

XML

DEPARTMENT OF THE NAVY

Department of the Navy – XML Naming and Design Rules (NDR) Overview

22 September 2004

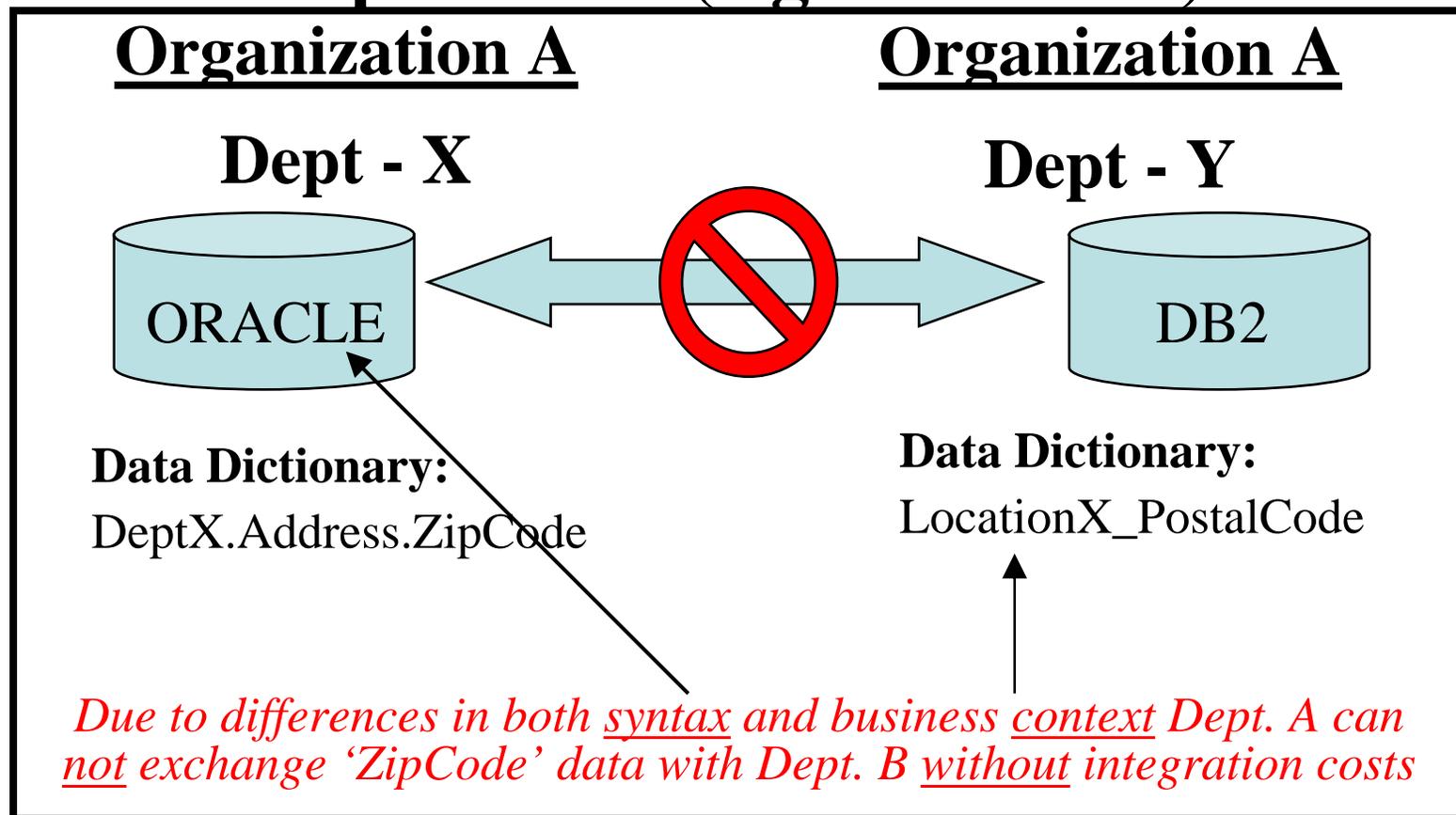
Federal CIO Council XML WG

Mark Crawford

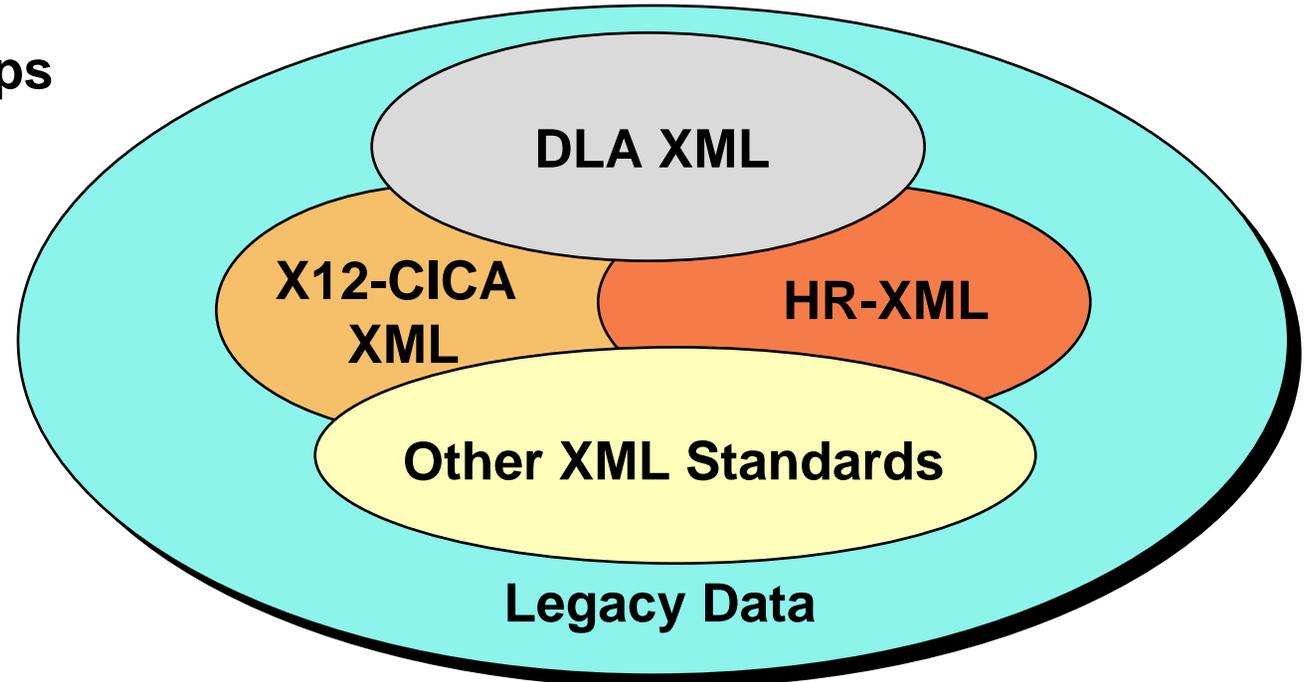
LMI

To achieve interoperability!

Department (e.g. The DON)



Conflicting Overlaps



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

```
<QUANTITYORDERED>12</QUANTITYORDERED>
```

```
<QuantityOrdered>12</QuantityOrdered>
```

```
<quantityordered>12</quantityordered>
```

```
<E_Quantity_Ordered >12</E_Quantity_Ordered>
```

Today, there are hundreds of “standard” XML syntax and semantics



The DON NDR is the answer...

```
<xsd:sequence>  
<xsd:element ref="biel-0:JulianDay"/>  
<xsd:element ref="biel-0:Target" maxOccurs="unbo  
<xsd:element ref="biel-0:AvailableOrdnance" maxOccurs="
```

- **NDR compliance results in:**
 - **Semantic interoperability**
 - Unambiguous
 - Syntax Neutral Model (SNM)
 - **Standards compliance**
 - **A foundation for enterprise harmonization**

- **Purpose of this brief is to provide a:**
 - background of the NDR,
 - An overview of the final guidance, and
 - a path forward

- **DON XML Developer's Guide**
 - V1.1 Released May 2002 (Main focus – NDR)
 - V2.0 - DON XML WG Team 2 began drafting in 2002
