



UBL 2.1: The Universal Business Language

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**Generic overview
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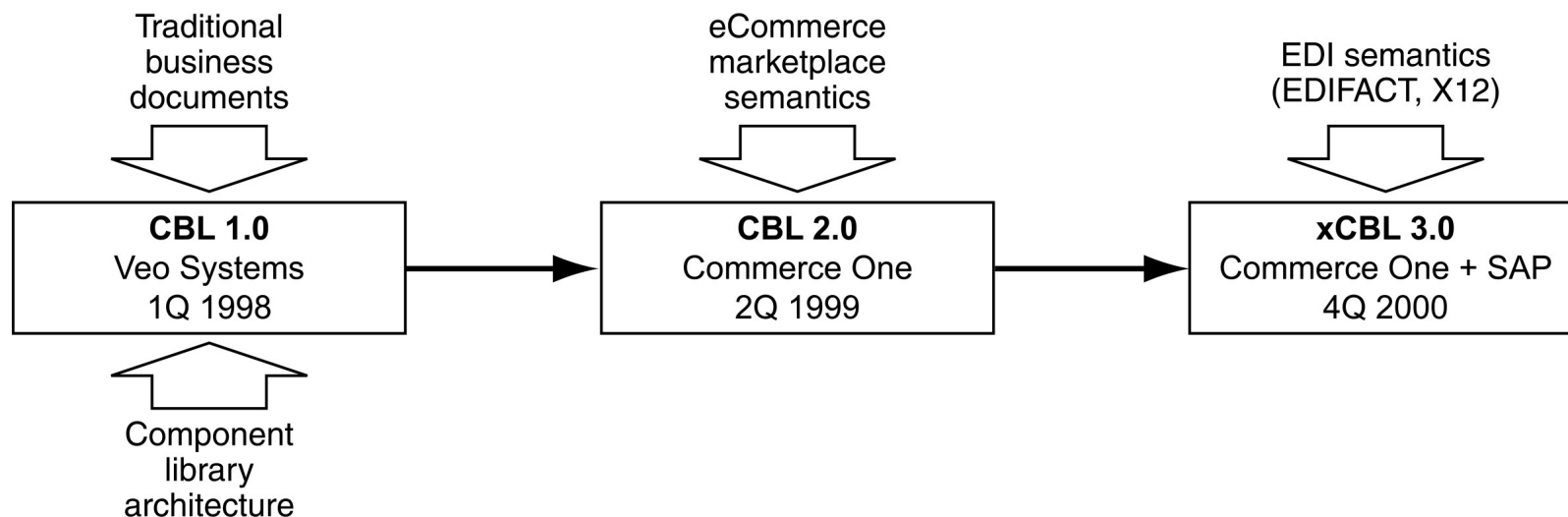


The Universal Business Language

- Royalty-free OASIS library of 64 standard XML electronic business documents created over 13 years of development
- Built on more than two decades of prior experience with EDI message sets and early XML marketplace and supply chain vocabularies
- Sponsored by governments and tested in large-scale deployments supporting cheap, painless ecommerce transactions between enterprises of all sizes
- Supports EDI semantics while mapping directly to traditional paper documents
 - Easy to understand
 - Plugs into existing business, legal, auditing, and records management practices with minimum disruption
 - Completely agnostic with respect to platform and web infrastructure
- Provides significant savings by eliminating the re-keying of data in existing fax- and paper-based supply chains
- Dramatically lowers cost of entry into electronic supply chains for smaller enterprises
- Presents vendors with a standard target for off-the-shelf business software
- Will do for business what HTML did for publishing

