business processes are ad hoc or developed using process modeling methodologies
- UBL document models can plug into a business process to satisfy interchange requirements
- an opportunity to move quickly to a production working interchange environment from an abstract business process definition
 - map information model to the UBL business objects and document types

UBL is only defining the vocabulary and structure of electronic business documents for interchange

- normative deliverables:
 - spreadsheet specification of the vocabulary
 - ISO/IEC 11179 dictionary entry names
 - UBL element names
 - cardinalities (how many of the elements may or must be present)
 - English language definitions
 - W3C Schema (XSD) expressions of the document constraints
 - defines a set of XML interchange document models and vocabulary
 - constrains the nesting of information in XML constructs
 - also includes constraints not expressible in W3C Schema
- UBL does not force any constraints on back-end processing, data models, database schemata, calculation models, etc.
- customization approaches available to address tailored interchange requirements
 - restricting and extending UBL document models

UBL employs a framework for communities of users and for trading partners to declare conformance to a particular suite of controlled vocabularies (e.g. code lists, identifiers)

- uses a supplemental methodology and approach to layer code list and value validation on top of XSD schema validation
- a community of users of UBL specifies which controlled vocabularies are in use
 - orthogonal to UBL specification

The role of UBL in e-commerce (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 3 - UBL applicability



UBL attempts to address 80%-90% of requirements for information interchange

- basic requirements based on business experience of committee members
- UBL 2 addresses 80%-90% of more documents than UBL 1
 - UBL 2 does not attempt to flesh out the remaining 10-20% of business information not implemented in UBL 1

Customization

- provides for specifying how UBL is the basis for building only that which is needed by communities of users or by two trading partners
- different profiles of business practices may impose the use or non-use of available UBL constructs
- can specify custom document models based on UBL information models
 - referred to in committee as "compatible customization"
 - focus is on the information model
- can specify custom subsets of UBL document models
 - referred to in committee as "conformant customization"
 - focus is on the XML syntax

Extensibility

- provides for addressing those parts of the missing components needed by communities of users or by two trading partners
- custom extensions are allowed to be added to standardized UBL document models
 - developed using compatible customization methods
- communities can build their own documents utilizing the UBL library of business objects

The role of UBL in e-commerce (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 3 - UBL applicability



UBL scenarios and business processes are only documentary

- used to support the decisions made by committee members when choosing document structures
- there is no obligation to match the business document flows or workflows described by UBL
- a plausible scenario was required by the committee with which to frame the directions undertaken and the decisions made

Users need only use those documents of UBL that they require

- no obligation to implement all UBL document types

Users need only use those optional portions of UBL documents that they require

- no obligation to implement all UBL information items

Communities of users can define a "UBL Customization" for their collective use

- profiles of different scenarios for exchanging business documents
- specifications of document types in each profile
 - a single UBL document may have different specifications of use in two profiles
- choice of standardized information items in each document type
- specifications of extension information items in each document type
- documentation of calculation models to populate the information items

The role of UBL in e-commerce (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 3 - UBL applicability



UBL provides a key economic benefit to the end user through standardization

- realized through availability of off-the-shelf inexpensive business software to handle the functions of dealing with the information transmissions
- the risk of investment by developers is mitigated by having a wider community of users adopting the technology

Possible stimulus for a major economic shift in the area of electronic commerce software

- the same shift as has happened in the past in other areas of information processing
 - initial "cottage industry" of vendors creating expensive custom systems for specific applications by users who can afford to pay
 - through standardization it becomes possible to address most (though not all) requirements
 - sufficient functionality that people will adopt the solution because the implementation is inexpensive to use and experiment with
 - sufficient customer pull creates a demand for a wide variety of software vendors to meet the need of a growing number of users of the low-cost or free technology
 - vendors can still compete on aspects of differentiation (usability, performance, features, integration, etc.)
- operating systems (1960's)
 - migration from bespoke systems to portable machine-independent systems
- programming languages (1970's)
 - migration from specific-purpose languages to general-purpose languages
- publishing systems (1980's)
 - migration from typesetting and typography to desktop publishing and generalized markup
- hypertext systems (1990's)
 - migration from custom applications (e.g. Ted Nelson's Xanadu, Bill Atkinson's Hypercard, etc.) to all-purpose web browsers (Tim Berners-Lee's HTML)

Standardization creates a marketplace for inexpensive products and support services

- potential big savings for small companies
- software, training, books can all be developed for a larger customer base than with a proprietary technology

Where is UBL going?

Chapter 1 - OASIS Universal Business Language (UBL)
Section 3 - UBL applicability



UBL 2.x development within OASIS

- base delivery 2.0 plus extension releases for "dot versions" (e.g. 2.1, 2.2, etc.) if the committee decides they are important enough to issue
- new document types
 - support a wider range of messages and scenarios
- new common library components
 - support a wider collection of information objects to use in messages
- new code lists
 - support a wider set of code lists and newer versions of code lists
- UBL 2.1 planned for 2009/2010 time frame
 - the technical committee is currently accepting use cases and contributions
 - UBL 2.1 will include new business objects and new document types

UBL next generation development will be within UN/CEFACT

- agreed in March 2006 - UN/CEFACT and UBL collaboration
 - "UN/CEFACT recognizes UBL 2 as appropriate first-generation XML documents for eBusiness"
 - future UN/CEFACT deliverables constitute the upgrade path for UBL
 - in the expectation that UN/CEFACT will produce its own integrated set of XML schemas within a period of three years, OASIS will produce no further major versions of UBL past UBL 2
 - OASIS will grant UN/CEFACT a perpetual, irrevocable license to create derivative works based on UBL, provided significant work progresses within the three-years

Adopting UBL is not contravening UN/CEFACT strategic direction

- UBL is recognized by the memorandum of understanding on eBusiness standards
 - memorandum between International Electrotechnical Commission (IEC), International Organization for Standardization (ISO), International Telecommunication Union (ITU) and United Nations Economic Commission for Europe (UN/ECE, UN/CEFACT)
- "UBL is the useable stepping stone to a unified UN/CEFACT standard"
 - from Draft Business plan for a CEN/ISSS Workshop on "Interoperability in the Implementation of electronic public procurement in Europe" (CEN/ISSS WS/ePPE - renamed "Business Interoperability Initiative")

UBL business objects are being aligned with UN/CEFACT semantics

- working with TBG-17 harmonization group to catalogue every UBL 2.1-defined semantic in the UN/CEFACT core component library

The Danish UBL experience

Chapter 1 - OASIS Universal Business Language (UBL)
Section 3 - UBL applicability



Formal analysis by KPMG on behalf of the Danish Ministry of Finance October 2003

- <http://www.idealliance.org/proceedings/xtech05/papers/03-05-02/>
- estimated 18 million invoices sent to public authorities each year
- conservative estimate of eliminating 10 minutes of handling for each invoice would save €94m
- conservative estimate of eliminating 17 minutes of handling and matching for each combination of order and invoice would save €160m

Legislated use of derivative of UBL 0.7 Invoice - OIOXML

- <http://en.wikipedia.org/wiki/OIOXML>
- 1.2 million invoices per month since February 2005
- data entry houses created for those without UBL support
 - free to companies with a turnover less than €2m
 - cost of €1 each invoice to other companies and public institutions
 - implemented by paying for a stamp
 - stamp affixed to the invoice as evidence of payment
- hundreds of millions of dollars/euros in savings realized just for the implementation of a single document type

Online Schematron validation

- an online service is made available to check the validity of candidate UBL submission before sending the document to the government
 - useful as a diagnostic tool for developers
 - useful as a confirmation tool for invoice submitters
- proposed initial implementation of the Danish UBL 2.0 Customization will only have Schematron validation and not any customized schema validation

Anticipated legislated use of UBL 2 may include up to 15 document types - OIOUBL

- <http://www.oioubl.info>
- "Offentlig Information Online" ("Public Information Online")
- catalogues
- ordering
- statements

OIOSI project defining and implementing interchange protocols

- <http://www.softwareborsen.dk/projekter/softwarecenter/serviceorienteret-infrastruktur>
- OIO Service-oriented Infrastructure
- open-source availability of service-oriented architecture components
- defined use of an OIOSI toolkit and UUID registry

Government procurement

Chapter 1 - OASIS Universal Business Language (UBL)
Section 3 - UBL applicability



European e-Government: Ministers make a unanimous declaration on 2010 targets

- agreement reached in 2005
- <http://www.publictechnology.net/modules.php?op=modload&name=News&file=article&sid=4060>
- By 2010 all public administrations across Europe will have the capability of carrying out 100% of their procurement electronically, where legally permissible, thus creating a fairer and more transparent market for all companies independent of a company's size or location within the single market.
- By 2010 at least 50% of public procurement above the EU public procurement threshold will be carried out electronically.

