XML Standards Relevant to the Aerospace Industry

Ron Schuldt

Co-Chair, AIA Electronic Enterprise Working Group
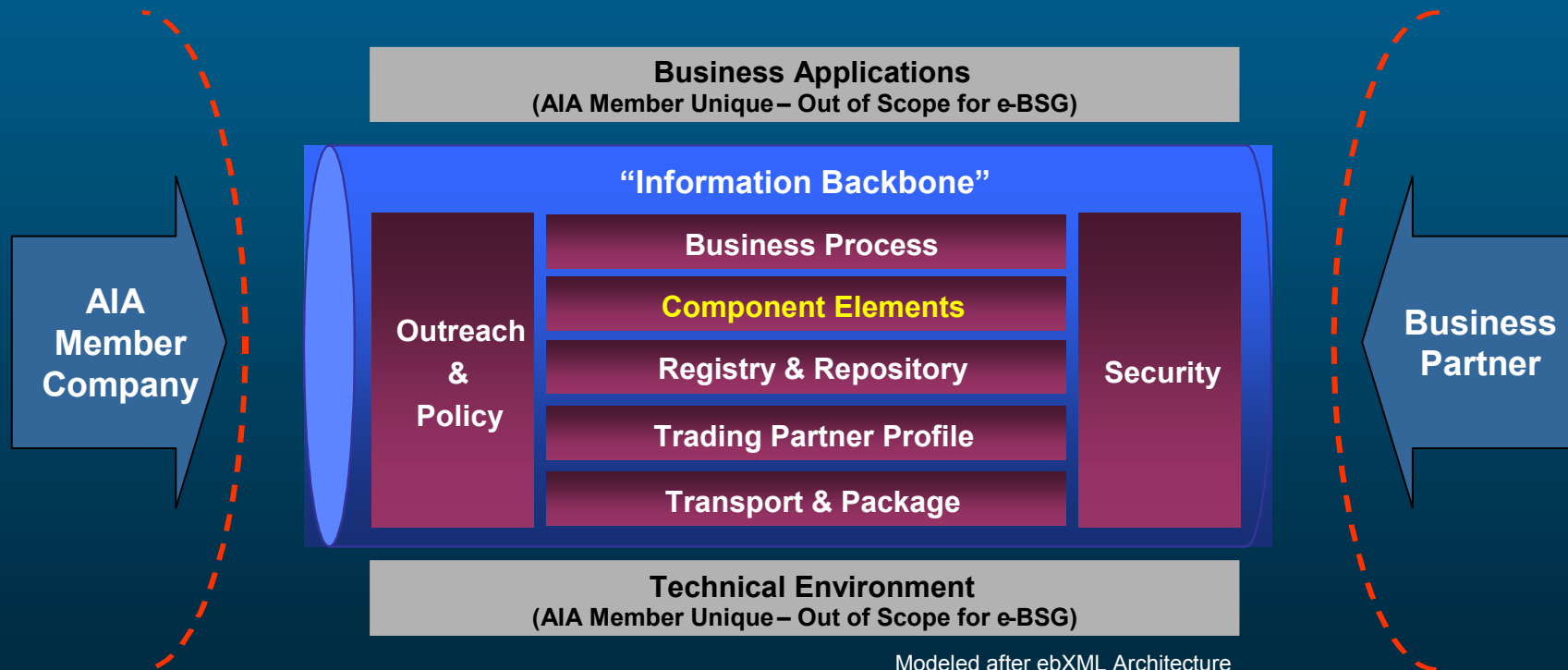August 7, 2002
ron.l.schuldt@lmco.com
303-977-1414

EB Interoperability Framework

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

Business Applications
(AIA Member Unique – Out of Scope for e-BSG)

"Information Backbone"

- Business Process
- Component Elements
- Registry & Repository
- Trading Partner Profile
- Transport & Package

Outreach & Policy

Security

AIA Member Company → ← Business Partner

Technical Environment
(AIA Member Unique – Out of Scope for e-BSG)

Modeled after ebXML Architecture

AIA *e*business workgroups aligned with the Framework

Two Types of Exchange Documents

- Transactions
  - 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.