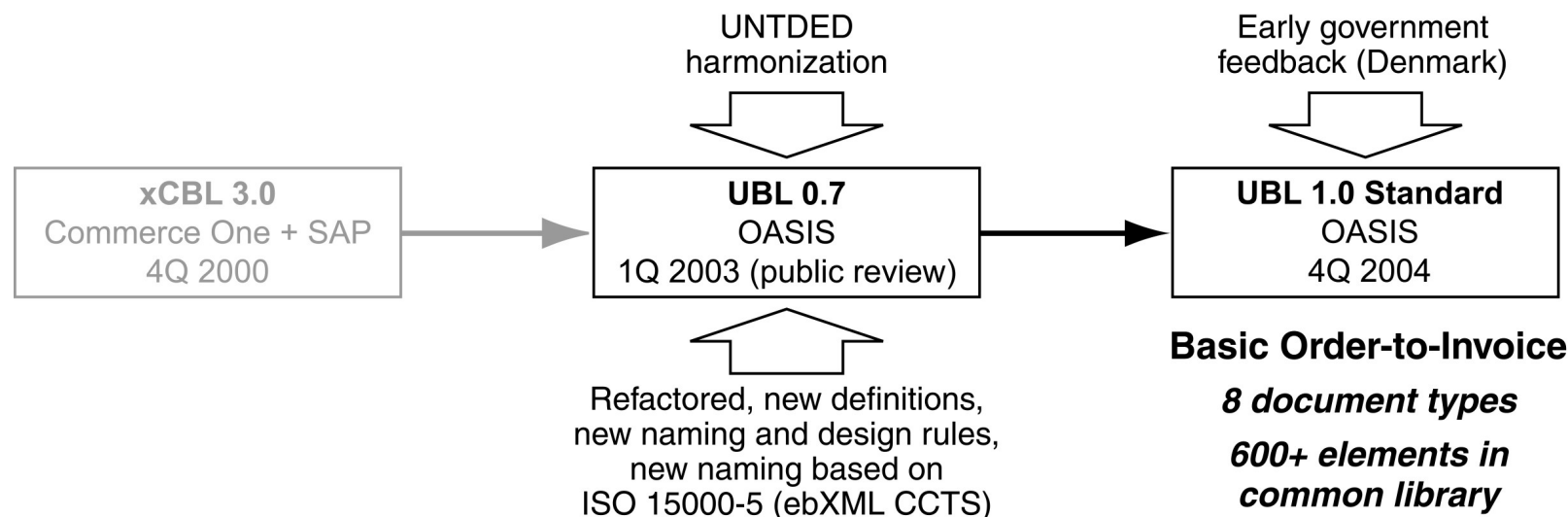


UBL Prehistory: CBL



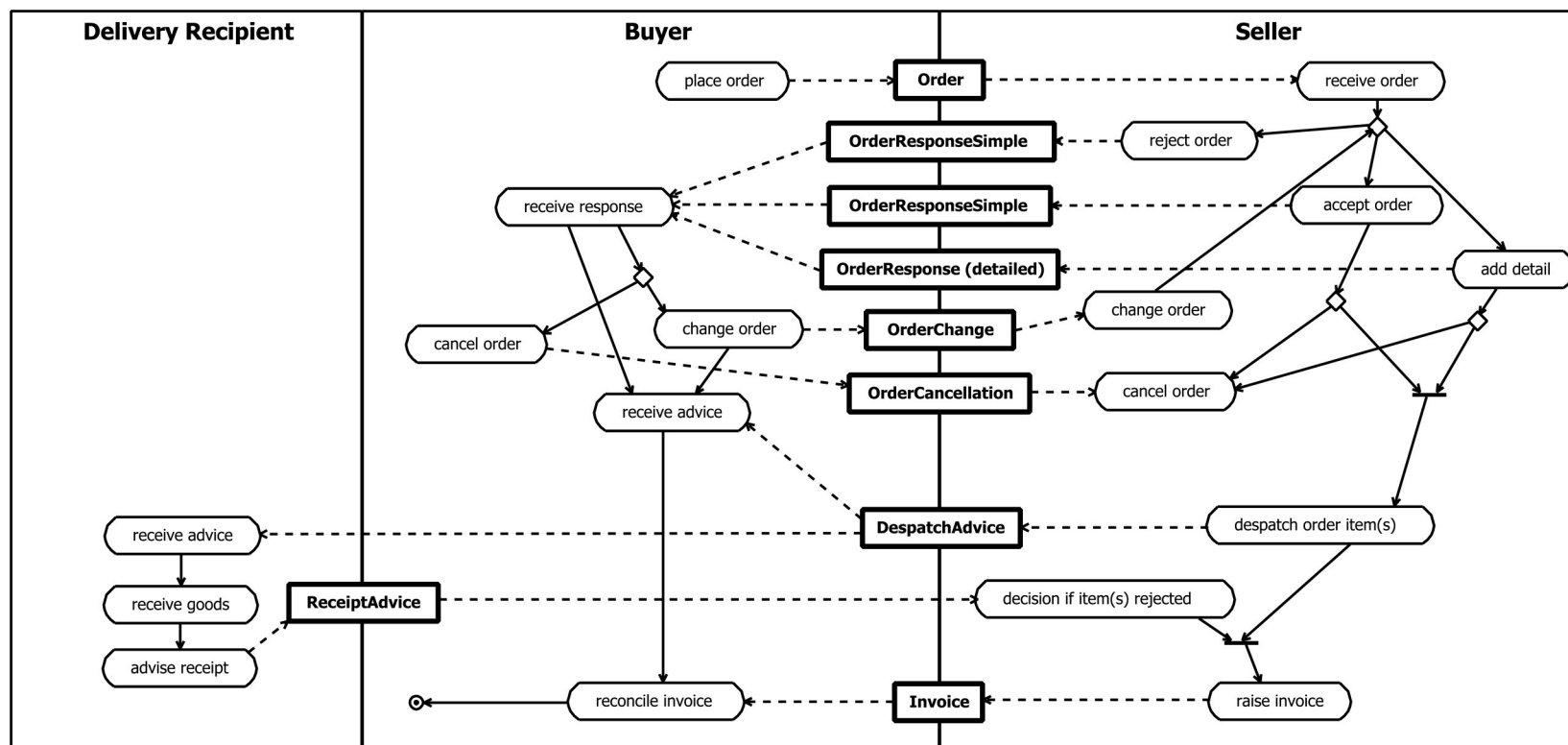
CBL (the Common Business Language) had already been widely deployed before the UBL TC was formed in OASIS. The development of CBL 1.0 was funded by the U.S. government (NIST).

UBL Phase One: Order to Invoice



The UBL TC completely reworked xCBL 3.0 and made UBL the first (and only) integrated set of XML business schemas to be based entirely on UN/CEFACT Core Components (ISO 15000-5, CCTS 2.01).

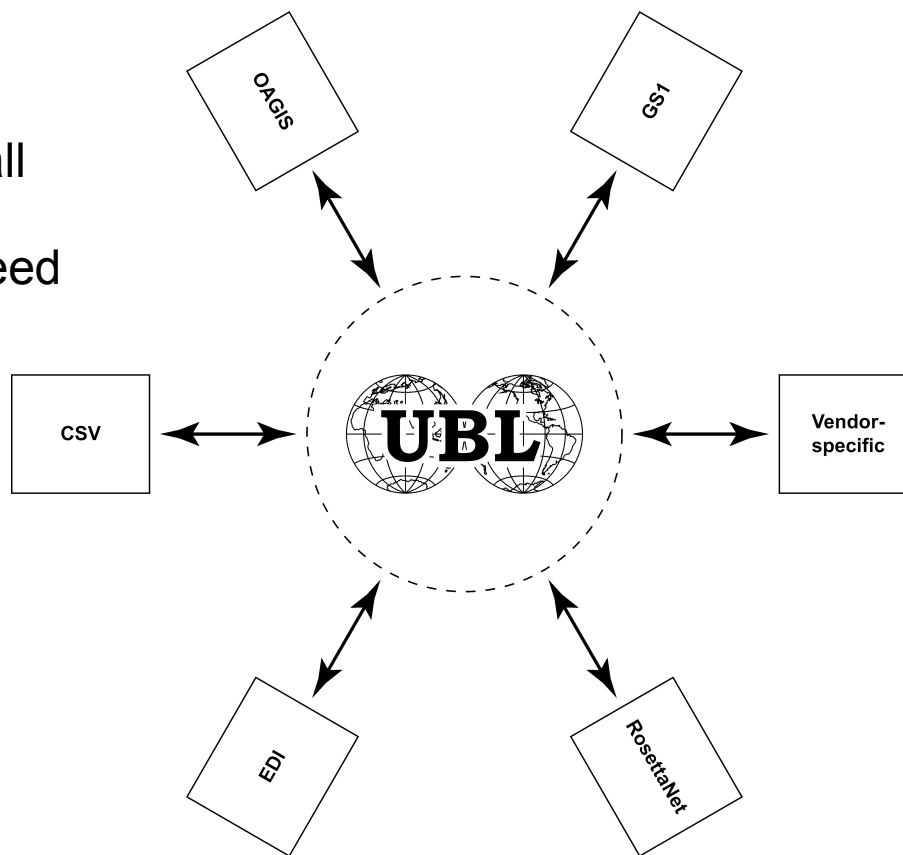
UBL 1.0 order-to-invoice process (2004)



This model describes a very large class of B2B use cases among both large companies and SMEs.