NES - North European Subset

- <http://www.nesubl.eu>
- targeted for public procurement for northern European governments
- led by the Danes and built on the Danish experience

BII - Business Interoperability Interfaces

- <http://www.en.ds.dk/bii>
- targeted for public procurement for all European governments
- led by the Danes and combines requirements from CODICE Spain (for pre-award documents) and NES (for post-award documents)
- objective only to specify requirements

PEPPOL pilot - Pan-European Public eProcurement On-Line

- <http://www.peppol.eu>
- led by the Danes to deploy the BII requirements as a pilot project
- development of document models and open-source document transportation facilities
- available to European members to adopt and deploy in production
- The vision of the PEPPOL project is that any company and in particular SMEs in the EU can communicate electronically with any European governmental institution for the entire procurement process. The project will set up integrated pilot solutions across borders

Other projects seen on the UBL radar

Chapter 1 - OASIS Universal Business Language (UBL)
Section 3 - UBL applicability



So many UBL projects are underway that the committee is unaware of or only just heard of without knowing details of unpublished projects

- please let us know at info@CraneSoftwrights.com of any others you are aware of in order for us to update these materials.
- Hong Kong
 - DTTN
 - http://www.unece.org/cefact/single_window/sw_cases/hongkong.htm
- Italy
 - UBL 1.0 and SBS for SME-driven business scenarios
 - <http://services.txt.it/abilities/project.html>
 - project member work in Lithuania, Slovakia, Turkey, Romania and Hungary
- Korea
 - Korean Customs Service
- Panama
 - La Cámara de Comercio de Panama
- Singapore
 - New TradeNet
- South America
 - various projects underway based on Spanish projects
- Spain
 - UBL Invoice government wide for Balearic Islands
 - Ministry of the Economy project
 - Spanish Tax Agency and the banking system
- Sweden
 - October 2005 - "Swed-Invoice" recommended for all government use by the Swedish Financial Management Authority
 - anticipated savings of SEK 4b (US\$500m) in the first five years
- United Kingdom
 - February 2006 - Zanzibar marketplace, created by the UK Office of Government Buying Solutions

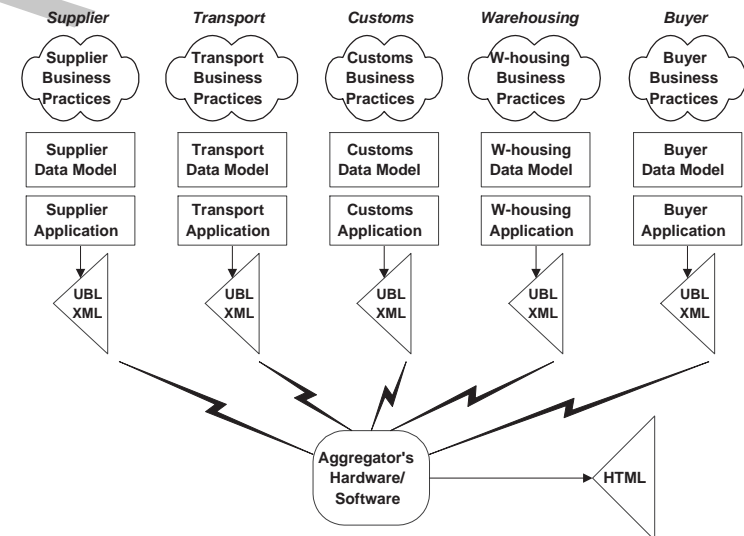
Other projects seen on the UBL radar (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 3 - UBL applicability



Projects (cont.)

- United States (Department of Transport)
 - Electronic Freight Management (EFM) project undergoing tests with UBL Despatch Advice, Receipt Advice, Bill of Lading and Transportation Status
 - example pilot projects with Limited Brands (China) shipping Victoria Secret clothing to Columbus, Ohio involving 14 participating companies
 - each participant has their own business practices, data models for those business practices and applications for those data models
 - not a central database, but a distributed Service-Oriented Architecture (SOA) where responses to messages are standard UBL instances
 - requesting a status report triggers a federated query to all participants in the shipping process, each returning a UBL Transportation Status message
 - the query aggregates the result into a single HTML page
 - a non-responding participant does not forestall the report
 - <http://www.tfhrc.gov/pubrds/06may/06.htm>
 - <http://www.ops.fhwa.dot.gov/freight/intermodal/efmi/>
 - <http://www.mettrans.org/nuf/2007/documents/Onder.pdf>



Document standardization business areas for UBL

Chapter 1 - OASIS Universal Business Language (UBL)
Section 3 - UBL applicability



Groups of UBL documents are being defined for two major areas of electronic business

Sourcing-to-payment procurement cycle (post-award) - in UBL 2.0

- cataloguing, ordering, invoicing, payment

Transportation - in UBL 2.0

- fulfillment, shipping

Tendering (pre-award) - coming in UBL 2.1

- notices, tenders, invitations, notifications

Sales order and reporting - coming in UBL 2.1

- requirements from ENEA in Italy

Collaborative planning, forecasting and replenishment documents - coming in UBL 2.1

- requirements from iSURF in Turkey

Some overlapping roles between scenarios

- the actual roles of parties in UBL transactions are dependent on the context of use
- e.g. the despatch party and delivery party as applied to the procurement process may differ in the transportation process
 - i.e. whether the consignor in the transportation process is actually equal to the despatch party or seller party in the procurement exchange depends on different business cases

UBL 2.0 specification contents

Chapter 1 - OASIS Universal Business Language (UBL)
Section 4 - UBL 2.0 specification contents



<http://docs.oasis-open.org/ubl/os-UBL-2.0-update/>

- public home of UBL specification and files
- replaces old installation of UBL 2.0 initial release:
 - <http://docs.oasis-open.org/ubl/os-UBL-2.0/>

The UBL 2.0 updated specification two parts unpack to 190Mb of content:

- <http://docs.oasis-open.org/ubl/os-UBL-2.0.zip>
 - OASIS standard - December 12, 2006
- <http://docs.oasis-open.org/ubl/os-UBL-2.0-update-delta.zip>
 - Errata "delta" package - May 26, 2008
 - these files are copied on top of the UBL 2.0 files, replacing the ones that now have new content
 - be careful if you are overlaying these files on a modified UBL installation as some modifications may be lost
- art/ - referenced artwork in the documentation files (page 34)
- asn/ - ASN.1 expressions of the document models (page 49)
- cl/ - code list expressions in genericcode
- css/ - CSS stylesheets for HTML rendering of the documentation files (page 34)
- db/ - DocBook support files (page 34)
- doc/ - NDR documentation file (page 45)
- etc/ - re-use cross reference file (page 41)
- mod/ - document model spreadsheets (page 41)
- uml/ - UML expressions of the document models (page 41)
- val/ - out-of-the-box two-step validation demonstration (page 49)
- xml/ - sample instances (page 49)
- xsd/ - document model schemata with documentation (page 49)
 - the files in this directory are the only normative files for UBL 2.0
- xsdrt/ - document model schemata without documentation (page 49)

UBL 2.0 specification contents (cont.)