 - Naming and Design Rules (NDR) Sub-set
 - Significant portion of V2.0 – Completed 5/2004
 - Evolution of the guidance provided in DG 1.1
 - NDR products to be delivered
 - NDR Guidance (eventually to be incorporated into DG 2.0)
 - Complete Schema Examples

- **NDR Final Draft Released to DON BSC and XML work group – 6/7/2004**
- **Final NDR DRAFT includes:**
 - **Comprehensive set of NDR's**
 - **Information analysis method - UMM**
 - **Working Schema example package**
 - **Specifications – TBD by BSC**
- **Awaiting DON CIO sign out – anticipate by end of September**



The DON XML NDR Strategy...

```
<xsd:sequence>  
<xsd:element ref="bie1-0:JulianDay"/>  
<xsd:element ref="bie1-0:Target" maxOccurs="unbo  
<xsd:element ref="bie1-0:AvailableOrdnance" maxOccurs="
```

- **Provide clear guidance**
 - Information analysis (Data modeling)
 - Schema design
- **Align with FEA DRM**
 - ISO 11179
- **Reuse existing Voluntary Consensus Standards**
 - OASIS Universal Business Language NDR
- **Introduce principles and concepts**
 - ISO 15000-5
 - Core Components
 - Business Information Entity (BIE)
 - ebXML



Intended audience

```
<xsd:sequence>  
<xsd:element ref="biel-0:JulianDay"/>  
<xsd:element ref="biel-0:Target" maxOccurs="unbo  
l:element ref="biel-0:AvailableOrdnance" maxOccurs="
```