The concept of a hub format

UBL semantics map to all common business data formats with very little need for extension.



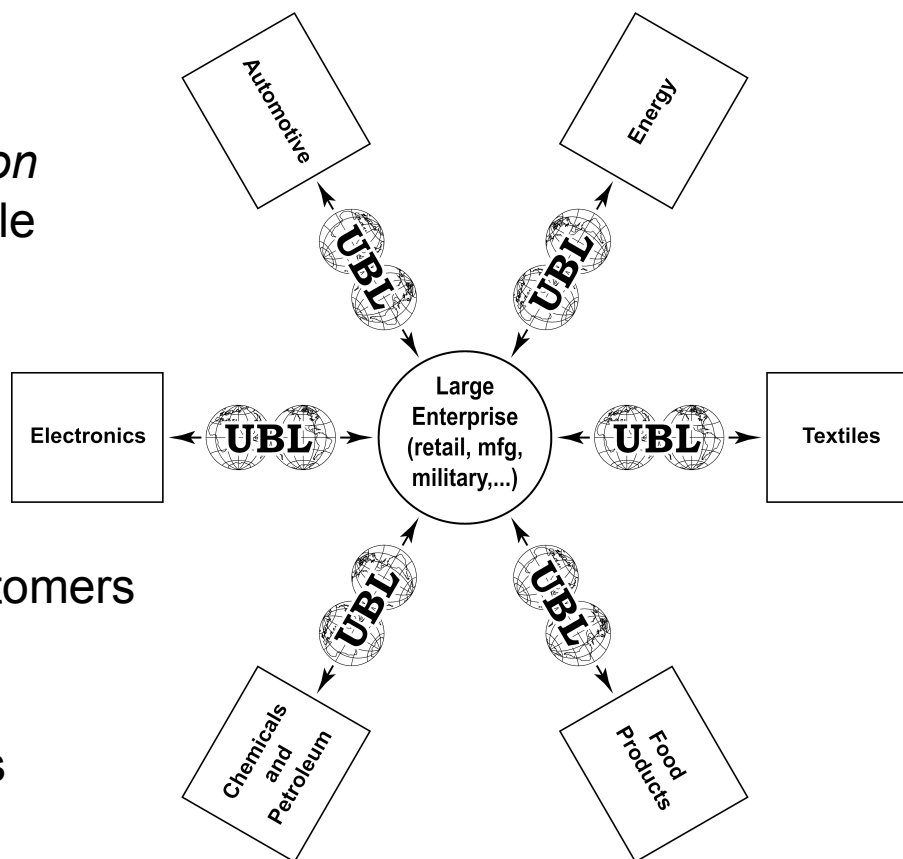
This means that a user of an industry-specific or proprietary data format need support only one kind of conversion: to and from UBL.

UBL and the large enterprise

UBL provides a *common data interface* to multiple suppliers in multiple industries....

as well as multiple customers in multiple industries...

and all the accountants
and tax authorities
and customs agents....



There appears to be no practical alternative to this architecture for implementing ecommerce relations in larger contexts.



UBL and government procurement

- The “large enterprise” architecture lends itself perfectly to the public sector, with the government at the center of the picture
- Government can solve interoperability problems through the power of the purse: “Use this format or you don’t get paid.”
- And it can back up its mandates with legislation
- Creation and maintenance of UBL in an open, accountable, public standards process makes it a natural for government adoption
- European and Asian government procurement experts were the first to understand the potential of UBL following the release of 1.0....

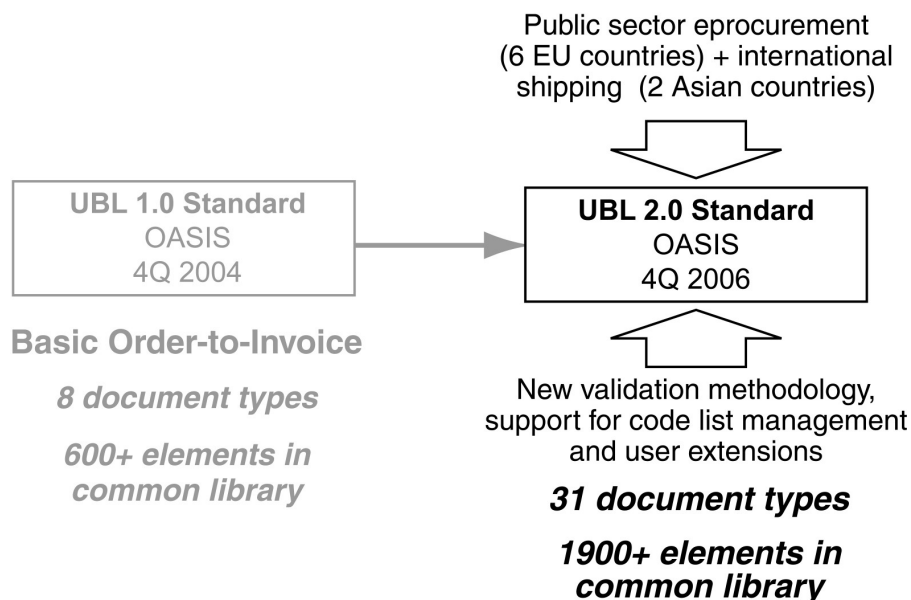


Northern European UBL group (2005)

Denmark	Danish Ministry of Science, Technology and Innovation (VTU), Danish IT and Telecom Agency (ITST)
Norway	Norwegian Ministry of Government Administration and Reform eProcurement Secretariat e2b Forum (an e-invoicing initiative in the private sector supported by the government)
Sweden	Single Face To Industry (SFTI), the public sector initiative in Sweden to promote e-business by the Swedish National Financial Management Authority (ESV), Swedish Association of Local Authorities and Regions (Sveriges Kommuner och Landsting), and Swedish Administrative Development Agency (Verva)
England	OGC buying solutions under Office of Government Commerce
Finland	State Treasury Tieke Finnish Information Society Development Centre
Iceland	Financial Management Authority (Fjársýsla Ríkisins) Iceland Committee on e-business and Trade Procedures (ICEPRO)

UBL 2.0 (2006) was created largely in response to the requirements of this working group, which then published the Northern European Subset of UBL (NESUBL) in 2007. Agencies of two Asian governments, Singapore and Hong Kong, contributed four basic transportation-related documents as well.