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

XML Specs and Standards Framework

Content "Payload" Standards

- Others – Insurance, Transportation, Banking
- PLCS – Product Life Cycle Support - Collaboration
- ISO 10303 - STEP - Collaboration
- EIA-836 - Configuration Management - Collaboration
- UDDI - Trading Partner Profile
- AIA EDI Transactions

Architecture Specifications

- Global ebXML - Architecture Specifications

Foundation Specifications

- W3C's - XML Schema Specification
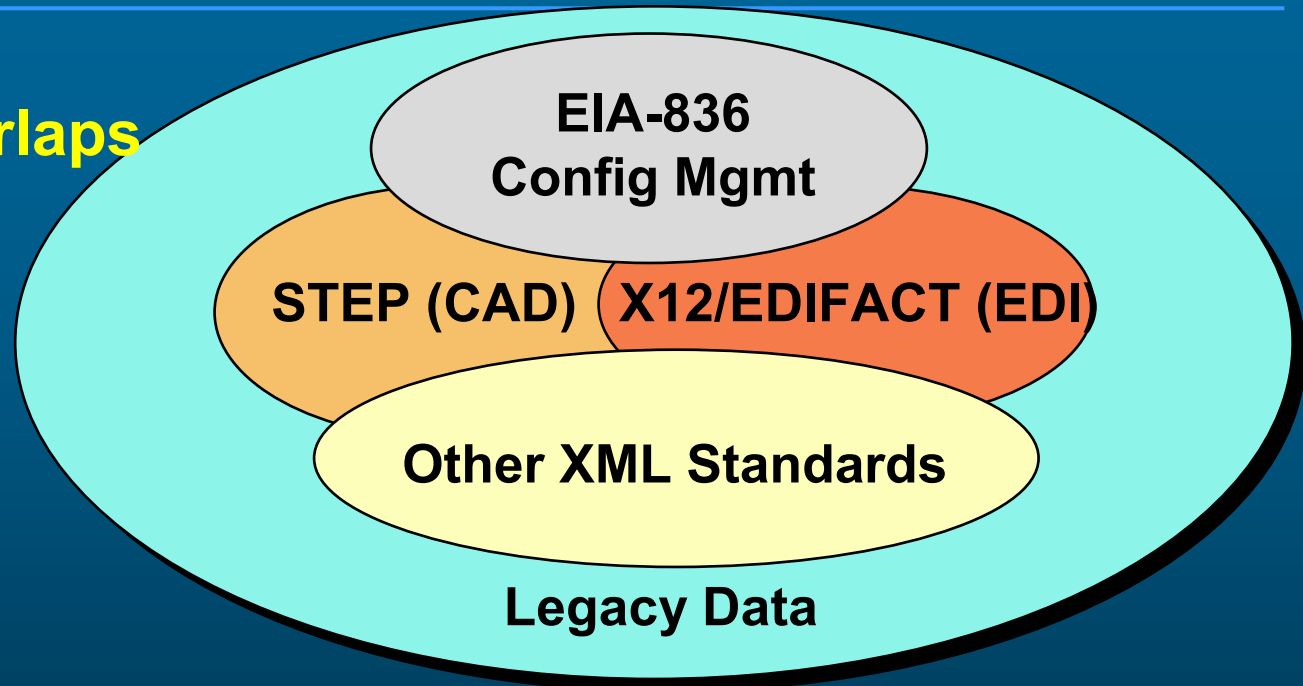- W3C's - XML 1.0 Specification - DTDs

Sample of the Other XML Standards

- HL7 - Health Care
- IFX - Interactive Financial Exchange
- FPML – Financial Products
- SWIFT – Business Messages based on EDIFACT
- HR-XML – Human Resources and Benefits
- RosettaNet – IT and Elec Components Industry
- ACORD – XML for the Insurance Industry
- XBRL – Accounting
- TranXML – Transportation XML
- Others