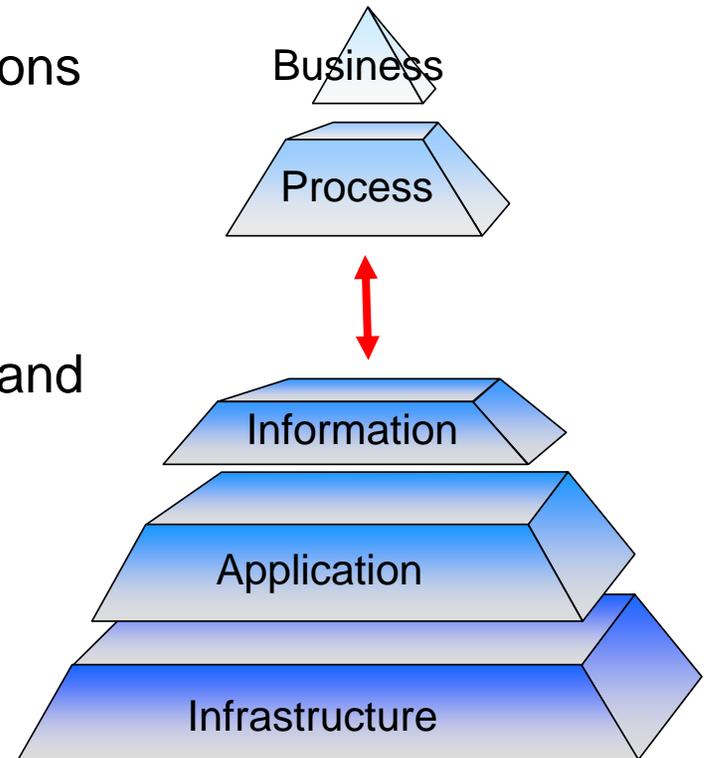
- **DON XML Developers**
- **DON FNC's**
- **DON XML Technical Assistance Team (TAT)**

- **NDR topic narratives:**
 - Information analysis
 - Data management
 - Namespace and Schema modularity
 - Versioning
- **XML rules:**
 - General XML
 - Naming, Definition and Declaration
 - Code List
 - Instance
 - Security
- **Schema example package – Appendix E:**
 - Enterprise example – Strike Plan
 - Development example – Battle Damage Report
- **Rules Table – Appendix A**

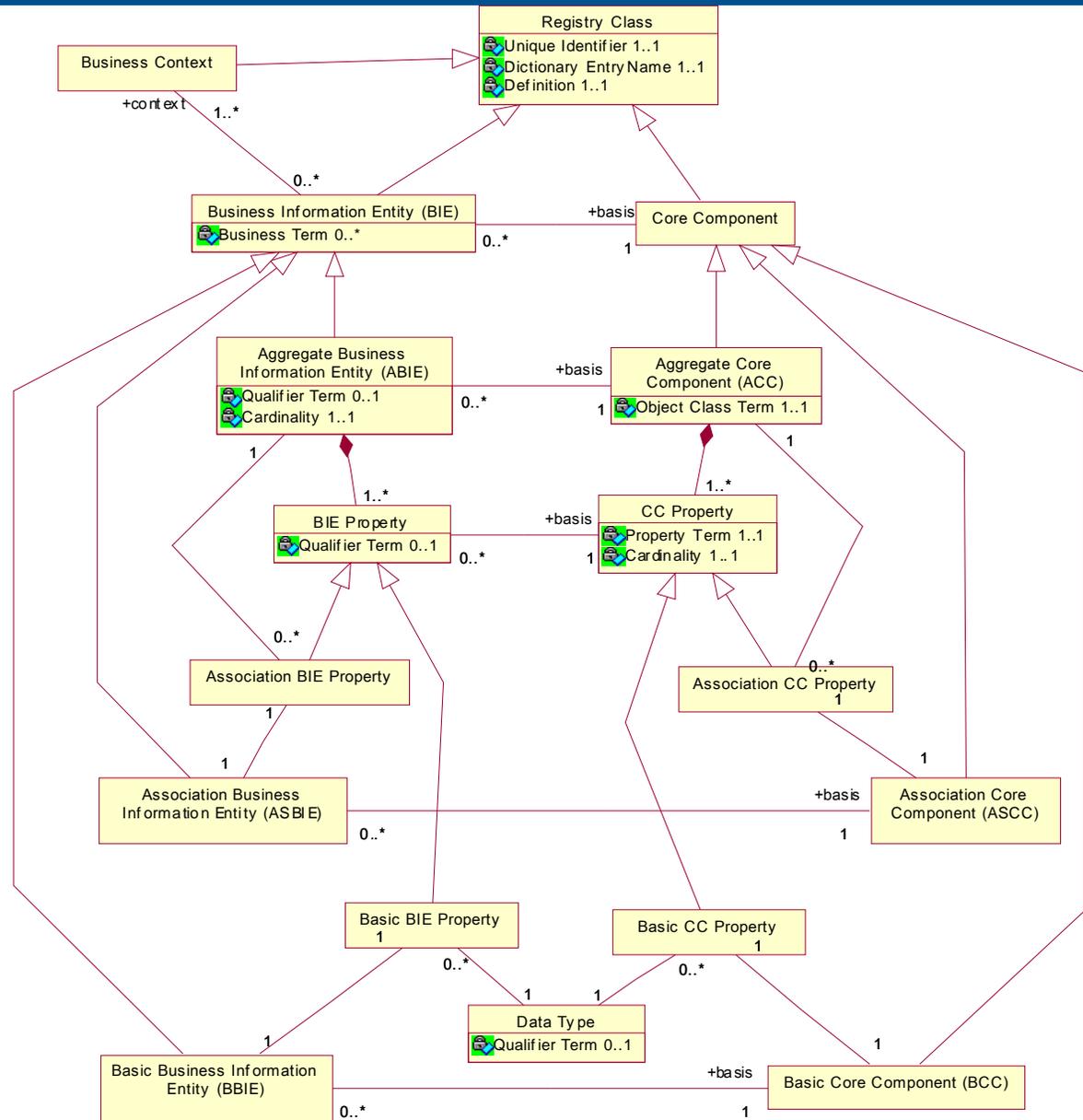
- **This section provides an overview of the:**
 - **CCTS Object Model**
 - What are ABIE's, ASBIE's and BBIE's?
 - **Uniform Modeling Methodology (UMM)**
 - Recommended approach for information analysis
 - CCTS and UBL standard for data modeling