UBL Phase Two: Government procurement



The government contributions tripled the size of the UBL component library and nearly quadrupled the number of document types.

Expanded UBL 2.0 business processes

UBL 2.0 expanded far beyond the original order-to-invoice scenario.

- Create Catalogue
- Update Catalogue Item Specification
- Update Catalogue Pricing
- Delete Catalogue
- Buyer-initiated Sourcing
- Punchout Sourcing
- Ordering
- Fulfilment with Despatch Advice
- Fulfilment with Receipt Advice
- Billing with Credit Note
- Billing with Debit Note
- Self Billing with Credit Note
- Self Billing with Self Billed Credit Note
- Freight Billing
- Payment
- Statement
- Initiate Transport Services
- Certification Of Origin Of Goods

*Approximate scope
of UBL 1.0 process*

Government-sponsored development turned UBL into a complete basic language for conducting large-scale ecommerce with and across multiple industries and supply chains.

Document types in UBL 2.0 (2006)

Updated UBL 1.0 order-to-invoice set

Order, Order Response, Order Response Simple, Order Change, Order Cancellation, Despatch Advice, Receipt Advice, Invoice

2.0 document types for sourcing

Catalogue Request, Catalogue, Catalogue Item Specification Update, Catalogue Pricing Update, Catalogue Deletion, Request For Quotation, Quotation

2.0 document types for fulfilment (shipping)

Forwarding Instructions, Packing List, Bill Of Lading, Waybill, Certificate Of Origin, Transportation Status

2.0 document types for billing

Credit Note, Debit Note, Self Billed Invoice, Self Billed Credit Note, Freight Invoice, Reminder

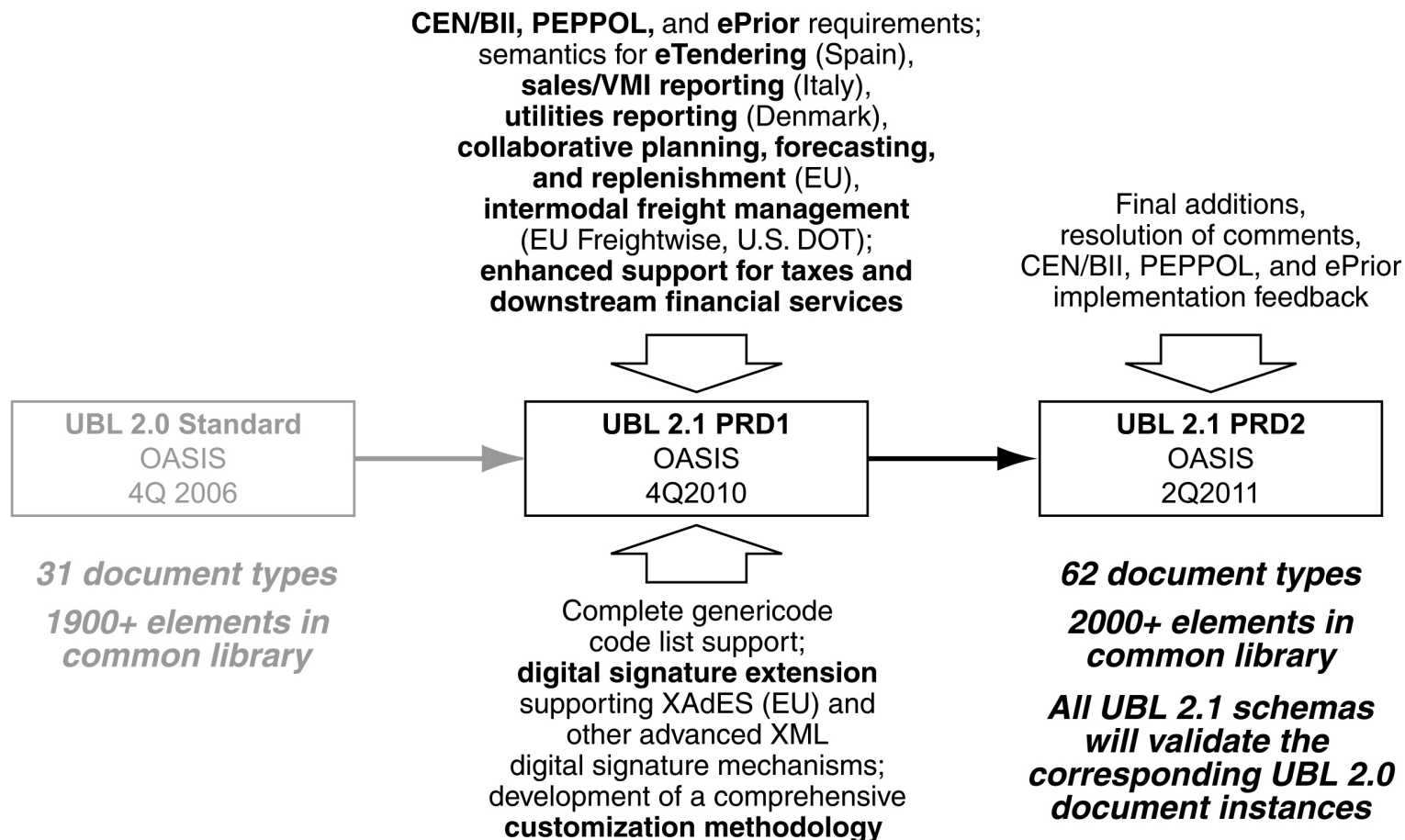
2.0 document types for payment

Remittance Advice, Statement

2.0 supplementary document types

Application Response, Attached Document

UBL 2.1 (phase two continued)



