



The Universal Data Element Framework – An Enterprise Information Integration Strategy

Enterprise Integration EXPO
September 23, 2003

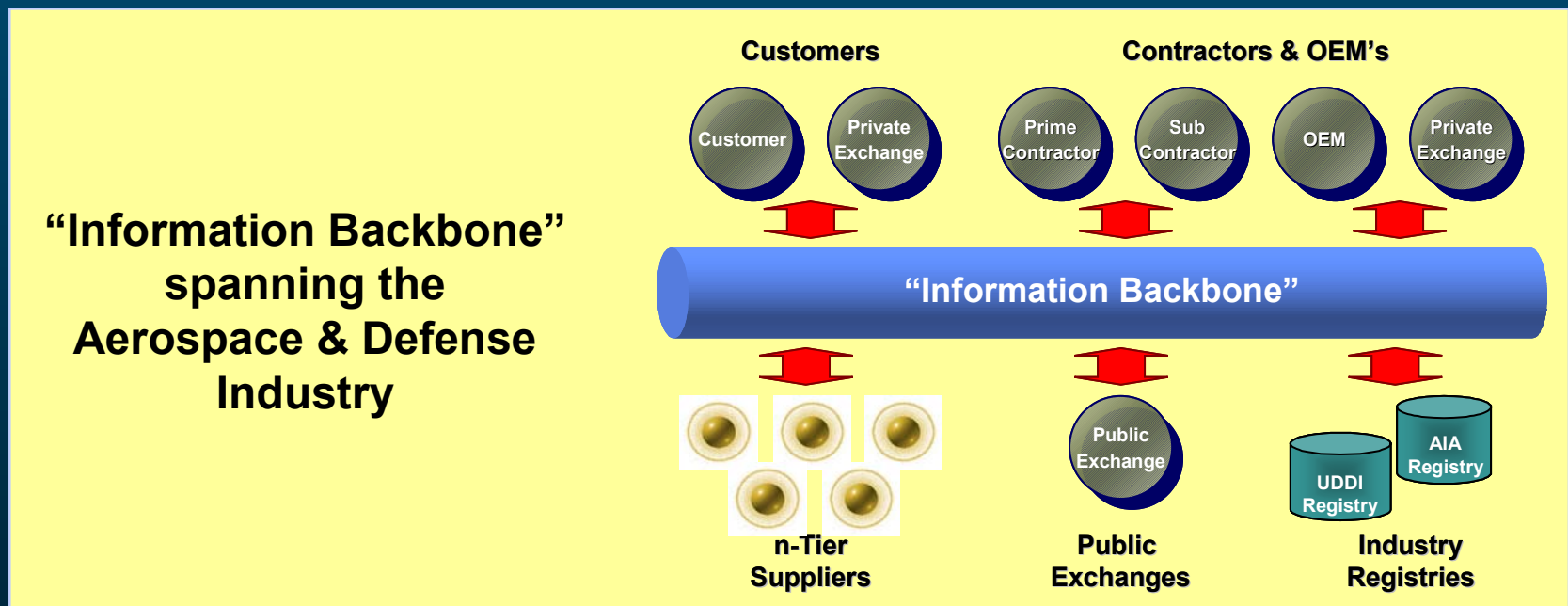
Ron Schuldt
Aerospace Industries Association
Co-Chair, Electronic Enterprise Working Group

AIA's eBusiness End-State Vision



AIA members are committed to the following vision for eBusiness across our industry:

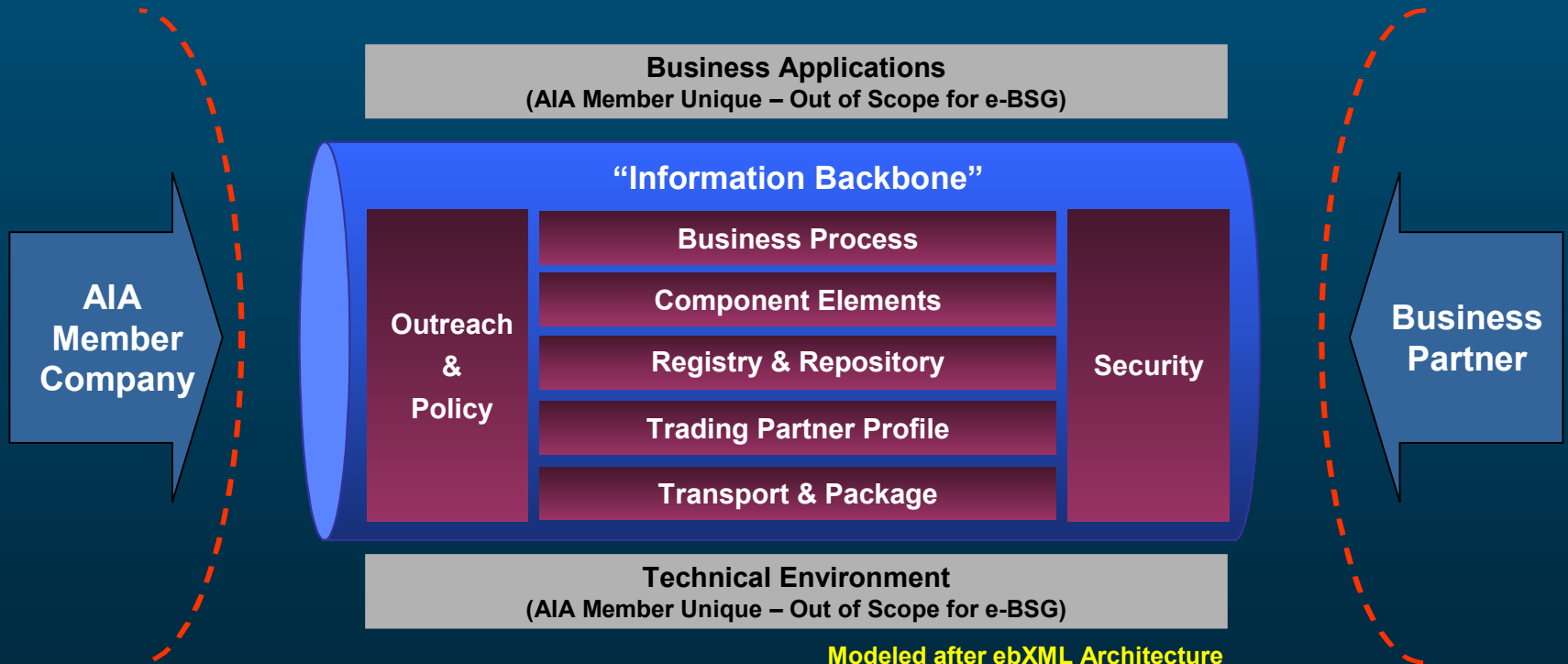
All participants in the aerospace value chain will be able to exchange information relative to product design, business relationships, transactions, and product support across **an information backbone which is open and accessible to all.**