Model Driven Architecture using BP and Data Analysis bridges the gap between EA and Applications

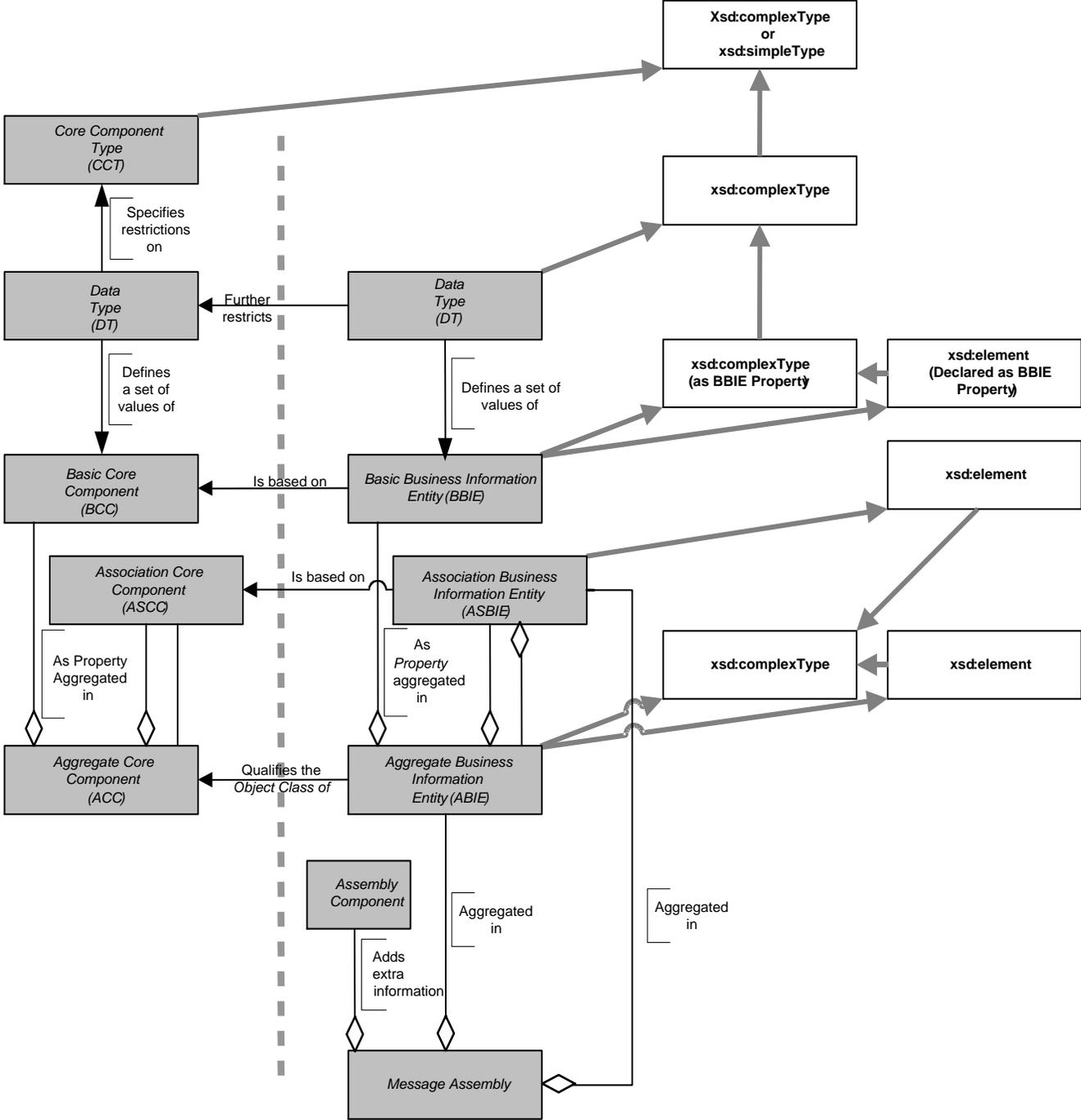
- Business defines your core business functions and their uses.
- Process identifies your value chain and supporting processes
- Information identifies data types and flows and aids standardization
- Application identifies systems and software used to manage data and support processes
- Infrastructure documents and assesses technology required to secure, prepare, transport, process, store, and retrieve data across agency