*The latest government and industry contributions have doubled the size of the UBL document set – **but not the size of the common library.***

New document types in UBL 2.1 (2011)

UBL 2.1 document types for eTendering

Awarded Notification, Call For Tenders, CatalogueTemplate [PRD3], Contract Award Notice, Contract Notice, Guarantee Certificate, Tender, Tender Receipt, Tenderer Qualification, Tenderer Qualification Response, Unawarded Notification

UBL 2.1 document types for VICS Collaborative Planning, Forecasting, and Replenishment

Exception Criteria, Exception Notification, Forecast, Forecast Revision, Item Information Request, Prior Information Notice, Purchase Conditions [PRD3], Trade Item Location Profile

UBL 2.1 document types for Sales Reporting / Vendor Managed Inventory

Instruction For Returns, Inventory Report, Performance History, Product Activity, Retail Event, Stock Availability Report

UBL 2.1 document types for Intermodal Freight Management

Goods Item Itinerary, Transport Execution Plan, Transport Execution Status, Transport Operation Status, Transport Service Description

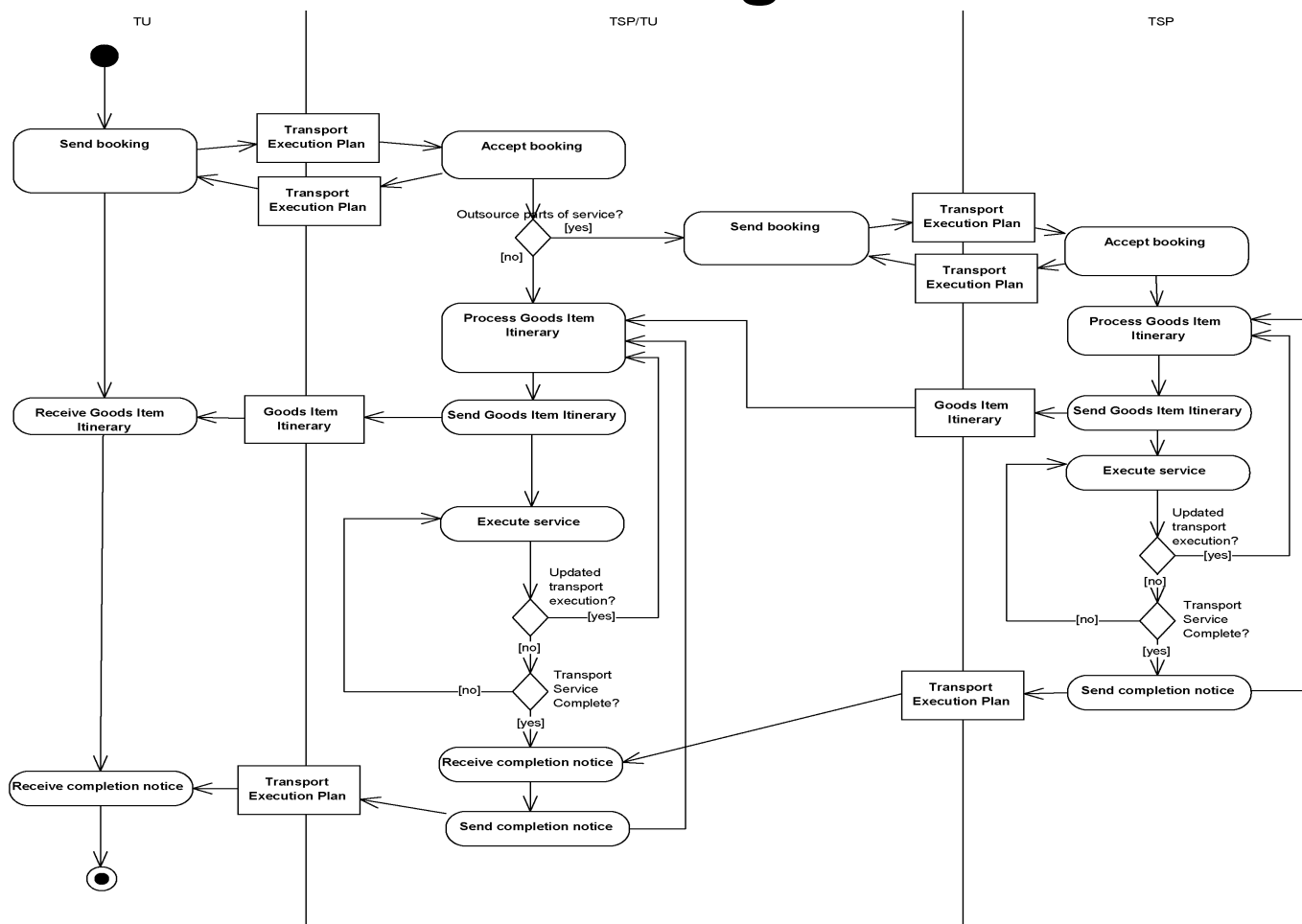
UBL 2.1 document type for Utility Billing