eBusiness Interoperability Framework



Industry-level interoperability enabled by common framework that defines scope and elements of the “Information Backbone”



Modeled after ebXML Architecture

AIA Objectives and Priority Projects



- **Open Standards-based Interoperability**

- EDI Implementation Conventions (focus on Procurement)
- EDI XML Standard (Interim standard)
- Aerospace XML
- **Metadata Harmonization with ISO 11179 Compliant Naming Convention (UDEF)**
- Transactional Business Process Models

- **Information Security**

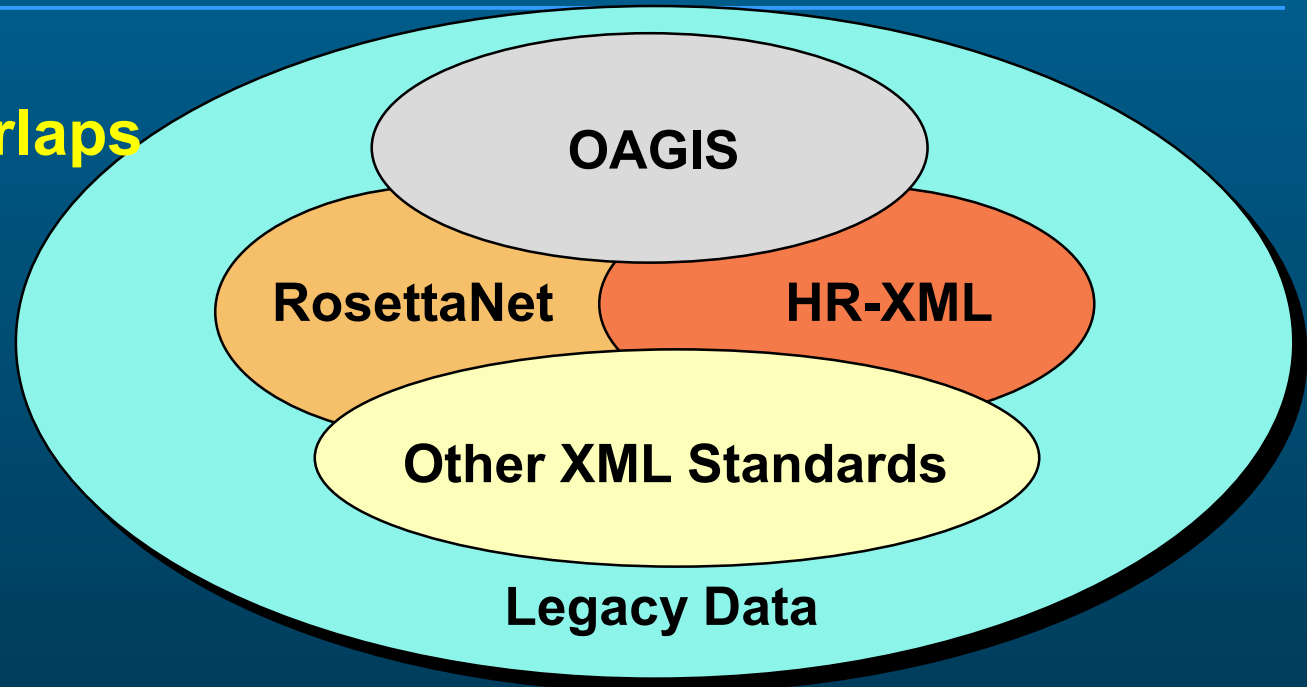
- Secure Collaboration Framework for US/UK Defense
- Security 'Code of Conduct'
- **Aerospace Industry position and recommendations:**
 - » Registry and repository
 - » Identity & access management
 - » Secure messaging and Internet-based transport
 - » Integrated infrastructure
- **Assessment of Implications of Web Services to Aerospace industry**