ISO 15000-5 BIE Basic Definition Model



From ISO 15000-5 to Schema



Core Component Library



Information analysis method

```
<xsd:sequence>  
<xsd:element ref="bie1-0:JulianDay"/>  
element ref="bie1-0:Target" maxOccurs="unbo  
element ref="bie1-0:AvailableOrdnance" maxOccurs="
```

- **Analyzing information exchange requirements**
 - Expressing units of metadata in reusable core components and Business Information Entities (BIEs)
- **Documenting BIEs**
 - Using “syntax neutral” model
 - In the form of a spreadsheet or other medium
 - Ultimately BIE’s will be registered “objects” in the DON XML Registry/Repository

CCs and BIE’s are the core building blocks of semantically interoperable Schemas

- **This section provides an overview of the:**
 - **Use of global elements**
 - All enterprise level standards will be global
 - Key exceptions are identifier, code, and measures which may be local only at functional or BSC or equivalent discretion

[Ref-ELD1] All element declarations MUST be global with the exception of Identifiers, Measures, and Codes, which MAY be declared as local elements if, and only if, approved by the FNC and BSC.

Example: Global Element Schema with Complex Type (Example shown does not include all required documentation for the purposes of this illustration.)

```

<!--Global Element-->
  <xsd:element name="Target" type="TargetType"/>
<!--Global ComplexType-->
<xsd:complexType name="TargetType">
  <xsd:sequence>
    <xsd:element name="TargetID" type="TargetIDType"/>
    <xsd:element ref="Description"/>
    <xsd:annotation>
      <xsd:documentation>
        <cdp:DictionaryEntryName>Target. Description.
Text</cdp:DictionaryEntryName>
        <cdp:ObjectClass>Target</cdp:ObjectClass>
        <cdp:PropertyTerm>Description</cdp:PropertyTerm>
        <cdp:RepresentationTerm>Text</cdp:RepresentationTerm>
      </xsd:documentation>
    </xsd:annotation>
    <xsd:element ref="AssignedOrdnanceREF"/>
    <xsd:element ref="CountryCode"/>
    <xsd:element ref="SurfaceTemperatureMeasure" minOccurs="0"/>
  </xsd:sequence>
</xsd:complexType>
  
```

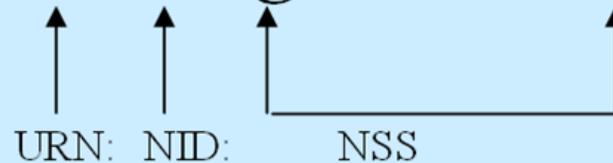
- This section provides an overview of the:
 - DON enterprise and development namespace modularity standard including:
 - Base URN
 - URN naming conventions
 - Minimum required Schema modules

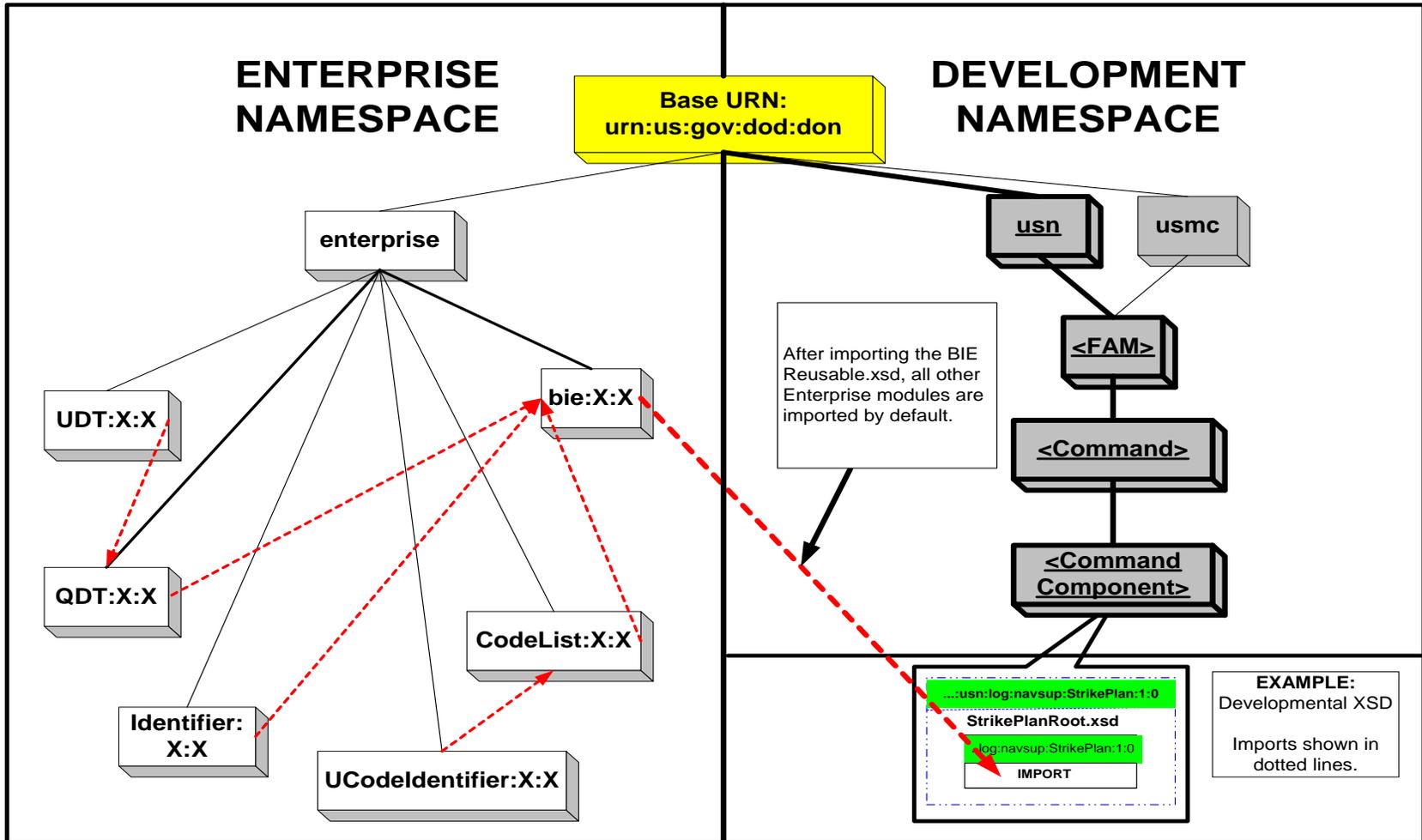
- Namespaces allow Schema to be grouped together
- Namespaces can include multiple Schema
- Namespaces allow more flexibility for businesses to exchange data
 - For example, a business can share the same semantics