Chapter 1 - OASIS Universal Business Language (UBL)
Section 4 - UBL 2.0 specification contents



The normative documentation is in XML with an HTML projection for reading in a browser

- UBL-2.0.xml - UBL specification hypertext document in XML
 - the hypertext document links to the components of the specification
 - art\ includes all artwork
- UBL-2.0.html - documentation rendering in HTML format (page 38)
 - this is where people can browse the content of the hypertext document
 - db\ used for transformation from DocBook XML source to HTML target
 - css\ used for rendering HTML
- UBL-index-2.0.pdf - documentation rendering in PDF format
 - this is a committee process artefact that serves no useful purpose
 - included only to satisfy archaic process requirements that are under OASIS review in consideration of removing its mandated presence
- note that the directories listed above without page number citations are related to the documentation files in support of the UBL-2.0.xml hypertext XML document and its HTML and PDF renderings
- UBL-2.0-update.html - errata-only documentation
 - the main UBL documentation in the hypertext document did not change with the update
 - this errata document only indicates which files have changed

<http://www.oasis-open.org/committees/ubl>

- public home of UBL committee working pages
- committee membership
- committee documents and files
- committee email archive
- public comments submission and archive
 - "Send A Comment" button
 - do not use this list for general comments or questions, only for comments to be formally reviewed by the technical committee

<http://docs.oasis-open.org/ubl/>

- public home of UBL committee repository files
- milestone deliverables
- committee documents and files too large for the committee working pages

UBL.xml.org and UBL-Dev

Chapter 1 - OASIS Universal Business Language (UBL)
Section 4 - UBL 2.0 specification contents



<http://ubl.xml.org>

- community support site replacing the former Support Subcommittee site
 - <http://www.oasis-open.org/committees/download.php/28723/support.htm>
- resources created by the UBL committee and by the UBL community
 - committee documents
 - contributions from academic research projects
 - vendors and users
 - model trading partner agreement templates
- publicly-available customizations
- news
- events
- products
- services
- forums
- blogs

<http://www.oasis-open.org/archives/ubl-dev/>

- un-moderated publicly-subscribed developer list
- <http://www.oasis-open.org/mlmanage/>

Chapter 2 - Parties, document types and profiles



-
- Introduction - Participants and document flows

Participants and document flows

Introduction - Chapter 2 - Parties, document types and profiles



Typically two or more trading partners agree to engage in a business transaction

- the initial UBL 2 scope is in two areas
 - procurement of goods or services
 - transport of goods

A given business transaction may involve a number of participants (parties)

- individual, a group, or a body having a role in a business function
- a single party may play a number of different roles in a given business transaction
- all of the roles in the UBL scenarios are representative and need not actually be realized as real people or parties

Contexts defined for 21 roles involved in 31 document types being exchanged

- most document exchanges involve two parties
- some document exchanges involve multiple parties
- some roles are not involved in sending and receiving documents

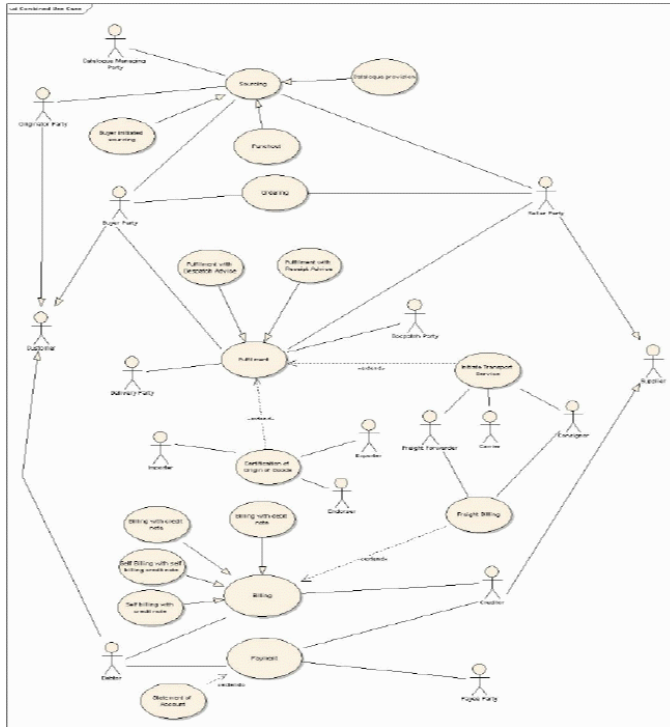
Participants and document flows (cont.)

Introduction - Chapter 2 - Parties, document types and profiles



Documentary scenario use case diagram outlines the roles of the many participants:

- the following image is a compressed version of the image found in the specification
- under "UBL 2.0 Context of Use" (4.); view it directly to see the detail



Participants and document flows (cont.)

Introduction - Chapter 2 - Parties, document types and profiles



A given business transaction may involve a number of document exchanges

- exchanges are choreographed in a UBL scenario as only an example exchange of documents for documentary purposes to illustrate their use
- UBL does not require trading partners to engage in any particular exchange of documents
- communities and users of UBL can create their own scenarios using documents of the various document types
- communicating and negotiating the requirements for document exchanges are not part of UBL
 - e.g. could be implemented by ebCPP/A partner agreements

Communities of users are creating "profiles" of choreography of documents for different scenarios

- a scenario describes the objective of the interchange of documents
- the profile fulfills the scenario by describing a particular choreography of a subset of documents
- the same document can be used differently in different profiles
- the community could also customize a UBL document in different ways for each of the profiles they define
 - different constructs have applicability in different scenarios
- a hierarchy of profile identity:
 - UBLVersionID - version of UBL
 - e.g. "2.0", "2.1", etc.
 - CustomizationID - customization of a particular UBL version
 - e.g. community
 - ProfileID - profile within a particular customization
 - e.g. business process
 - each specific document type is customized for the profile
 - there may be different document type customizations for different profiles within the same customization

Benefits can be realized by implementing only a single document

- e.g. Denmark realized millions of euros in savings implementing (and legislating) only Invoice and no other document types
 - the Danish government already moving to support (and legislate) other document types

Participants and document flows (cont.)

Introduction - Chapter 2 - Parties, document types and profiles

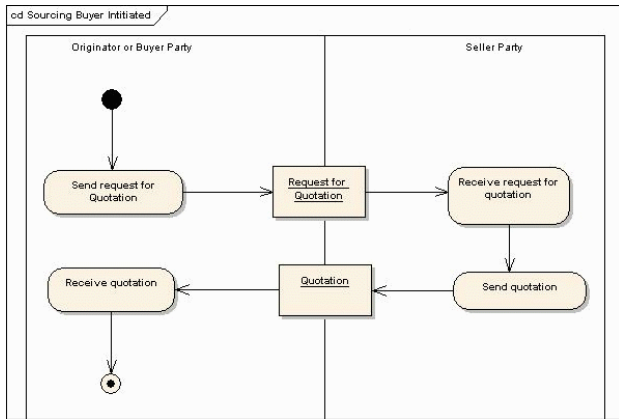


Each document exchange is documented in the specification with sample workflows using activity diagrams:

- the vertical "columns" of activity diagrams are colloquially referred to as "swim lanes"
- document types are depicted in square-cornered boxes with underscored labels
- actions are depicted in round-cornered boxes
- the start of the process is the solid-filled circle
- the end of the process is the hollow-filled circle

Example workflow activity diagram for quotations excerpted from UBL documentation:

- excerpted from the specification section 4.3.2.



Find all diagrams in the UBL main documentation file under section 4.

Chapter 3 - Information items

- Introduction - Information found in UBL documents
- Section 1 - Crane's UBL information model reports



Information found in UBL documents

Introduction - Chapter 3 - Information items



Committee members are responsible for information modeling of UBL document types

- the XML document modeling is not the direct responsibility of members
- XML document models are synthesized from the collaborative information models
- office software spreadsheets used for collaboratively developing the information models
- UML information models used for confirming the spreadsheet models
 - some members start with the UML and add to the spreadsheets from their work

UBL development started with the xCBL 3.0 information items

- along the way refined the concepts based on reviews and feedback from the public and from committee members
- applied the principles of syntax-neutral CCTS to the definition of an XML vocabulary
 - UBL is the first publicly-available royalty-free library of XML components defined using CCTS 2.01

UBL keeps the innovative concept of a library of common shared information items

- document types are not developed in isolation
- individual document types are built from components in a single library
- ensures semantic equivalence of constructs between document types because the constructs are the same (not just similar)

UBL uses CCTS distinction between basic (atomic) and aggregate (molecular) constructs

- XML structures are syntactic representations of semantic building blocks of CCTS

Crane's UBL information model reports

Chapter 3 - Information items

Section 1 - Crane's UBL information model reports



Crane Softwrights Ltd. has created an aggregated report from all document models into a single file to be viewed from a web browser

- <http://www.CraneSoftwrights.com/resources/ubl/#ubl2modelreport>
- Crane-UBL2Reports/EN/Crane-UBL2Report-All-EN.html - 5Mb (complete; all document types in one)
- Crane-UBL2Reports/EN/Crane-UBL2Report-??????-EN.html - individual document types
- alphabetically indexed by UBL Name and document type
- hyperlinked to model row reproduction in an HTML table (juggled columns)
- hyperlinked to ABIE for each ASBIE, and row numbers to index definitions
- available in all languages of the IDD

Multilingual versions of the report

- the suffix is the two-character language indicator
- the only columns translated are the definition and common business terms

Report has three main sections

- front matter (indexes, meta data, etc.)
- alphabetized initial two-letters of each component
- alphabetized link to the model collections included in the report

Trimmed common library component rows

- only those common library rows that are used directly or indirectly for the document types are included
- this improves the traversal through the model as unused rows do not distract the reader
 - e.g. the catalogue-related rows are not included directly or indirectly in the invoice report
- in the report for a customized schema, the trimming includes all unused constructs

Rules of thumb for navigation

- hyperlinked row numbers switch between summary and table views
- hyperlinked UBL names stay within the summary and table views

Created by Crane's schema subset configuration tool

- see Annex A - OpenOffice 3 UBL customization environment (page 78)
- the same report is generated for an arbitrary customization of the schemas

Crane's UBL information model reports (cont.)