- **Multi-Partner Collaboration**

- Industry standard Trading Partner Agreement and Collaborative Protocol Agreement
- Collaborative Business Process Models

The Problem Summarized

Conflicting Overlaps



Though semantically equal, the following are 4 different XML tag names

```
<PARTNUMBER>111-222-333</PARTNUMBER>
```

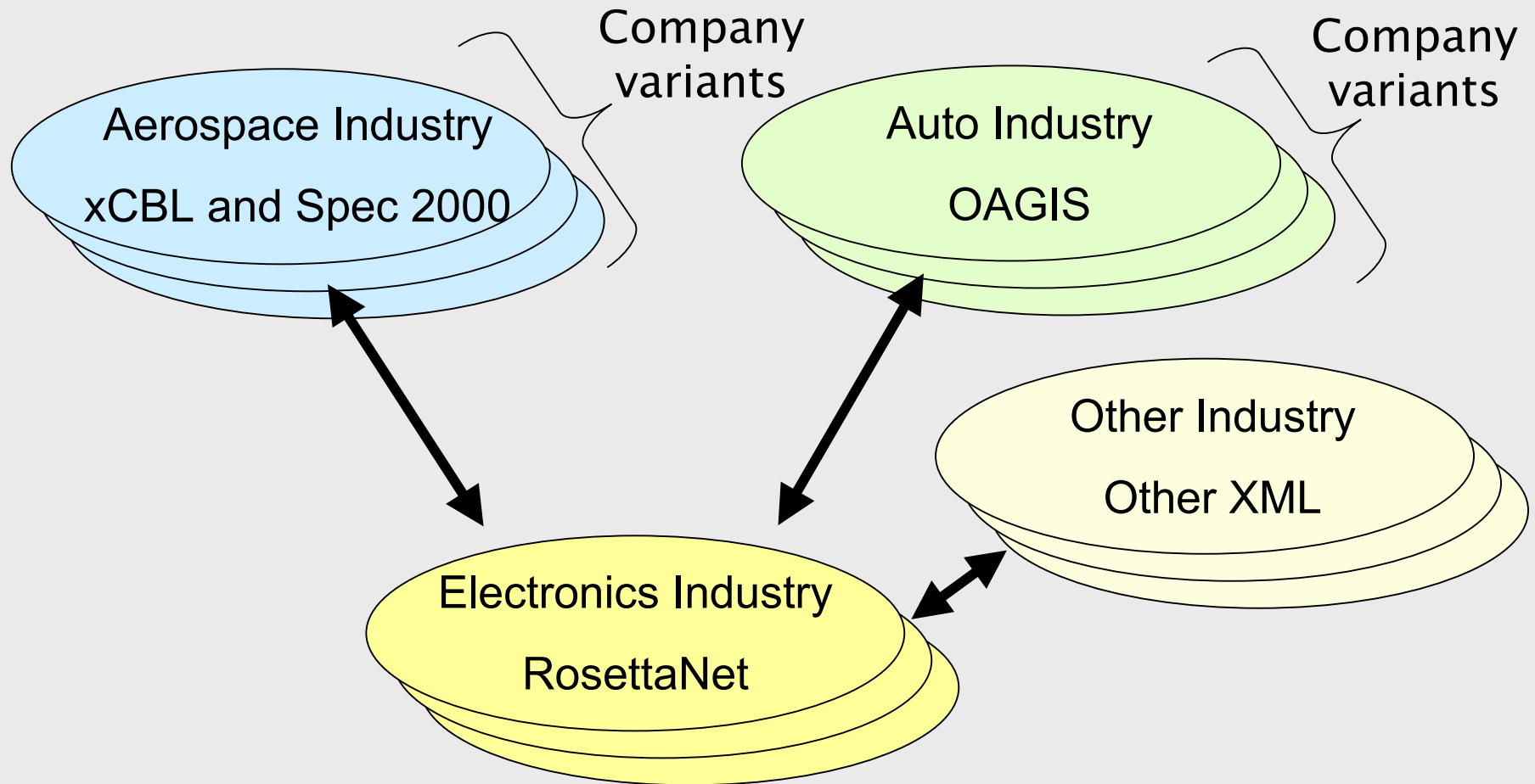
```
<partNumber>111-222-333</partNumber>
```

```
<PartNumber>111-222-333</PartNumber>
```

```
<partnumber>111-222-333</partnumber>
```

Today, there are hundreds of “standard” XML vocabularies

Each Industry Adopting Standard(s)



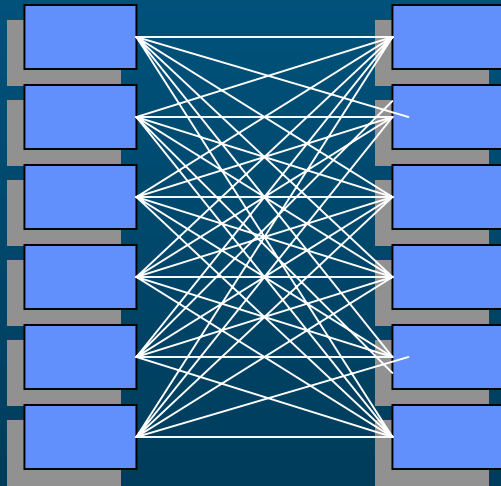
Small Sample of the “Other XML Standards”