The Problem Summarized

Conflicting Overlaps

**EIA-836
Config Mgmt**

STEP (CAD) **X12/EDIFACT (EDI)**

Other XML Standards

Legacy Data

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

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

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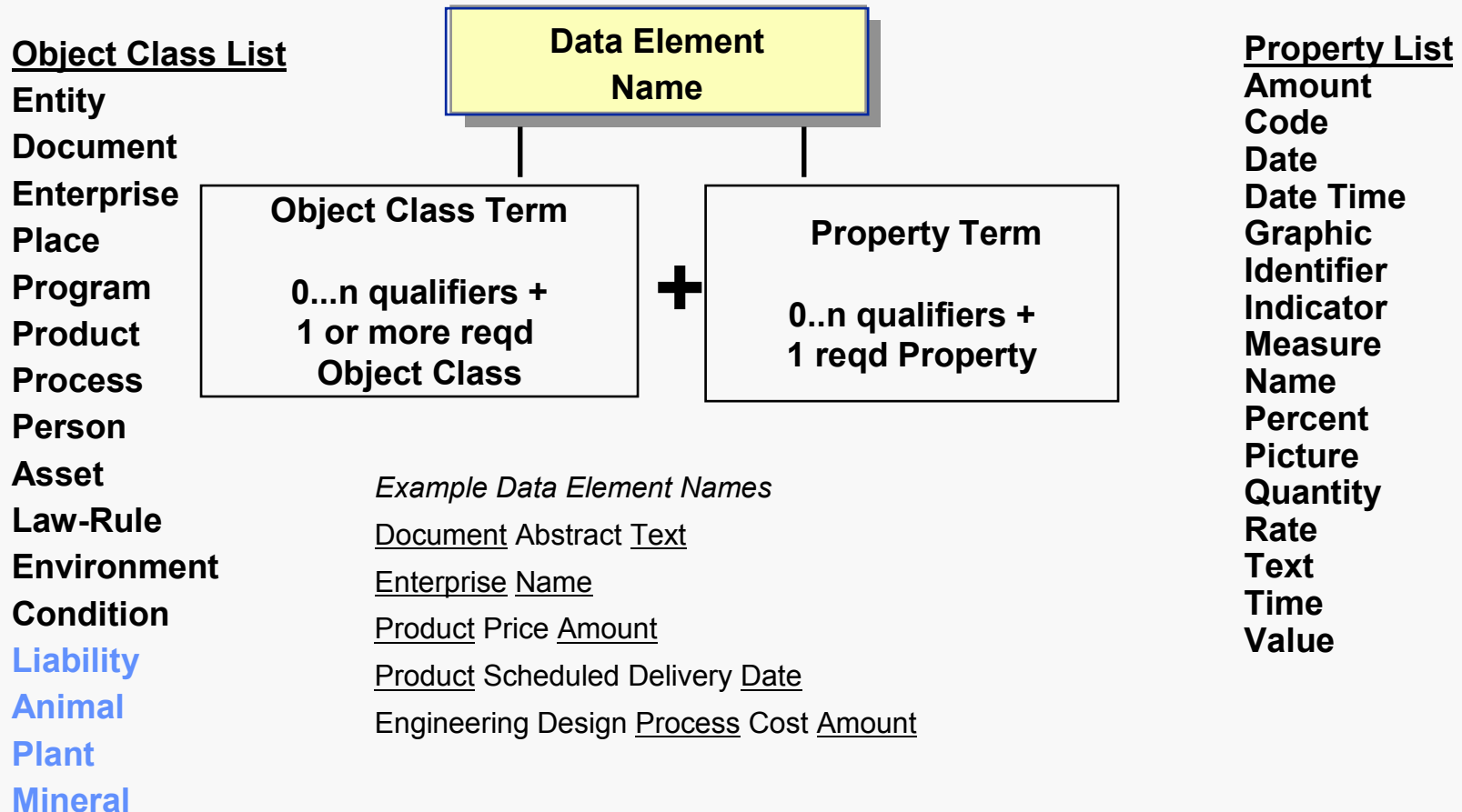
<PartNumber>111-222-333</PartNumber>

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

As result, many industries including aerospace are defining their metadata (tag name) XML standards necessary for e-business