Chapter 3 - Information items
Section 1 - Crane's UBL information model reports



All - UBL 2.0 Update - 2009-02-08 15:55

Index for all items: [Summary](#) [AC](#) [AD](#) [AG](#) [AI](#) [AL](#) [AM](#) [AN](#) [AP](#) [AT](#) [BA](#) [BI](#) [BL](#) [BR](#) [BU](#) [CA](#) [CE](#) [CH](#)
[IR](#) [UB](#) [UN](#) [UP](#) [UR](#) [US](#) [UU](#) [VA](#) [VE](#) [WA](#) [WE](#) [XP](#) [CommonLibrary](#) [Application](#) [Response](#)

Profile short name All

Domain UBL 2.0 Upd

Report layout and generated file "look and feel" copyright © Crane Softwrights Ltd. (please do not copy). This
Rendering: 2009-02-08 15:55z Legend: Name (Module line Object) TYPE Description

Summary

This summary of elements only includes those members of the common library that are referenced directly or

LO

LocaleCode (CommonLibrary 563 Language) BBIE The locale where the language is used, expressed as a code.

Location

CommonLibrary

(598) ABIE Information about a location.

[DeliveryLocation\(511 DeliveryTerms\)](#) [DeliveryLocation\(300 Delivery\)](#)
[FirstArrivalPortLocation\(881 Shipment\)](#) [LastExitPortLocation\(882 Shipment\)](#)
[LoadingLocation\(1016 TransportEquipment\)](#) [LoadingPortLocation\(895 ShipmentStage\)](#)
[PhysicalLocation\(679 Party\)](#) [TransshipPortLocation\(897 ShipmentStage\)](#)
[UnloadingPortLocation\(896 ShipmentStage\)](#)

(942 Stowage) BBIE Describes a location on board a means of transport where specified goods or transport equipment have been or are to be stowed.

LocationCoordinate

CommonLibrary

(606) ABIE Information about physical (geographical) location.

(29 Address) ASBIE An association to Location Coordinate

(397 Response) An association to Response.

1..n Response

(598 Location) Information about a location.

Location

(599 ID) The unique identifier for the location, e.g., the EAN Location Number

0..1 Identifier 57900022

Chapter 4 - Naming and design rules (NDR)



- Introduction - Formal naming and design rules

Formal naming and design rules

Introduction - Chapter 4 - Naming and design rules (NDR)



UBL model development is only in the information models, not the document models

- using spreadsheets and UML models as the basis for collaboration
- models for different document types
- model for common library of components

A document model constraints the labels used for information items in XML documents

- a number of XML constraint languages are available to be used
- the UBL TC chose the W3C XML Schema (XSD) constraint language

UBL document models correspond to the document types in the information models

- XML documents are constrained by formal model expressions of constraints
 - a given expression of constraints is a schema
 - a schema is written in a schema language expressing the semantics of a given schema validation process
- information models in spreadsheet form are translated into document models in a schema language

Formal naming and design rules (cont.)

Introduction - Chapter 4 - Naming and design rules (NDR)



Naming and Design Rules (NDR) are expressed as rules for XSD schema generation that can be automated

- enables but does not oblige the rules to be applied using automation
- automated tools can be rules-driven in synthesizing the schema fragments

Document extension is an aspect of schema generation, not model design

- the information models say nothing at all about extension mechanisms in the schema fragments
- the `UBLExtensions` element and its descendants are specified as schema facilities for all document types

Downstream customization processes can rely on schema expressions to follow UBL NDR

- straightforward processing of expressions can be accomplished because of particular choices of rules
- breaking the rules prevents the downstream processes from being able to extract the required information out of the models

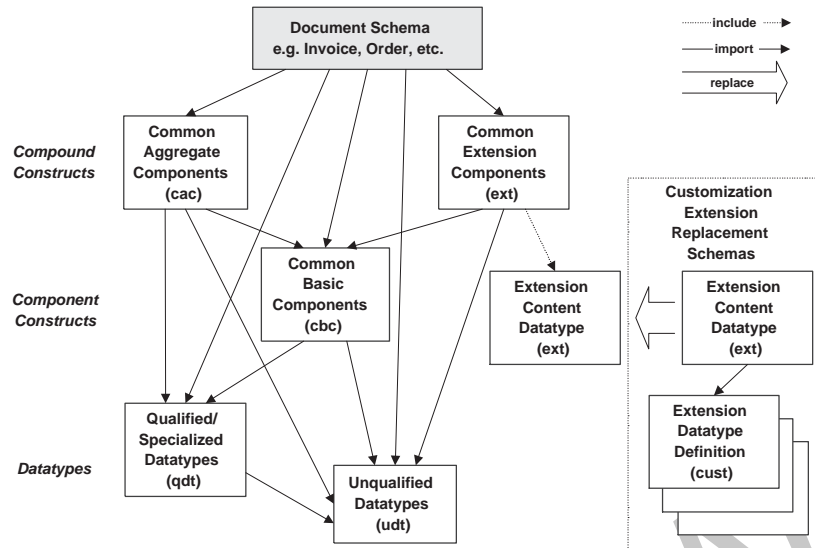
Formal naming and design rules (cont.)

Introduction - Chapter 4 - Naming and design rules (NDR)



This illustrates the schema import and include dependencies described by the NDR:

- `<xsd:include>` must be used when the namespace URI string does not change
- `<xsd:import>` must be used when the namespace URI string changes
- the parentheses surround the namespace prefix used by convention by the UBL TC



Chapter 5 - Documents and document models



- Introduction - Document model formal expressions

Document model formal expressions

Introduction - Chapter 5 - Documents and document models



A UBL document is an XML instance that satisfies constraints chosen by the UBL TC

- structural and lexical constraints are described by a document model
- value constraints are described through supplemental declarative files
 - see Chapter 8 - Controlled vocabulary overview (page 57) for overview
- instance constraints are described in the specification

A document model is a syntax formalism

- for machine processing of the constraints of information model components in a physical expression of a sequence of characters
- two different expressions of the document model based on the form of the documents
 - determined by the kinds of networks across which the documents are transmitted
- compact binary-encoded documents
 - ASN.1 ISO 8825
- marked-up text-based documents
 - W3C Schema XSD
- note that the XML constraints are normative while the ASN.1 constraints are not normative

Document model formal expressions (cont.)