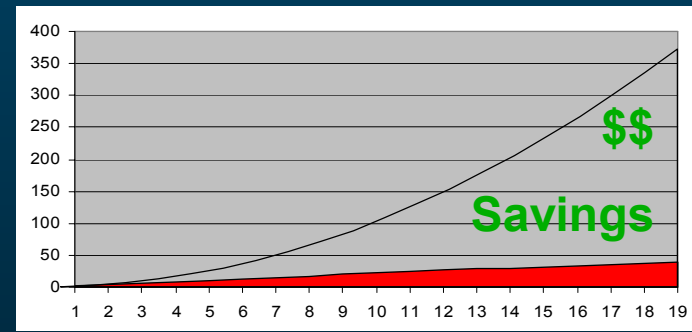
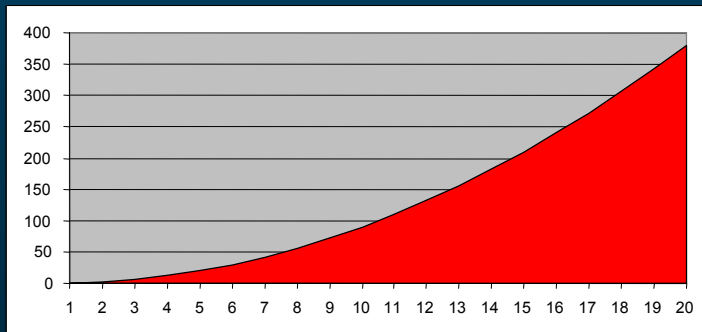
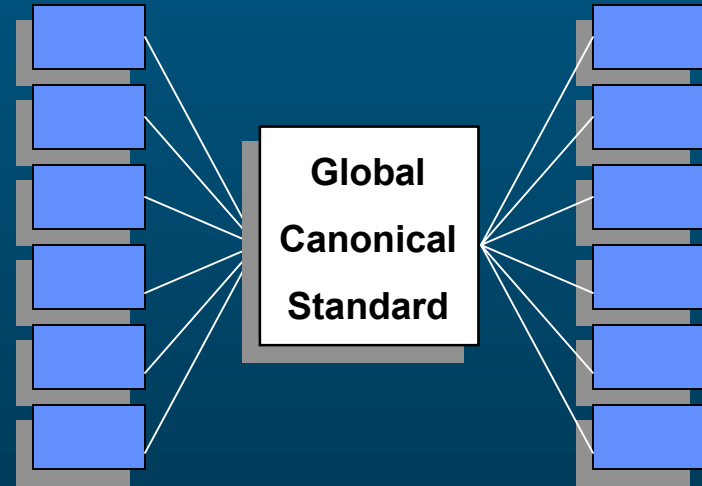
- HL7 - Health Care <http://www.hl7.org/>
- IFX - Interactive Financial Exchange <http://www.ifxforum.org/>
- FPML – Financial Products <http://www.fpml.org/>
- SWIFT – Business Messages based on EDIFACT (for International Trading Partners) <http://www.swift.com/index.cfm>
- EIA-836 – Configuration Management Data Exchange and Interoperability <http://www.dcnicn.com/cm/index.cfm>
- ACORD – XML for the Insurance Industry <http://www.acord.org/>
- XBRL – Business Reporting - Accounting <http://www.xbrl.org/>
- TranXML – Transportation XML <http://www.transentric.com/default2.asp>

The Integration Problem & Goal

Current Point-to-Point Approach --- $n(n-1)$



Future UDEF Canonical Approach --- $2n$



Goal – provide a mechanism to reduce the costs of integrating systems

Metadata Harmonization Project (MHP)



Sample Mapping Matrix Extract

UDEF ID	UDEF Role or Type of Object	UDEF Object	UDEF Type of Property	UDEF Property	EIA-836			EDI (X12)	
					Name	Definition	Valid Values	Name	D
3_6.35.8		Enterprise	Defense Logistics Assigned	Identifier	CAGE Code	A Commercial and Government Entity (CAGE) ...	5 alphanumeric character	DE 98 + DE 66/ Code M4	
ah.3_10.35.8	Manufacturer	Enterprise	NATO Assigned	Identifier	NSCM Code	A standard NATO supply code ...	string	DE 98/ Code M9 + DE 66/ Code 37	

Phase One Summary

- Focus on four topics
 - Enterprise Identification
 - Document Identification
 - Product Identification
 - Asset Identification
- Four standards – EIA-836, X12, STEP, UCC
- Goal – to understand the process and the necessary resources to proceed into second phase
- Completed – August 2002

Phase Two Summary

- Include additional standards such as ATA Spec 2000
- Leverage EIDX XRef
- Require XMLization of the UDEF
- Require UDEF transfer to non-profit
- Web Service Demo – May 2003
- Full Scale Pilot – January 2004
- Target completion – 1st Qtr 2004