Namespace Rule

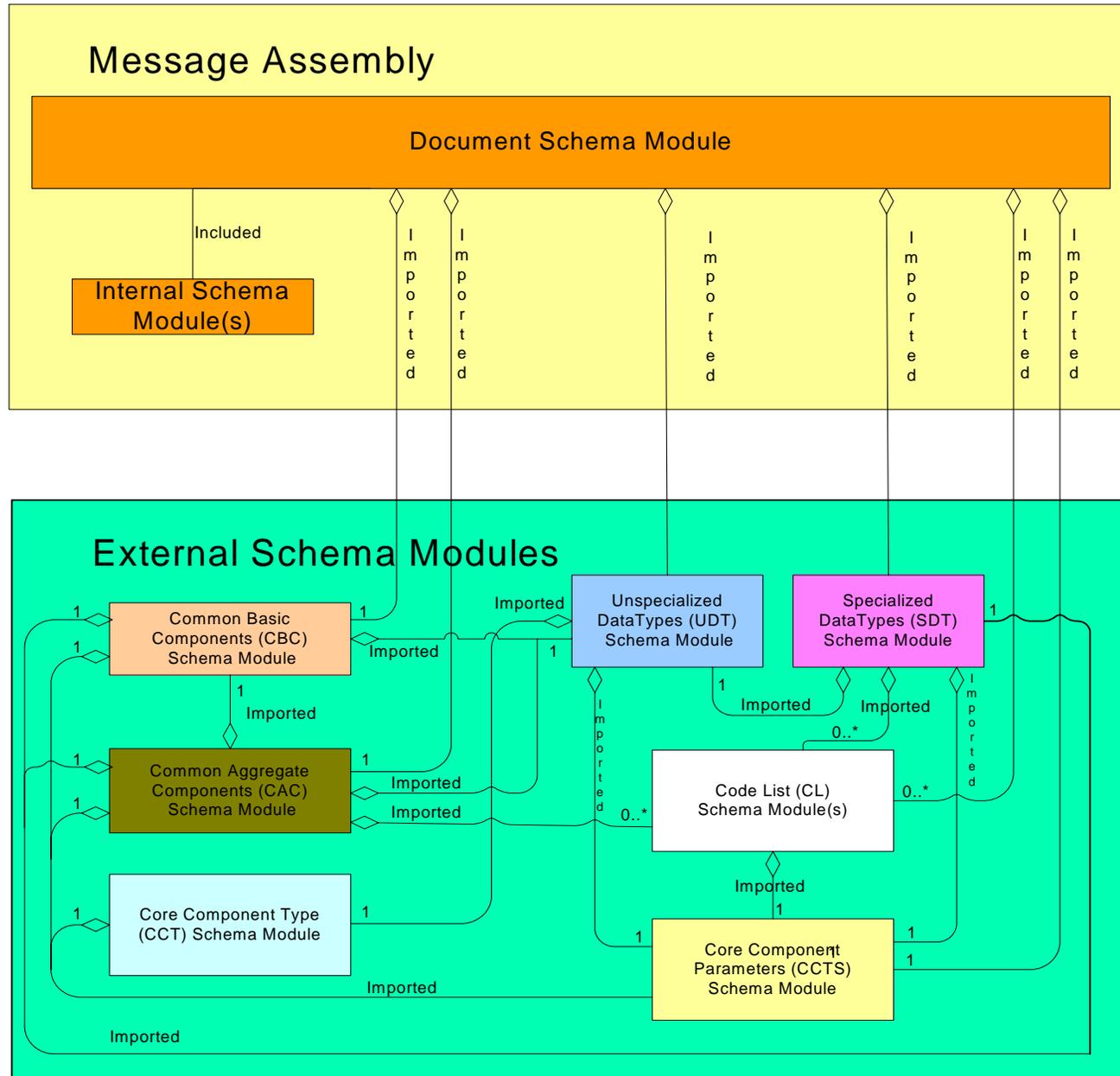
[NMS1] All DON enterprise and development namespaces MUST use the base URN “urn:us:gov:dod:don.”