Introduction - Chapter 5 - Documents and document models



The document model constrains the interchange of information, not the application data model

- a popular misconception in XML-based system design is to equate the document model with the application data model
- XML provides independence between the two data models of the applications performing an interchange
- an application translates information from its data model to and from the interchange model

One of two normative components of UBL is the W3C Schema XSD expression of XML document constraints

- formal expression of document constraints expressed for automated processing
- two instantiations of the document constraints:
 - one with comments
 - spreadsheet model information copied for reference purposes
 - one without comments
 - streamlined file may be processed more quickly by some applications
 - referenced as the "run time versions" of the schemas
- the other normative component is the definitions in the spreadsheets
 - recall the discussion on page 41

The UBL TC has mandated additional normative instance-oriented constraints that go beyond the formal document model

- this promotes interoperability and blind interchange of XML documents
- some of these constraints are difficult or impossible to be checked using XML-based tools

Chapter 6 - Model semantics



 - Introduction - Model semantics

Model semantics

Introduction - Chapter 6 - Model semantics



 Semantics is about the meaning of things

- by definition
- by association

The information item "UBL name", i.e. element type name, is mnemonic

- the label of the information item in the XML document structure
- the mnemonic is meant to be a useful reminder of the semantic behind the term
- the mnemonic is *not* meant to define the term
- NDR rule GNR1 requires information item names to be in Oxford English

The information item "Definition" and "Alternate Business Terms" are descriptive and meant to convey the semantic meaning

- inappropriate for use in other languages because multiple readers of a given language may interpret or translate the definition differently
- would need a language-specific version of these to consistently convey meaning to a group of readers of a language other than English

That the UBL schemas are normative mandates the mnemonics used for element names be unchangeable in all uses of UBL

- the descriptions associated with the mnemonics are informative
- transliteration of the element types does not maintain the "UBL-ness" of the document
- it is inappropriate, and not compatible with UBL, to use translated element and attribute names in instances

Chapter 7 - XPath enumerations



-
- Introduction - Exhaustive enumeration of information items

Exhaustive enumeration of information items

Introduction - Chapter 7 - XPath enumerations



Constraint expressions (as used in the UBL schemas) reveal only the parent/child relationship between information items

- one cannot readily tell the impact of the additional number of possible descendents being added to a given element when choosing to include a particular child for that element

The complete ancestry of possible information items is only available through an analysis of the parent/child constraints at every possible level of the document tree

- the UBL TC has performed the analysis and summarized all of the elements and attributes in all contexts of all document types

The information is made available in four forms of what the committee has termed "XPath files"

- a normative description in XML of all possible ancestral and descendent paths of an XML instance
 - this description can be processed for analytical purposes
- a simple text report of the absolute minimum set mandatory information items required to satisfy the document model
- a simple text report of all possible information items defined by the document model use of elements
- an exhaustive sample XML instance that can be processed by non-validating applications

Exhaustive enumeration of information items (cont.)

Introduction - Chapter 7 - XPath enumerations



Complete suite of XPath information created from the document models

- could be based on the regular nature of the W3C Schema XSD expressions
- could be based on the model information of parent/child relationships
- drawback of being very large files
 - e.g. there are over 800,000 information items (not including recursion) in the UBL Order model

Can also create XPath files from instances

- useful when working with a limited number of information items instead of an exhaustive enumeration
- drawback of being fragile
 - changing anything in the instance rennumbers all reference numbers from that point to the end of the document
- Crane has a number of XPath-related resources available in the "Free resources" section of the web site linked from the right-hand marginalia of:
 - <http://www.CraneSoftwrights.com/links/trn-20090212.htm>

UBL XPath files are used in the creation of a number of related resources

- e.g. stylesheet development

Chapter 8 - Controlled vocabulary overview



- Introduction - Controlled vocabularies in business documents

Outcomes

- overview the concepts of validating UBL documents against a collection of controlled vocabularies such as code lists and identifier lists

Controlled vocabularies in business documents

Introduction - Chapter 8 - Controlled vocabulary overview



Business documents have many information items valued using controlled vocabularies

- an abstract and compact value expressed to represent an agreed-upon semantic
- often mnemonic in a particular language
 - e.g. "USD" for the US dollar currency code
 - e.g. "ES" for the Spain country code
- sometimes non-mnemonic to be language independent
 - e.g. "42" for "Payment to bank account" payment means code

Controlled vocabularies include codes and identifiers

- codes represent abstract concepts
- identifiers distinguish concrete instantiations of concepts
 - e.g. account codes specific to a trading partner

Registration authorities are responsible for publicly-available value lists

- e.g. International Organization for Standardization (ISO)
- e.g. United Nations Economic Commission for Europe (UN/ECE)

Trading partner agreements need a rigorous expression of constraints

- there is an opportunity for misunderstanding if the parties cannot agree a priori on the coded values acceptable to their document exchanges
- value constraints are layered on top of structural and lexical constraints for a business document vocabulary
 - so as not to disturb the structural and lexical constraints for the documents

Controlled vocabularies in business documents (cont.)

Introduction - Chapter 8 - Controlled vocabulary overview



Traditional use of XSD Schema enumerations to specify value lists is too restrictive

- ties the value validation to the structural and lexical validation in a single expression of the document constraints
 - communities of users work with standardized expressions of document constraints
 - when business requirements need to be tailored, the structural expressions are tampered with
 - interoperability is promoted when the document constraint expressions are read-only and unchanged from the published standards
- globally-declared information items have document-wide value constraints
 - business rules for trading partners may require an information item to have different value constraints in different document contexts

Emerging standards for the outboard expression of controlled vocabularies

- OASIS code list representation technical committee
 - <http://www.oasis-open.org/committees/codelist>
- OASIS genericcode 1.0
 - <http://docs.oasis-open.org/codelist/genericcode>
 - an XML vocabulary for the expression of a list of values
- OASIS context/value association using genericcode (draft)
 - http://www.oasis-open.org/committees/document.php?document_id=29990
 - an XML vocabulary for the expression of the association of XML document contexts with lists of values
 - useful for validation or user interface implementation or any other purpose
 - independent of the XML vocabulary of the documents being validated
 - works in step with any structural validation technology (e.g. XSD, RELAX-NG, DTD)

Crane's Schematron-based validation using CVA using genericcode: CVA2sch

- one way to use CVA using genericcode files for validation
 - there are many possible uses of genericcode files without obligation to use this approach
- other OASIS committees and companies using XSD are considering adopting this methodology
- migrating to become part of an Apache project for Schematron

Crane's "Practical Code List Implementation" book details the methodology

- see "Book excerpts" at <http://www.CraneSoftwrights.com/links/trn-20090212.htm>
- the methodology applies to any XML vocabulary, not just UBL

Controlled vocabularies in business documents (cont.)

Introduction - Chapter 8 - Controlled vocabulary overview



The UBL package includes a representative default set of controlled vocabularies

- the genericcode XML vocabulary is used to create an instance of an enumeration of values
 - meta data identifies the set of values
- a snapshot of controlled vocabularies is included as genericcode files
 - <http://docs.oasis-open.org/ubl/os-UBL-2.0/cl/>
 - includes meta data for all UBL lists
 - the UBL 2.0 package uses genericcode 0.4
 - the UBL 2.0 update package uses genericcode 1.0
- trading partners can agree on their own lists of values to use
 - would include meta data to identify the custom lists

The defaultCodeList.xsl stylesheet is an informative (non-normative) implementation of the default set of codes

- <http://docs.oasis-open.org/ubl/os-UBL-2.0/val/>
- recall the validation scenarios page 49 and page 49
- created using an early version of CVA2sch

Trading partners can exchange context/value association files and genericcode files

- can choose to use the default set of controlled vocabularies "out of the box"
- can choose to select a different set of vocabularies
 - represents an agreement to conform to code lists separate from the agreement to conform to UBL structures
- the files are tailored to the particular business process agreed upon between trading partners
- the files form part of the formal trading partner agreement
- each party can have an independent implementation of the validation that uses these declarative files
 - implementation choices are particular to a trading partner environment
- each party continues to use published, standardized and unmodified structural and lexical expressions
- partners can also agree on various business rules constraining the values of data
 - expressed as assertions that need to be true or false regarding content found in the UBL instances

Chapter 9 - UBL customization



- Introduction - When to customize UBL

When to customize UBL

Introduction - Chapter 9 - UBL customization



Many criteria are considered when determining when and how to customize UBL

- the use of UBL
 - stakeholders
 - profiles of deployment
 - business vs. technical
- the scope of UBL
 - more documents in UBL than needed
 - fewer documents in UBL than needed
- the size of UBL
 - more information items in UBL than needed
 - fewer information items in UBL than needed
- the perspective of UBL
 - closed environment or open environment?
 - compatible or conformant?
 - taking advantage of existing UBL-based resources

The UBL committee is not a certification authority

- it is not in the OASIS UBL Technical Committee charter to review, comment, measure or certify a UBL customization
 - responsible only for "Standard UBL" and associated publications
 - responsible to define conformance and compatibility but not enforce it or measure it
 - committees can claim conformance or compatibility of their customization, but it is up to users to measure or confirm such is true
- however a community defines a customization is up to the community
 - following TC guidelines may help in identifying and meeting objectives
 - one is not obliged to follow TC guidelines

When to customize UBL (cont.)

Introduction - Chapter 9 - UBL customization



There are common basic steps in the process of creating a UBL customization

- define the profile
 - what business function is being satisfied by the customization?
- define the processes
 - which transactions are needed to enact the business function?
- determine the documents
 - which documents are used in the transactions?
- determine the document contents
 - what information items are in the documents?
- specify the restrictions and extensions
 - which existing constructs are not needed and therefore are pruned
 - which non-existent constructs must be added to the existing constructs
- emit the other artefacts
 - what support will the user community need?