UDEAF Background



CALS ISG - Developed UDEF in the late 80s – early 90s

Industry

Ron Schuldt (Chair) - Lockheed Martin
Barbara Barman (Vice Chair) - Raytheon
Rob Bryant - DynCorp
Ruey Chen - David Taylor Research Center
Bob Hodges - Texas Instruments
Neal McNamara - Analysis & Technology Inc.
Bud Orlando - TRW
Madelyn van der Bokke - ASEC
George Walther - Lockheed Martin

Government

Norma Kornwebel - PM JCALS
Dinah Beres - NAWC
Steve Waterbury - NASA

EIA - Applied UDEF in the mid 90s and 2002

Industry

Ron Schuldt (Chair) - Lockheed Martin
Rick Lang - Texas Instruments
Pam Stanfield - Lockheed Martin
Gary O'Hara - Hughes Space and Comm
Tony DiPerna - Ericsson Communications
Ken McTee - Texas Instruments
Cindy Hauer - Mevatec Corp
Fred Bahrs - CMstat Corporation
Doug Drury - ITT Federal Services
Lee LeClair - Texas Instruments

Government

Deborah Cornelius - US Army Missile Cmd
C. H. VanLandingham - NOAA Nat'l Wea
Svc



Today AFEI (formerly CALS ISG) holds the Intellectual Property Rights to the UDEF

UDEF Scope

Transactions – Structured Data

- Purchase Orders
- Purchase Order Changes
- Purchase Order Acknowledgements
- Purchase Order Change Acknowledgements
- Invoices
- Remittance Advice
- Request for Quote
- Request for Quote Response
- Shipping Schedule
- Etc.

Heavily influenced by finance and procurement functions and ERP type applications

Relevant open standards – X12, EDIFACT, ebXML, OAGIS, RosettaNet

Collaboration – Unstructured Data

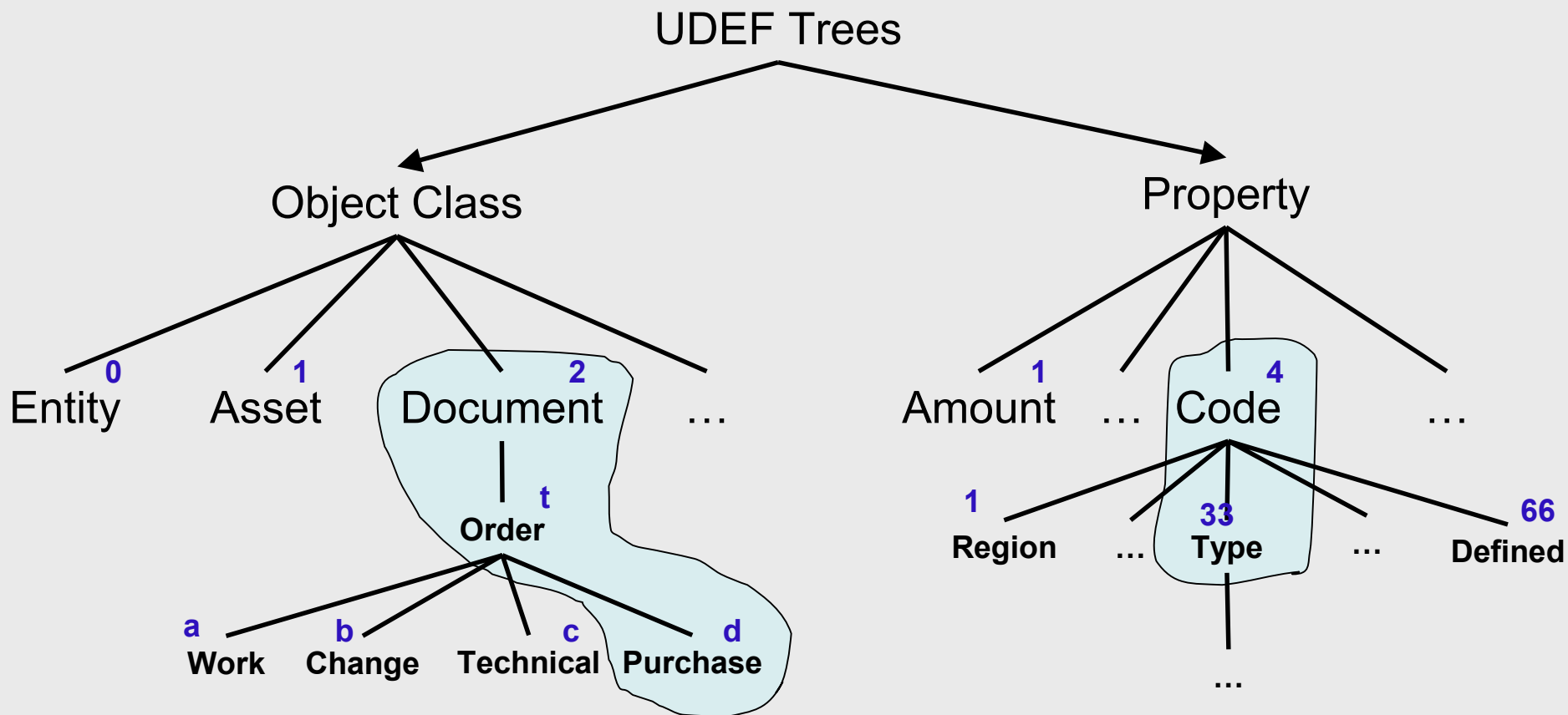
- Mission Requirements
- Concept of Operations
- Specifications
- Product Designs
- Engineering Change Proposals
- Trade-off Studies
- Test Reports
- Meeting Minutes
- Plans
- Schedules
- Presentations
- Etc.