UDEF Rules Based Naming Convention

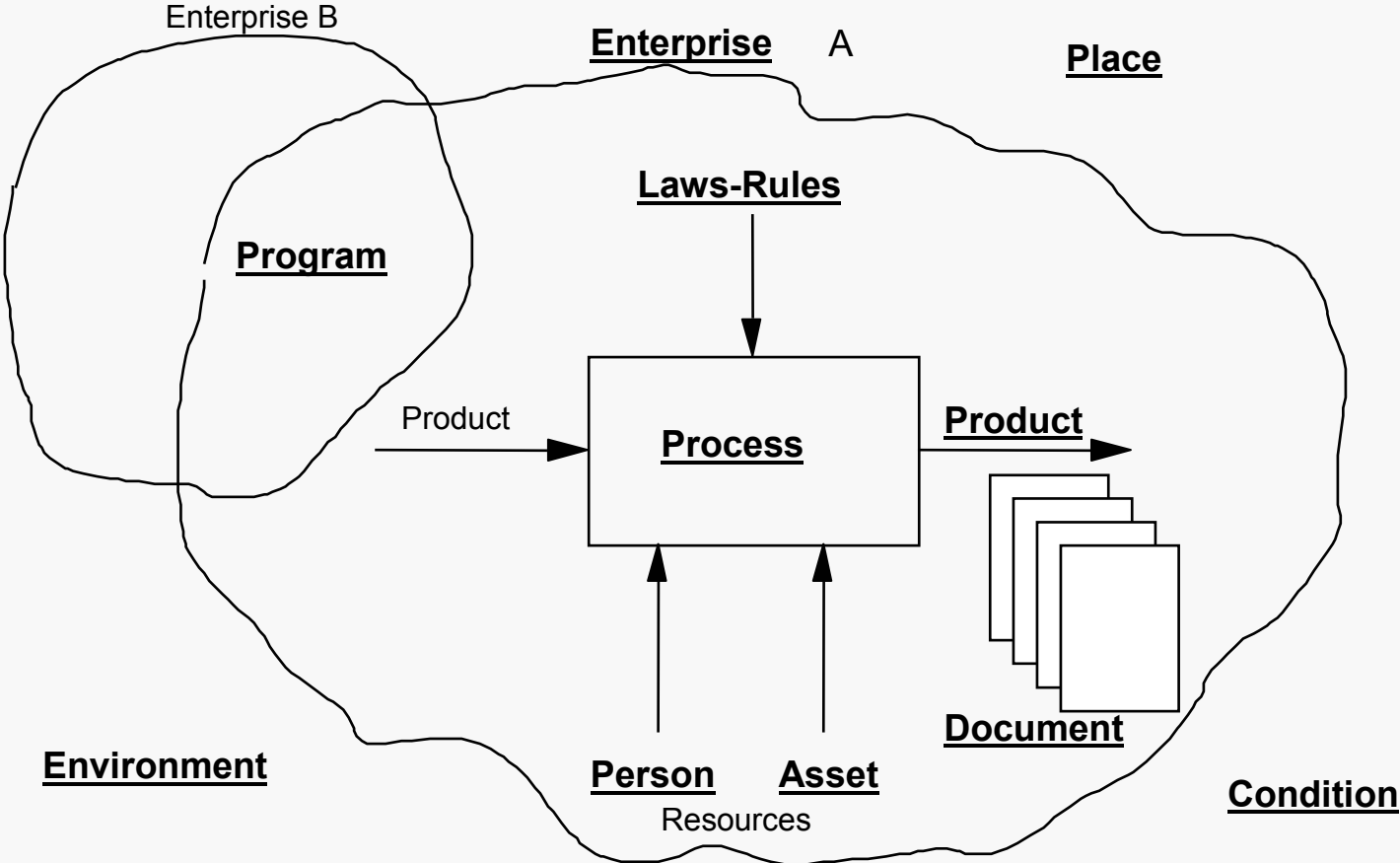Complies with ISO 11179 Naming Convention and Supports ebXML

Object Class List
Entity
Document
Enterprise
Place
Program
Product
Process
Person
Asset
Law-Rule
Environment
Condition
Liability
Animal
Plant
Mineral

Data Element Name

Object Class Term

0...n qualifiers +
1 or more reqd
Object Class

+

Property Term

0..n qualifiers +
1 reqd Property

Property List
Amount
Code
Date
Date Time
Graphic
Identifier
Indicator
Measure
Name
Percent
Picture
Quantity
Rate
Text
Time
Value

Example Data Element Names

Document Abstract Text

Enterprise Name

Product Price Amount

Product Scheduled Delivery Date

Engineering Design Process Cost Amount

Names constructed follow the rules of English – modifiers precede the word they modify

UDEF Objects – Establish Context

Entity

Enterprise B

Enterprise A

Place

Laws-Rules

Program

Product → **Process** → **Product**

Document

Environment

Person **Asset**

Resources

Condition

Goal - UDEF IDs Become Global Unique IDs (GUIDs)

UDEF ID = ebXML UID	EIA-836	X12 (EDI)	Vendor A
9_5.8	Product Part Identifier	Product/Service ID	Part No
9_9	Product Name	Product/Service Name	
y.3_9		Entity (Supplier) Name	Supplier
e.2_8	Contract Document Identifier	Buyer's Contract Number	Contract No
f.g.9_11	Component Product Quantity		
2_33.4	Document Type Code	Report Type Code	Doc Type