Chapter 10 - Customization specification



- Introduction - Customization specification

Customization specification

Introduction - Chapter 10 - Customization specification

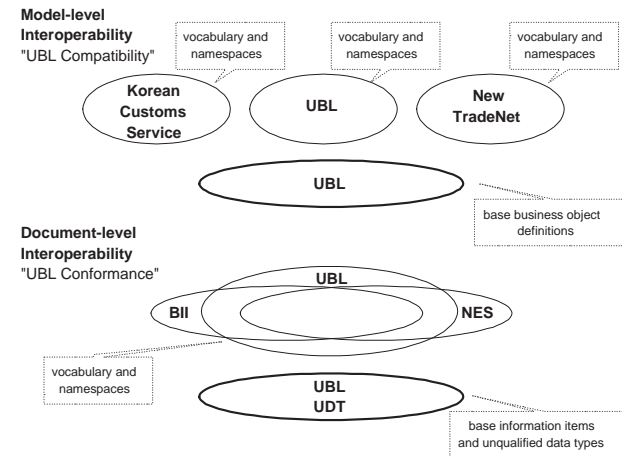


At least two ways to view interoperability when customizing UBL for one's own purposes

- model-level interoperability (UBL compatibility)
 - objective to be create new information items and messages based on UBL library of constructs
- document-level interoperability (UBL conformance)
 - objective to be able to interchange UBL messages

In these two diagrams, the thin-edged ovals represent the set of vocabulary information items (names and namespaces) for an implementation of UBL, while the thick-edged ovals represent the basis upon which the vocabularies are derived

- the top diagram illustrates how there is no overlap of vocabularies between UBL, the Korean Customs Service implementation of UBL and the New TradeNet implementation of UBL
 - the business objects in all vocabularies are derived from UBL business objects
- the bottom diagram illustrates how there is a big overlap of vocabulary between UBL, the North European Subset (NES), and the BII vocabulary
 - both the NES and BII vocabularies use a subset of the UBL vocabulary
 - opportunity to add extensions, though in practice this hasn't yet happened
 - all three vocabularies are based on the information items and unqualified data types of UBL, thus the XSD module is utilized in the declaration of the constructs



Expressing a conformant UBL subset

Introduction - Chapter 10 - Customization specification

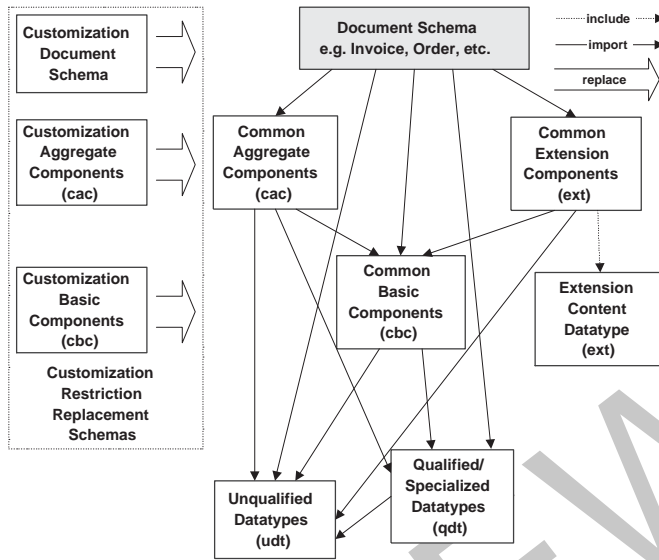


The W3C schema modules for a conformant UBL subset express the customization constraints

- customization fragments partially overwrite a copy of the UBL *xsd/* and *xsdrt/* directories

The following subset schema fragments replace the UBL schema fragments:

- the document schema (e.g. Statement, Waybill, etc.)
- the definition of ABIE (and, therefore, ASBIE) constructs
- the definition of BBIE constructs
- all unused constructs are removed from the fragments



Chapter 11 - Conformant customization implementation



- Introduction - Conformant customization implementation

Conformant customization implementation

Introduction - Chapter 11 - Conformant customization implementation



An implementation of a customization need only support the customization definition

- the community has agreed on what parts of UBL will be used
- the application can limit itself to only the parts expected

Customization validation can only check the customization definition

- requires unexpected constructs to be pruned from instances before processing

Conformant customization implementation (cont.)

Introduction - Chapter 11 - Conformant customization implementation



Two different implementations of conformant customizations may or may not be able to exchange UBL documents

- the use of XML and the common vocabulary allows much of the information to be interchange
- two communities may make different choices of which optional constructs to support

Only mandatory elements are guaranteed to be interchangeable

- e.g. addresses may not be interoperable
 - customization A restricts addresses to structured components only
 - an address is comprised of separately-labeled pieces
- ```

01 <cac:Address>
02 <cbc:StreetName>City Road</cbc:StreetName>
03 <cbc:BuildingName>Banking House</cbc:BuildingName>
04 <cbc:BuildingNumber>12</cbc:BuildingNumber>
05 <cbc:CityName>London</cbc:CityName>
06 <cbc:PostalZone>AQ1 6TH</cbc:PostalZone>
07 <cbc:CountrySubentity>London</cbc:CountrySubentity>
08 <cac:AddressLine>
09 <cbc:Line>5th Floor</cbc:Line>
10 </cac:AddressLine>
11 <cac:Country>
12 <cbc:IdentificationCode>GB</cbc:IdentificationCode>
13 </cac:Country>
14 </cac:Address>

```
- customization B restricts addresses to unstructured components only
    - an address is simply a set of address lines
- ```

01 <cac:Address>
02   <cac:AddressLine>
03     <cbc:Line>5th Floor</cbc:Line>
04     <cbc:Line>Banking House</cbc:Line>
05     <cbc:Line>12 City Road</cbc:Line>
06     <cbc:Line>London, England AQ1 CTH</cbc:Line>
07   </cac:AddressLine>
08 </cac:Address>

```

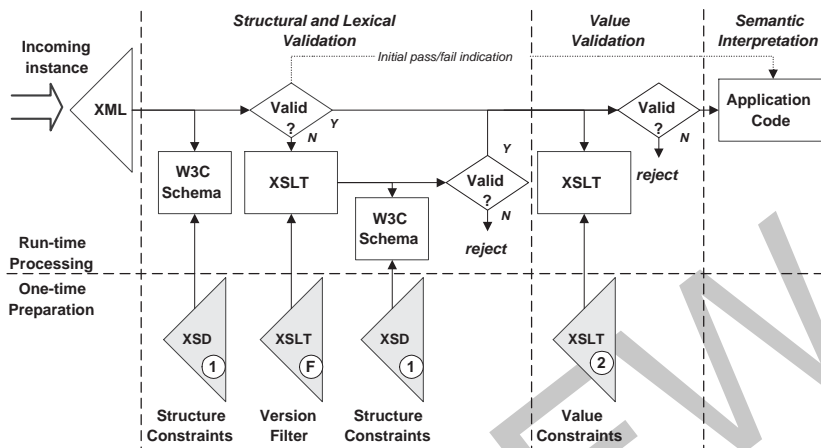
Out-of-band processes and business practices can address mismatched expectations of UBL

- a rejection in processing a UBL document is not an automatic rejection of business
- it is a business decision regarding how to do business when information is complete

- just as there is no set processing model for handling standard UBL instances
- the information in this module is but an example for consideration

- see Chapter 5 - Documents and document models (page 49)
 - first step confirms the structural and lexical constraints on the instance
- see Chapter 8 - Controlled vocabulary overview (page 57)
 - second step confirms the standardized and trading partner values used in the instance

- the remainder of the process remains the same
- the files in use for the remainder of the process are defined for the customization
- also implements "forward compatibility" of UBL minor versions



- preserves only the constructs recognized by a customization definition

Introduction to document engineering

Introduction - Chapter 12 - Introduction to document engineering



Document Engineering (the book)

- ISBN 0-262-07261-0 - Robert J. Glushko, Tim McGrath
- formal and rigorous document modeling techniques
- models, patterns and re-use
- interoperability or lack thereof

The role of documents in business transactions

- distinguishing models and documents
- designing business patterns
- implementing models and documents in applications

Techniques for deriving the model and structure of documents

- analyzing documents
- assembling document models

Chapter 13 - Customization extension



- Introduction - Customization extension

Customization extension

Introduction - Chapter 13 - Customization extension



Many uses for adding extension information to the document model

- customization augmentation
 - new information items are associated with existing constructs
- supplemental information
 - e.g. bit image scan
 - including a picture to back up the choices made in the data
 - e.g. legacy format
 - useful for round-tripping information to different formats

Chapter 14 - Customization deployment



- Introduction - Customization deployment

Customization deployment

Introduction - Chapter 14 - Customization deployment



Deployment is more than just document formats

- supporting the user community will help the deployment be successful
- different artefacts will support developers and users
- e.g. the government of Denmark offers an online validation service users can use to check the invoice instance they plan to submit for payment

What interchange protocols need to be supported?