Heavily influenced by engineering, manufacturing and program management functions and PDM/Document Management type applications

Relevant open standards – STEP, PLCS, EIA-836

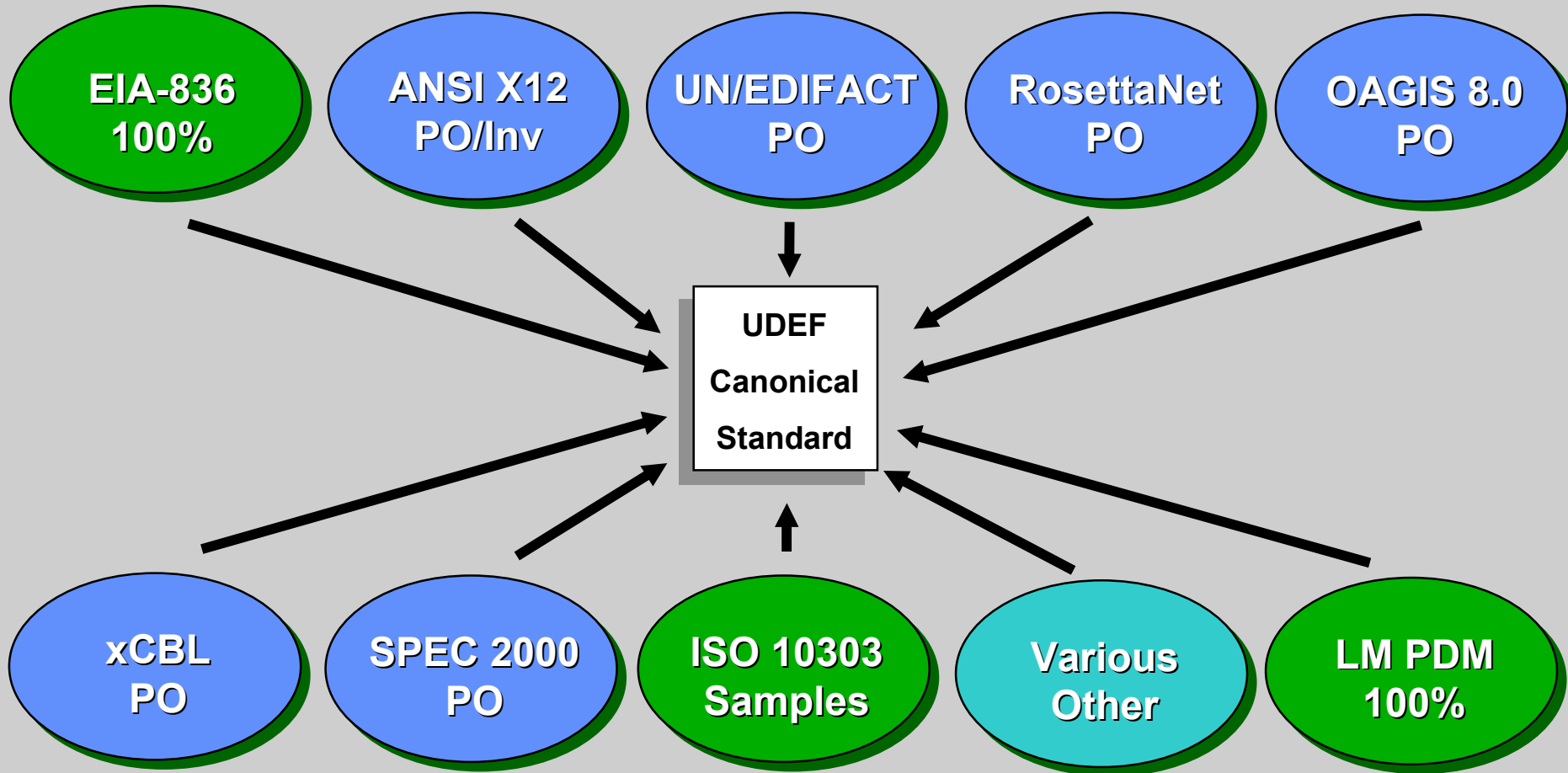
UDEF transcends the transaction and collaboration worlds