`<ProductPartIdentifier PRD:GUID="9_5.8">123-456-789</ProductPartIdentifier>`

`<ProductServiceID PRD:GUID="9_5.8">123-456-789</ProductServiceID>`

`<PartNo PRD:GUID="9_5.8">123-456-789</PartNo>`

Benefit – GUIDs eliminate the baggage associated with changing names

AIA Mapping Matrix Summary

Sample Mapping Matrix Extract

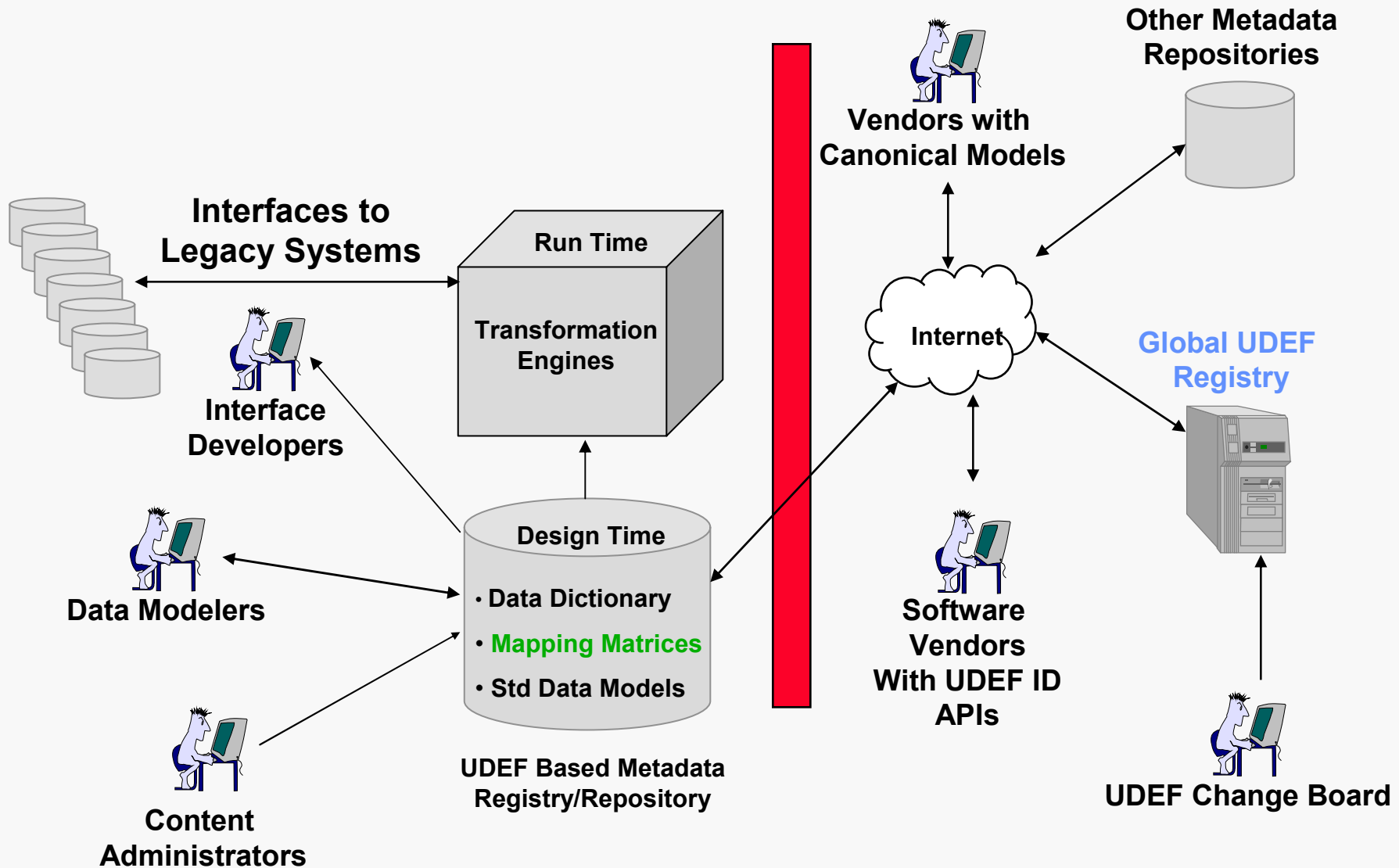| UDEF ID	UDEF Role or Type of Object	UDEF Object	UDEF Type of Property	UDEF Property	EIA-836			EDI (X12)	
					Name	Definition	Valid Values	Name	D
3_6.35.8		Enterprise	Defense Logistics Assigned	Identifier	CAGE Code	A Commercial and Government Entity (CAGE) ...	5 alphanumeric character	DE 98 + DE 66/ 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