- perhaps a standardized message handling specification?
 - use of ebXML (page 20)?
 - use of WS-*?
 - <http://www.w3.org/TR/ws-arch/>
- perhaps a custom Service Oriented Architecture (SOA)?
 - use of XML Remote Procedure Call (XML-RPC)?
 - <http://www.xmlrpc.com/spec>
 - use of Simple Object Access Protocol (SOAP)?
 - <http://www.w3.org/TR/soap/>
 - use of Representational State Transfer (REST)?
 - <http://www.ics.uci.edu/~fielding/pubs/dissertation/top.htm>

What application interfaces will you need for XML?

- use of Java Architecture for XML Binding (JAXB)?
 - <http://java.sun.com/developer/technicalArticles/Webservices/jaxb/>
- use of CodeSynthesis XSD/e for C++?
 - <http://www.codesynthesis.com/products/xsde/>
 - an open source development project, not an open standard
- use of the Post Schema Validation Infoset (PSVI)?
 - <http://www.w3.org/TR/xmlschema-1/#d0e504>
- use of Document Object Model (DOM)?
 - <http://www.w3.org/DOM/>
- use of Simple API for XML (SAX)?
 - <http://www.saxproject.org/>

Customization deployment (cont.)

Introduction - Chapter 14 - Customization deployment



Identification of parties

- what to use for an end point identifier?
 - tax registration number?
 - could be used by a government as already managed by the government
 - GS1 Global Locator Number (GLN/EAN)?
 - a number used to identify an organization as a legal entity
 - other international register or infrastructure number?

Annex A - OpenOffice 3 UBL customization environment



- Section 1 - OpenOffice 3 UBL customization environment

OpenOffice 3 UBL customization environment

Annex A - OpenOffice 3 UBL customization environment
Section 1 - OpenOffice 3 UBL customization environment



Crane Softwrights Ltd.'s `profile2ods` package is a pair of OpenOffice 3 XML filters

- enables OpenOffice 3 to specify and save a subset of the published UBL 2.0 document models
- supports the export of developer resources supporting a subset specification

Developer resources:

- human-readable HTML reports for consistency review
 - see Chapter 3 - Information items (page 41) for an example
 - all of Crane's model reports are created with this tool using 32 profiles
 - one profile includes all document types
 - one profile for each document type
- pruned W3C Schema XSD files
 - see Expressing a conformant UBL subset (page 66) for the role these play
- synthesized XSLT and Python instance filters
 - see Refining the document processing model (page 70) for the role these play
- XML and text document context XPath reports
 - see Chapter 7 - XPath enumerations (page 54) for the roles these play

The package is found as a ZIP file linked from the sales page for this book

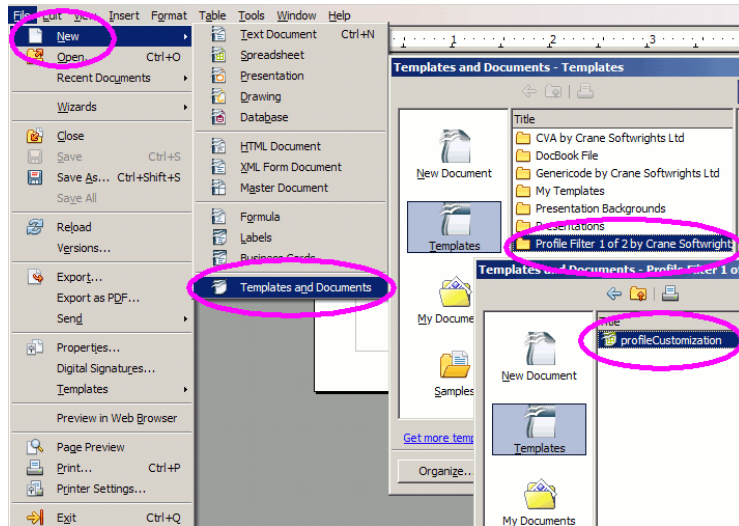
- <http://www.CraneSoftwrights.com/sales/publd/>
- your book purchase password is needed to get access to the package

The `readme.html` documentation includes all of the necessary documentation to install, uninstall and use these filters.

OpenOffice 3 UBL customization environment (cont.)

Annex A - OpenOffice 3 UBL customization environment
Section 1 - OpenOffice 3 UBL customization environment

A new profile document is created from scratch using the profileCustomization template in "filter 1":



OpenOffice 3 UBL customization environment (cont.)

Annex A - OpenOffice 3 UBL customization environment
Section 1 - OpenOffice 3 UBL customization environment

There are thirty-seven sheets when editing the profiles:

- Configuration
 - managing the exportation and user interface properties
 - specifying the artefacts to be created during the exportation process
- Profiles
 - managing the meta data for each profile
- Summary document types
 - managing which document types are in which profiles
- Individual document types (32)
 - managing which components are in each document type for each profile
- Help
 - context-sensitive help information
- Support
 - there is no user serviceable data in this sheet

The customization is saved as an OpenOffice ODS file for maintenance

- faster operation than using the XML format
- preserves all information, including user-defined meta data

Creating the artefacts is triggered by exporting the document using the "Profile Export Filter"

- artefact creation governed by settings on the configuration page

Configuration sheet

Annex A - OpenOffice 3 UBL customization environment
Section 1 - OpenOffice 3 UBL customization environment



Used to configure the various export activities

Input property	Value (remember to preface with "file:///" or "http://" or other suitable protocol)
Input schema parent directory	?? file:///c:/path/to/local/copy/os-UBL-2.0
Export properties	?? Value (remember to preface with "file://" or "http://")
Export version profile suffix	?? test1
Export nature	?? Permitted
Export HTML base directory	?? file:///c:/path/to/output/artefacts
Export schema parent directory	?? file:///c:/path/to/output/artefacts
Export filter base directory	??
Export XPath full text directory	??
Export XPath minimal directory	??
Export XPath XML directory	??
Export XPath instance directory	??
Export profiles	
Export profile	?? simple
Export profile	?? complex
Export profile	??
Document types	
Definitions/terms language	?? EN
	?? EN
	?? ES
	?? IT
	?? JP

- location of input schema files to be pruned
- nature of outputs
 - "permitted" subsets include all items with explicitly specified cardinality
 - "strict" subsets include only items with explicitly specified cardinality
- location of output artefact directories
- indications of export activity for each output artefact directory
- specification of language for definitions and business terms

Configuration sheet (cont.)

Annex A - OpenOffice 3 UBL customization environment
Section 1 - OpenOffice 3 UBL customization environment



Use File / Export... to emit the selected artefacts

- the primary output file is a text file reporting the results of exporting multiple UBL artefacts

Example export report from the hands-on exercise:

```

01 Crane's OASIS UBL 2.0 profile editor report output
02 -----
03
04 Run time: 2009-02-11 20:50z
05 Determining requirements...
06 Analyzing project information...
07 Export version suffix:
08 Export nature: Strict
09 Producing results for profiles: Exercise
10
11 Profile short name: Exercise
12 Profile title: Exercise - Customization exercise
13 Models in profile: CommonLibrary
14
15 HTML production:
16   Output HTML report file: file:///c:/publd/exer/Exercise/Exercise.html
17 Schema production: not active
18 Filter production: not active
19 XPath full text production: not active
20 XPath minimal text production: not active
21 XPath XML production: not active
22 XPath Instance production: not active
23
24 End of report.
  