UDEF IDs Provide the Key



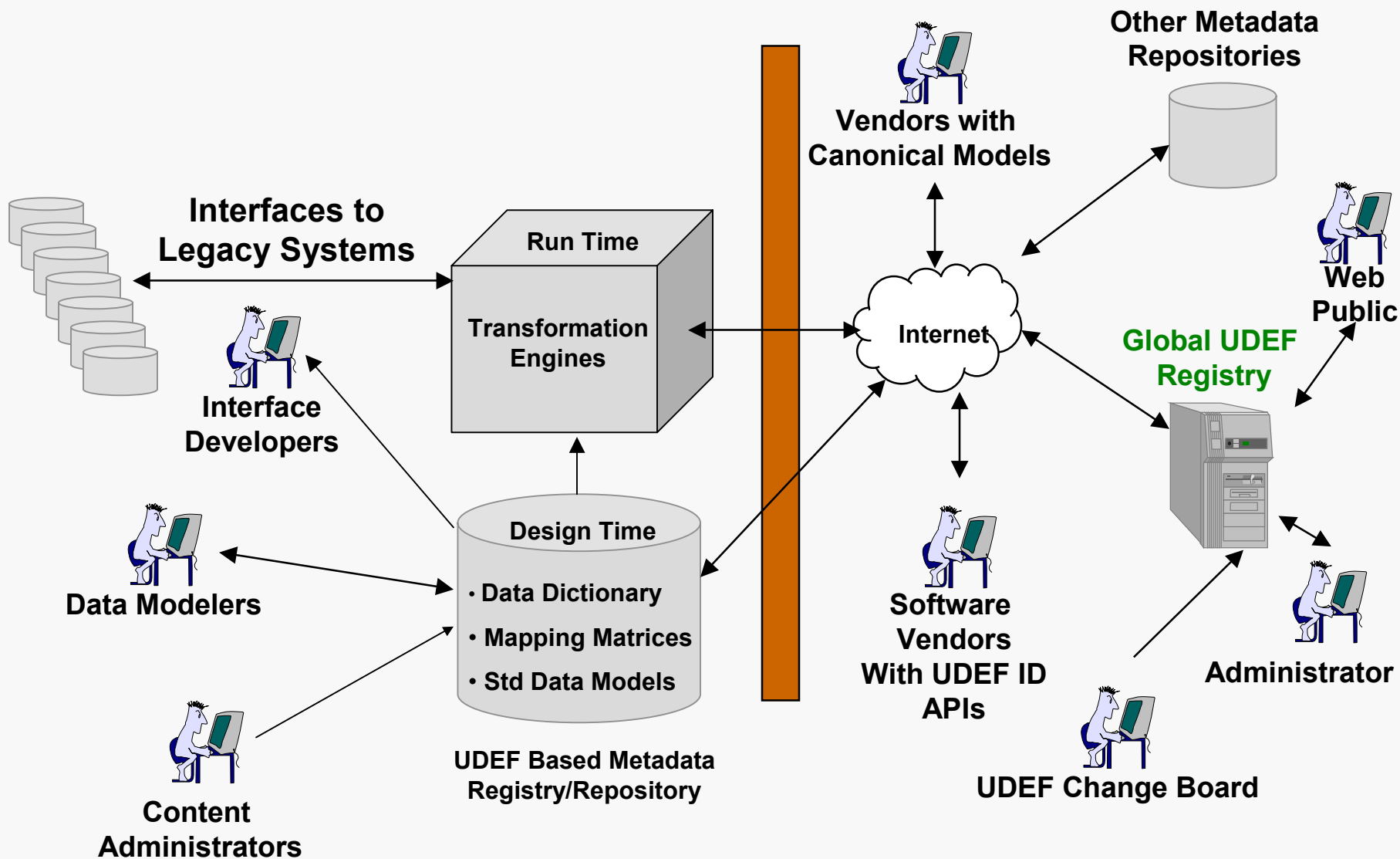
Purchase Order Document_Type Code UDEF ID = d.t.2_33.4

Sources of UDEF Tree Structures



Color Key:  Transactions  Collaboration  Mixed (e.g., HR)

UDEF Implementation Strategy



UDEF Current Status

AIA and AFEI/NDIA have developed a Request For Information (RFI)

- Purpose – to determine which not-for-profits might be interested in obtaining the UDEF IP from AIA and AFEI and to host the UDEF trees

DoD Logistics Data Strategy Working Group

- Significant interest in UDEF but wants to see broader adoption first
- Supports the concept of a pilot with a major DoD program – 3 possible candidate programs

UDEF National Conference in St. Louis – August 19, 2003

- Over 40 organizations represented

UDEF Builders Internet Discussion Group Launched

- Send email to udef.builders-subscribe@topica.com

UDEF Compare Web Service Needs to be Productized

- Have begun preliminary discussions with Oracle

Visit <http://www.udef.org/>

UDEF Gaining Momentum

Industry Support (S) and Interest (I)

- Aerospace (AIA) – S
- Defense (NDIA/AFEI) - S
- Electronics (EIA and EIDX) – S
- Computer (CompTIA) - S
- Automotive (AIAG) - I
- Airline (ATA) - I
- Railroad - I

Company/Agency Support (S) and Interest (I)

- Lockheed Martin - S
- Boeing – S
- Raytheon – S
- Tyco Electronics - S
- Envision – S
- AMS - S
- Northrop Grumman - I
- DoD Logistics – I
- DoD DMSO – I
- NASA - I
- South Korean MoD - I

Vendor Support (S) and Interest (I)

- Contivo - S
- Oracle - I
- IBM - I
- Microsoft - I
- SeeBeyond - I
- DataDirect - I
- GXS - I
- Unicorn Solutions - I

Standards Support (S) and Interest (I)

- Open Applications Group - S
- RosettaNet - I
- ANSI X12 - I

These are not exhaustive lists

UDEF Keys to Adoption Success

Adoption by major application vendor(s)

- **Oracle seems to be a prime candidate**

Adoption by two or more middleware vendors

- **Contivo already on-board**
- **IBM, SeeBeyond and GXS are additional candidates**

Adoption by system integrators

- **DataDirect Technologies and Unicorn Solutions are candidates**

Adoption by widely adopted XML standards

- **OAG is already on-board**
- **RosettaNet is seriously interested**
- **W3C is possible through key membership participants such as Contivo and Unicorn**

UDEF Summary and Status

Summary Description

The UDEF is a rules based metadata naming convention that follows the naming principles of ISO 11179 and supports the ebXML core components naming convention. Once a data element concept has been mapped to the UDEF, the data element can then be assigned a UDEF derived structured unique ID.