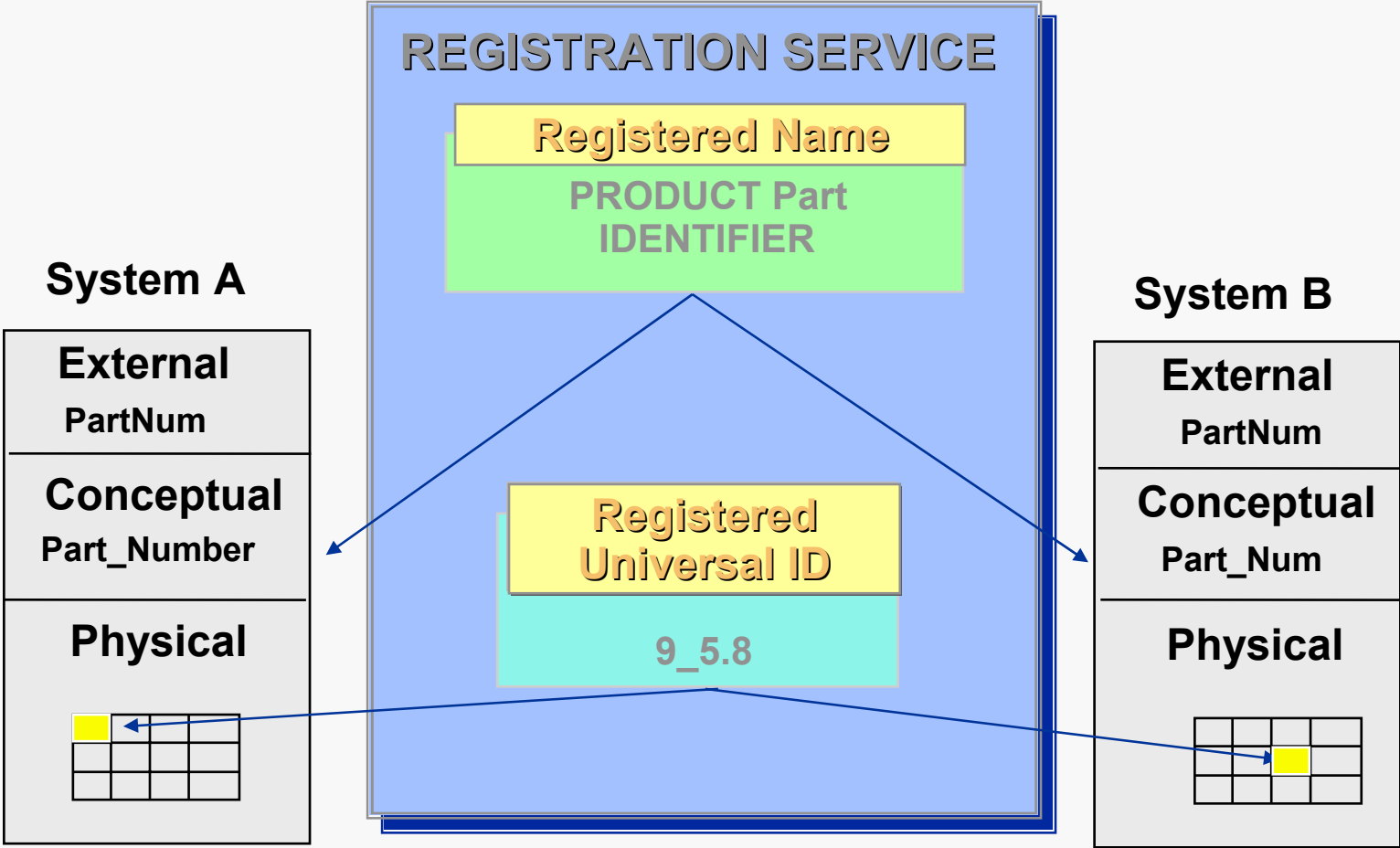- Target completion – August 2002

Phase Two Summary

- In planning stages
- Include additional standards such as ATA Spec 2000
- Require support from tool such as Contivo
- Require XMLization of the UDEF
- Require UDEF transfer to non-profit
- Require additional business process experts – especially contracting and inbound/outbound logistics
- Target completion – November 2003

Concept of Implementation

Global UDEF Registry

REGISTRATION SERVICE

Registered Name

PRODUCT Part
IDENTIFIER

System A

External
PartNum

Conceptual
Part_Number

Physical

**Registered
Universal ID**

9_5.8

System B

External
PartNum

Conceptual
Part_Num

Physical

AIA and EIDX working with UCC to establish this service