Utility Statement

UBL 2.1 supplementary document types

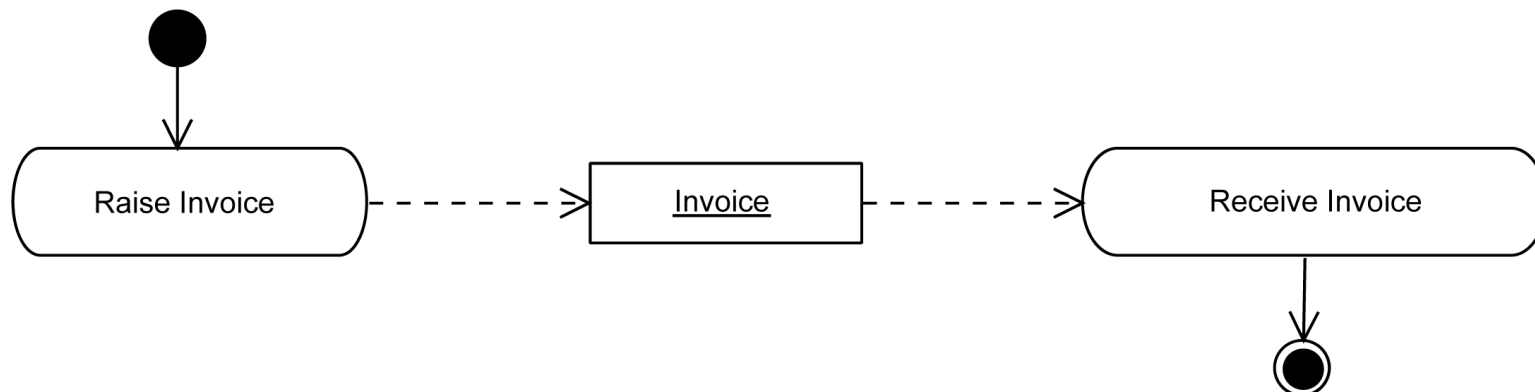
Document Status, Document Status Request

UBL can be overwhelming...



“Transport planning with intermediary role” (1 of 56 processes in UBL 2.1)

...but it doesn't have to be



- UBL has become an integrated, interoperable set of document types from which you can choose any subset (often just one document, generally no more than a few)
- The document schemas are themselves often subsetting to further limit the information items used in a specific trading relationship
- In general, each community of interest defines the processes, documents, and information items it will require and support
- The only people who have to support most or all of UBL are the tool vendors and the sellers of value-added services



Key UBL features

- Free
- Vendor-neutral
- Document oriented
- Based on a component library
- Highly configurable
- Proven
- Widely deployed
- Perfectly suited to transactions between large organizations and a number of smaller trading partners



“Document-oriented” syntax

“Document-oriented” means:

- Mapping to paper documents as a design priority
- Standardizing data, not process
- Focusing on the “public space” between enterprises rather than the private (application-oriented) space within enterprises

Document orientation lowers barriers to entry by facilitating a transition from paper-based transactions to electronic transactions with a minimum of disruption to basic business processes.

It also makes it easier to map ecommerce to traditional legal practices.

It makes interchanges agnostic with regard to platform or transport – anything from web portal, to direct connection, to email will do.

It thus enables a very wide range of input capabilities (paper/electronic, synchronous/asynchronous, automatic/manual) to interface with a similarly wide range of output requirements and users.



Example: UBL Order document

```
<?xml version="1.0" encoding="UTF-8"?>
<Order xmlns:res="urn:oasis:names:specification:ubl:schema:xsd:odelist:AcknowledgementResponseCode-
1.0" xmlns:cbc="urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-1.0"
xmlns:cac="urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateComponents-1.0"
xmlns:cur="urn:oasis:names:specification:ubl:schema:xsd:odelist:CurrencyCode-1.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="urn:oasis:names:specification:ubl:schema:xsd:Order-1.0"
xsi:schemaLocation="urn:oasis:names:specification:ubl:schema:xsd:Order-1.0 ../../xsd/maindoc/UBL-
Order-1.0.xsd">
  <BuyersID>20031234-1</BuyersID>
  <cbc:IssueDate>2003-01-23</cbc:IssueDate>
  <cbc:LineExtensionTotalAmount amountCurrencyCodeListVersionID="0.3"
amountCurrencyID="USD">438.50</cbc:LineExtensionTotalAmount>
  <cac:BuyerParty>
    <cac:Party>
      <cac:PartyName>
        <cbc:Name>Bills Microdevices</cbc:Name>
      </cac:PartyName>
      <cac:Address>
        <cbc:StreetName>Spring St</cbc:StreetName>
        <cbc:BuildingNumber>413</cbc:BuildingNumber>
        <cbc:CityName>Elgin</cbc:CityName>
        <cbc:PostalZone>60123</cbc:PostalZone>
        <cac:CountrySubentityCode>IL</cac:CountrySubentityCode>
      </cac:Address>
      <cac:Contact>
        <cbc:Name>George Tirebiter</cbc:Name>
      </cac:Contact>
    </cac:Party>
  </cac:BuyerParty>
  <cac:SellerParty>
    <cac:Party>
      <cac:PartyName>
        <cbc:Name>Joes Office Supply</cbc:Name>
      </cac:PartyName>
      <cac:Address>
        <cbc:StreetName>Lakeshore Dr</cbc:StreetName>
        <cbc:BuildingNumber>32 W.</cbc:BuildingNumber> [etc.]
```

*The UN Layout Key has for more than 40 years been the international standard for the **layout** of paper business documents. Complex paper document requirements like the UNLK can easily be met by generating PDF from the UBL document instance (this printout was generated from the Order shown in the previous slide).*