Business Problem

- Point-to-Point Interfaces are the Norm
- Mappings are Time Consuming Process
- Lack Consistent Naming Convention
- Lack Standard Data Names/Structure
- System Experts Often Retained to Support Interface Development

Major Milestones

- UDEF Conversion to XML – Sept 2003
- Select Non-Profit – Nov 2003
- UDEF Demo with Non-Profit – Jan 2004
- Launch UDEF Global Host – 1st Qtr 2004

How Implemented by Company

- Large Companies
 - Learn the UDEF Naming Convention
 - Assign UDEF ID to Each Element of Metadata and Manage Metadata
- Small Companies
 - Buy UDEF Supported Applications

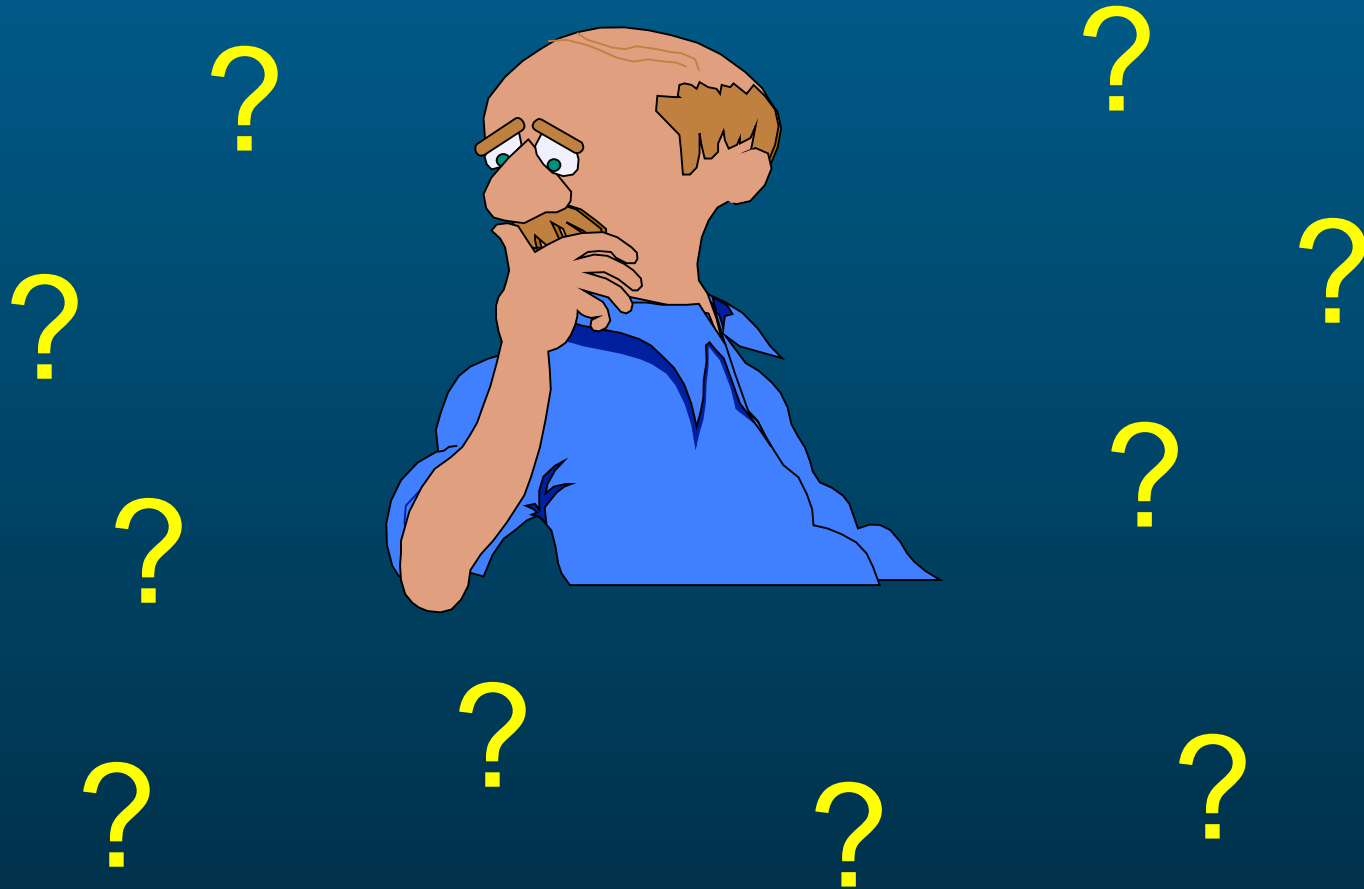
Dependencies

- Suitable Non-profit accepts responsibility for maintaining the UDEF global registry
- Support by other standards bodies – especially W3C
- Software vendor support within applications

Join the UDEF Bandwagon

Visit <http://www.undef.org/>

Questions



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