```

Used to define properties of profiles

Help	Configuration	Changing the number of columns involves saving and reloading a Profile XML file	
Profiles:	Jump to the config sheet		
Indicate column save action:	?? No column action	No column action	No column action
Profile definition	?? Each column defines a profile		
Profile short name	?? simple	complex	
CustomizationID string	??		
ProfileID string	??	The profile short name is mandatory for each profile	
Domain	??		
Process	??		
Title	?? Simple Procurement	Complex Procurement	
Document reference	??		
Description	??		
Commentary	??	Other values only have meaning when the profile short name is specified	
	Jump to the doctypes sheet		
	Document types		

- column action is only engaged when files are saved and opened as XML
 - very long tasks to save and open the files as XML
 - user meta data is not preserved when using the XML format for saving the information
 - much more efficient to save and open the files in ODS when not needing to change the number of profiles
- the short name property is an identifier used for uniqueness across all profiles
 - participates in file naming conventions during export
- all other properties are documentary and do not impact on the specification
 - defining the title is useful for distinguishing the titles of reports from various configurations

Example values drawn from BII documents for illustration

- Domain:
 - Post award procurement
- Process:
 - Ordering - Fulfillment - Billing - Payment
- Title:
 - Advanced Procurement with Dispatch
- Document reference:
 - CEN/ISSS WS/Profile BII13
- Description:
 - Profile description for Advanced Procurement with Dispatch
- Commentary:
 - e.g. status information, participants, discussion, etc.

Document types sheet

Annex A - OpenOffice 3 UBL customization environment
Section 1 - OpenOffice 3 UBL customization environment

Used to specify the inclusion of document types in each profile

The screenshot shows a spreadsheet titled "Configuration" with the following content:

Profile Prefix	simple	complex	
X	X	X	CommonLibrary
			ApplicationResponse
			AdditionalDocument
			BillOfLading
			Forwarding
			FreightInvoice
X	X	X	Invoice
			Order

Yellow callout boxes with arrows point to specific cells or text in the spreadsheet:

- "Jump to the config sheet" points to the "Configuration" title.
- "Each of the profile identifiers, one per column" points to the "Profile Prefix", "simple", and "complex" headers.
- "Select the document types for each profile." points to the text above the data rows.
- "Jump to the individual document type sheet" points to the "CommonLibrary" cell.
- "Jump to the profiles sheet" points to the "AdditionalDocument" cell.
- "Use no value to indicate exclusion" points to the empty cells in the "simple" and "complex" columns for "Forwarding" and "FreightInvoice".
- "Use any value to indicate inclusion" points to the "X" values in the "simple" and "complex" columns for "Invoice" and "Order".

- any non-blank value can be used (the programmatic default is "x")
- data entry in white cells is used during the export process
- data entry in yellow cells is ignored during the export process and the XML save format
- defining a profile's short name enables white cells on this sheet
- specifying a document type on this document types sheet enables the corresponding white cells on the corresponding document type sheet

Document type sheet

Annex A - OpenOffice 3 UBL customization environment
Section 1 - OpenOffice 3 UBL customization environment



Used to specify cardinalities of items and item-level user-defined meta data in each profile

10	<<				5	ProfileID	Identifies a user-defined profile
11	<<						
12	<<	1	1	1	6	ID	Identifier for the Invoice assignment
13	<<						
14	<<	0	0..1		7	CopyIndicator	Whether a document is a copy of another
15	<<						
16	<<	0..1	1		8	UUID	A universally unique identifier for the document
17	<<						
18	<<	1	1	1	9	InvoiceDate	The date assigned by the originator
19	<<						
20	<<						
21	<<				11	InvoiceTypeCode	Code specifying the type of the invoice
22	<<						
23	<<						
24	<<				12	Note	Free-form text applying to the invoice
25	<<						
26	<<	0	0..1		13	TaxPointDate	The date of the tax point
27	<<	0..1					
28	<<	1					
29	<<	1..n					
30	<<				15	TaxCurrencyCode	The currency used for tax amounts

- each new cardinality cell is constrained based on the model cardinality
- items with unspecified new cardinalities are included in permitted models but not in strict models
- data entry in white cells is used during the export process
- data entry in yellow cells is ignored during the export process and the XML save format

User-defined meta data can be defined on each sheet

- instructions for modification of the cell widths and headings are in the `readme.html` file

Profile tool methodology

Annex A - OpenOffice 3 UBL customization environment
Section 1 - OpenOffice 3 UBL customization environment



Objective is to configure and support a customization of UBL

- what UBL standard constructs are needed?
- what UBL standard optional constructs can be discarded?
- what extensions need to be added?

The OpenOffice environment is for collaboration and specification

- export human-readable HTML report for review
 - are all of the constructs pruned as required?
 - are any constructs over-pruned to the point of being impossible to be UBL valid?
- when ready for testing or deployment, export other artefacts
 - schemas for validation of the instance against the subset specification
 - filters for pruning incoming UBL instances to test conformance against the subset
 - text and markup reports as developer tools for stylesheets and other applications acting on subset instances

Profile tool methodology (cont.)

Annex A - OpenOffice 3 UBL customization environment
Section 1 - OpenOffice 3 UBL customization environment



Extension components and new document types are crafted by other tools

- the profile tool's sole purpose is to prune the published UBL 2.0 document models
- using other means create the replacement "Extension Content Datatype" module and new document schemas

Customization validation environment created from old and new components

- copy all schema fragments from UBL 2.0 update package
- overlay fragments replacing complete schemas with the pruned schemas
- overlay fragment replacing extension data type module with customization extension
- add customization extension support fragments
- see page 73 for the schema replacements

Customization validation processing model

- use a filter configured to only pass those constructs allowed for the customization
- see page 49 for the processing model
 - the version filter (F) is replaced with the customization filter

Where to go from here?

Conclusion - Practical Universal Business Language Deployment



The work on UBL continues:

- OASIS UBL 2.0 Standard - December 12, 2006 with update May 26, 2008
 - <http://docs.oasis-open.org/ubl/os-UBL-2.0/>
 - <http://docs.oasis-open.org/ubl/os-UBL-2.0-update/>
- focus now shifts to support, deployment, awareness and evangelism
- join the UBL Technical Committee to help
 - <http://www.oasis-open.org/join/>
- committee mail list - UBL TC
 - <http://lists.oasis-open.org/archives/ubl/>
- community mail list - UBL-Dev
 - <http://lists.oasis-open.org/archives/ubl-dev/>
 - <http://www.oasis-open.org/mlmanage/>
- community resource center - UBL focus area
 - <http://ubl.xml.org>
- community contribution to UBL International Data Dictionary
 - <http://ubl.xml.org/forums/ubl-international-data-dictionary-idd-contributions>

Colophon

Conclusion - Practical Universal Business Language Deployment



These materials were produced using structured information technologies as follows:

- authored source materials
 - content in numerous XML files maintained as external general entities for a complete prose book that can be made into a subset for training
 - specification of applicability of constructs for each configuration
 - 45- and 90-minute lecture, half-, full-, two- and three-day lecture and hands-on instruction, and book (prose) configurations
 - an XSLT transformation creates the subset of effective constructs from applying applicability to the complete file
 - content from other presentations/tutorials included semantically (not syntactically) during construct assembly
 - customized appearance engaged with marked sections and both parameter and general entities
 - different host company logos and venue and date marginalia
 - changing a single external parameter entity to a key file includes suite of files for given appearance
- accessible rendition in HTML
 - an XSLT stylesheet produces a collection of HTML files using Saxon for multiple file output
 - mono-spaced fonts and list-depth notation conventions assist the comprehension of the material when using screen-reader software
- printed handout deliverables
 - an XSLT stylesheet produces an instance of XSL formatting objects (XSL-FO) for rendering
 - XPDF <http://www.foolabs.com/xpdf> extracts raw text from PDF files for the back-of-the-book index methodology published as a free resource by Crane Softwrights Ltd.
 - XEP by RenderX <http://www.renderx.com> produces PostScript from XSL-FO
 - GhostScript <http://www.ghostscript.com> produces PDF from PostScript
 - the iText <http://itext.sf.net> PDF manipulation library for Java is used for page imposition by a custom Python <http://www.python.org> program running under the Jython <http://www.jython.org> environment

Obtaining a copy of this material

Conclusion - Practical Universal Business Language Deployment



This comprehensive tutorial on UBL is available for subscription purchase and free preview download:

- "Practical Universal Business Language Deployment" Third Edition - 2009-02-12 - ISBN 978-1-894049-23-8
 - the free download preview excerpt of the publication includes the complete text of the first chapter and the introductory text of all of the other chapters
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