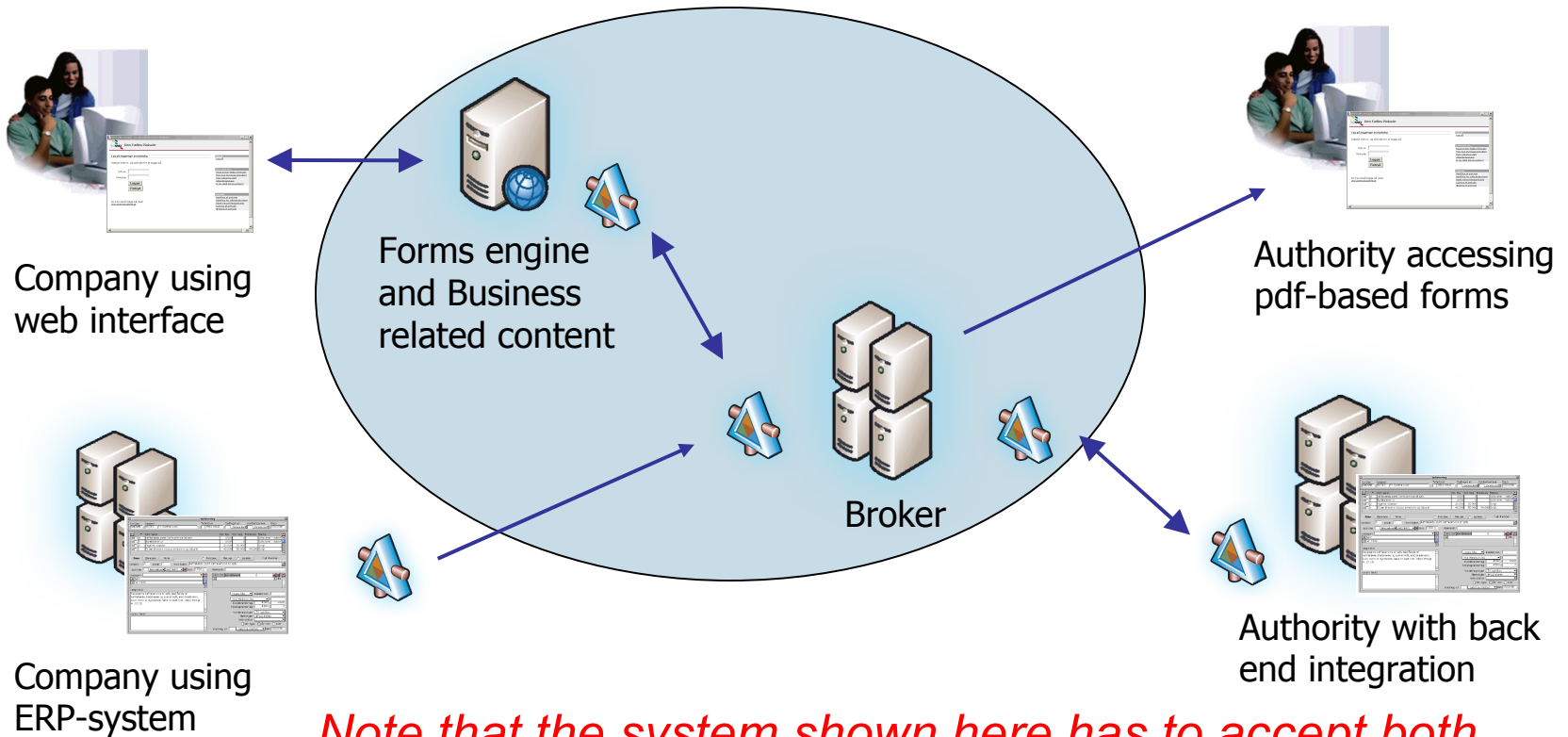
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This slide shows what a real user (the government of Denmark) actually does with a UBL-based system and demonstrates the power of a document orientation.

The Business Portal Infrastructure



Note that the system shown here has to accept both sync and async inputs and has to produce both electronic and paper outputs. In other words, it has to support both machines and humans.

Component library architecture

- Document schemas are assembled from a library of *reusable XML schema components*
- Avoids uncoordinated message design – a major defect of traditional EDI (EDIFACT and X12) message sets
- Allows maximum reuse of program code across all UBL document types, lowering cost of development
- Makes it easy to “flip” Orders to Invoices (for example)
- Centralizes data dictionary definitions
 - Maps to UNTDED and the UN/CEFACT Core Component library for semantic harmonization with other message formats
 - Creates industry standard definitions of virtually all generally recognized kinds of business data



The UBL International Data Dictionary

- UBL localization subcommittees translate the standard data item definitions
- Translations take a year or two after release of each version
- The 600+ definitions in UBL 1.0 have been translated into Chinese (traditional and simplified), Japanese, Korean, Spanish, and Italian
- The 1900+ business definitions in UBL 2.0 have been translated into Italian, Spanish, Japanese, German, and Slovak; partial translations are available in Danish, Turkish, Hungarian, and Lithuanian
- There is no other resource like this in the world





Configurability and customization

- The UBL two-phase validation approach allows **extensive code list customization** and long-term code list management without changing the standard schemas
- The UBL extension mechanism allows **ad hoc additions to the standard schemas** to accommodate trading partner requirements without requiring changes by other trading partners
- Thus, UBL provides a very high level of configurability **within** the standard framework
- For details, see the *UBL Guidelines for Customization*
<http://docs.oasis-open.org/ubl/guidelines/UBL2-Customization1.0cs01.pdf>



UBL deployments (1)

- UBL Invoice has been required by law for the **Danish** public sector since 2005. 1.25 million UBL invoices are exchanged in the Danish public sector every month, with savings to the government estimated at **100 million euros annually**
- All **Swedish** national agencies have been UBL-enabled since 2006, with savings estimated at **USD 100 million annually**
- The Danish government is now engaged in a major national effort to deploy UBL documents into the private sector; when the program is fully deployed in 2012, it is expected to save Danish businesses **550-700 million euros annually**
- All ERP systems in the Danish market (Microsoft Dynamics, SAP, Oracle, etc.) have been adapted to support UBL; some, like Microsoft Dynamics C5, support it natively

UBL deployments (2)

- UBL Invoice has also been mandated by law for all public sector invoicing in **Turkey** and **Peru**; larger savings will attach to these larger invoicing deployments
- As of 1 January 2011, all government agencies in **the Netherlands** are required to accept UBL invoices
- In **Spain**, documents for eTendering and eAwarding based on the UBL library have been legally required for government eprocurement since 2008; these document types are now part of UBL 2.1
- A project of La Cámara de Comercio de **Panama** funded by the Inter-American Development Bank (IDB) and intended for use by SMEs throughout Latin America has implemented UBL Order-to-Invoice using a combination of Excel spreadsheets and secure email
- CNIS (**China** National Institute of Standardization) has created a Chinese language localization of the UBL Common Library for use in developing Chinese UBL document types



UBL deployments (3)

- UBL is the basis for the ePrior eProcurement initiative of the **European Commission**, Directorate General for Information Technology
- UBL is the basis for testing and early deployment of PEPPOL (Pan-European Public Procurement Online), an EC-funded initiative driven by a consortium of government agencies representing 12 countries (**Austria, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Norway, Portugal, Sweden, and the UK**) that will allow businesses to bid for public sector contracts anywhere in the EU
- UBL 2.1 freight management documents are being implemented by the **U.S. Department of Transportation** (Electronic Freight Management program) and the **European Commission** (Freightwise and e-Freight initiatives)



U.S. Department of Transportation Electronic Freight Management (EFM) pilot

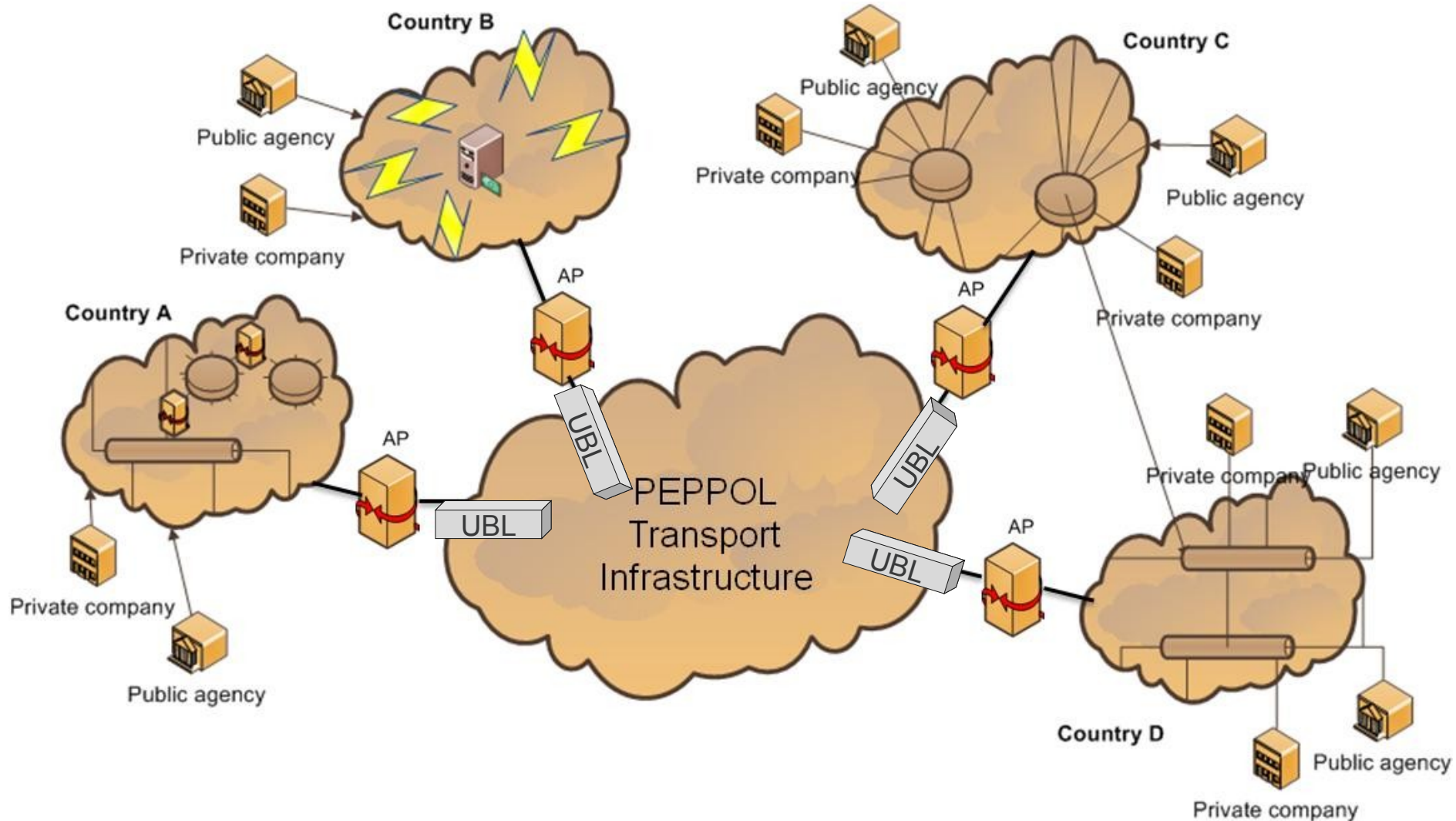


- Integrated a major U.S. clothing distributor and 13 of its supply chain partners in the U.S. and China into an interactive real-time reporting system based on the exchange of UBL documents
- Greatly increased timely data visibility among all the players
 - Forwarders received booking data 1 day earlier
 - Shipping notices were available 6-8 hours earlier than with EDI and were better than 90 percent accurate vs. 65 percent for EDI
- Savings estimated at 5.94 USD per consignment

UBL in international freight management

- The USDOT EFM initiative and the EU Freightwise initiative are working on a joint memorandum of agreement to guarantee interoperability between the American and European electronic freight management infrastructures
- The US and EU initiatives have been the main contributors to the new intermodal freight management capabilities in UBL 2.1
- Both initiatives will be using UBL freight management documents
- The two frameworks will therefore not only interoperate with each other but also with other business processes (ordering, invoicing, etc.) using procurement-oriented UBL documents built from the same semantic library
- Thus entire infrastructures become extensible and to some degree interpenetrable and interoperable with each other

The 4-Corner Approach in PEPPOL





The future of UBL

- The UBL TC intends to stabilize UBL at 2.x
 - only minor releases in the future
 - all backward compatible with 2.0
 - protects investments in software
- The next *major* revision of UBL will be to “the single international standard XML business vocabulary”
 - hopefully from UN/CEFACT
 - working with UN/CEFACT to achieve this





For more information

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

UBL Chair: bosak@pinax.com

UBL Vice Chair: tim.mcgrath@documentengineeringservices.com

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

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

UBL 2.0 Naming and Design Rules (Committee Specification)

<http://docs.oasis-open.org/ubl/cs01-UBL-2.0-NDR/cs01-UBL-2.0-NDR.pdf>

UBL 2.1 Public Review Draft 1 (September 2010)

<http://docs.oasis-open.org/ubl/UBL-2.1.pdf>

<http://docs.oasis-open.org/ubl/UBL-2.1.html>

UBL Guidelines for Customization:

<http://docs.oasis-open.org/ubl/guidelines/UBL2-Customization1.0cs01.pdf>

Public ubl-dev discussion list: <http://www.oasis-open.org/mlmanage/>

UBL Online Community site: <http://ubl.xml.org>