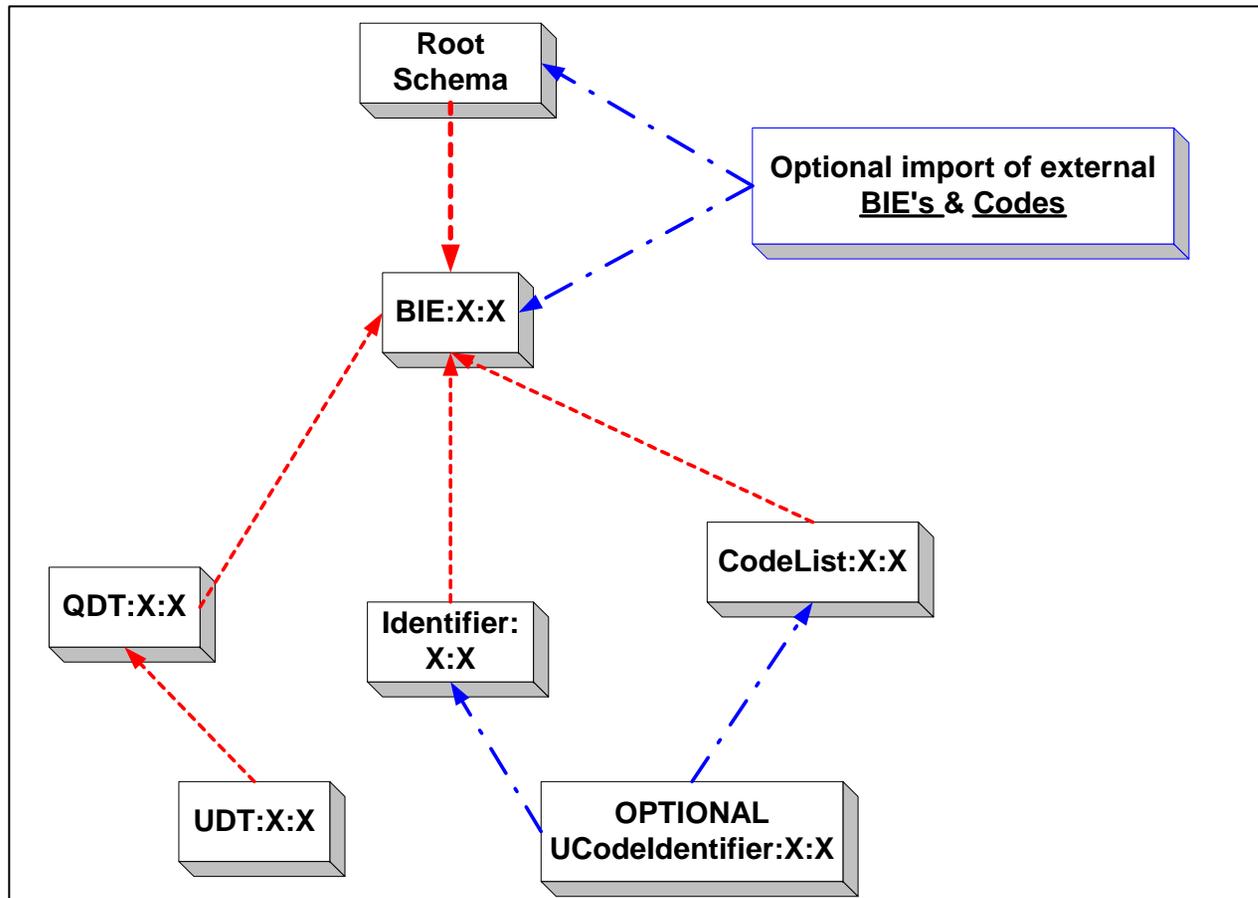
urn:us:gov:dod:don



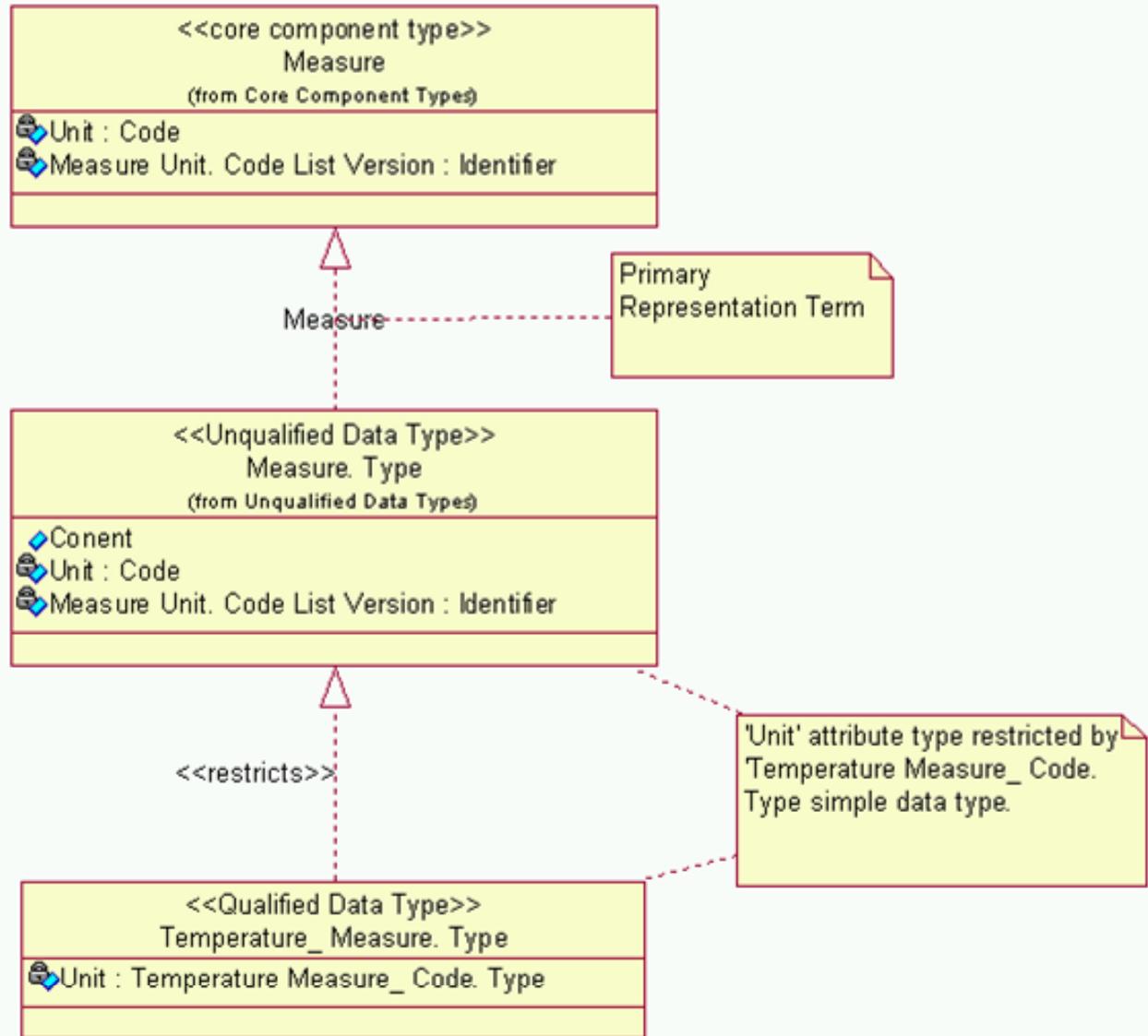


The resulting URN is: **urn:us:gov:dod:don:usn:log:navsup:StrikePlan:1.0**





This UML Class diagram expresses the relationship between the **Core Component Type "Measure"**, the **Unqualified Data Type "Measure. Type"**, and a **Qualified Data Type "Temperature_Measure. Type"**.



- **This section provides an overview of the:**
 - **Versioning requirements for all DON Schema components including:**
 - **Namespace (URN) versioning**
 - **Schema versioning**

- **Schema must be versioned like any other code subject to revision**
- **Namespaces are also versioned to support polymorphic processing**
 - Example: `urn:us:gov:dod:don:usn:log:navsup:1:0`
- **Repositories and other version control technologies can help (e.g. Canon)**
- **You must follow the versioning recommendations contained in the Federal Best Practices for Schema Development guidance**

Examples of DON NDR Versioning Rules

[VER1] XML schema version information **MUST** be defined in a schema and match the version of the namespace in which it resides.

[VER2] The major-version field **MUST** equal “1” for the first release of a namespace.

[VER3] The major-version field of a namespace or schema **MUST** be incremented when the proposed Schema changes impact the compatibility of any previous XML instance based on the related Schema.

- **This section provides an overview of the:**
 - **Standards adherence (e.g. W3C)**
 - **Overall Schema structure including:**
 - **General Schema structure**
 - **Root element**
 - **Namespace**
 - **Documentation**
 - **All BIE's**
 - **XML instance rules**
 - **Namespace, encoding and root element**

- [STA1] All DON XSD schema design MUST be based on the W3C XML Schema Recommendations: XML Schema Part 1: Structures and XML Schema Part 2: Datatypes.**
- [STA2] All DON schema and messages MUST be based on the W3C suite of technical specifications holding recommendation status.**
- [RED1] Each DON Root-Level Schema module MUST identify at least one global element declaration that defines the content in the schema expression. That global element MUST include an xsd:annotation child element, which MUST further contain an xsd:documentation child element that declares the following: “This element MUST be conveyed as the root element in any instance document based on this schema expression.”**

- This section provides an overview of the:
 - Naming, Definition and Declaration rules for all BIE's
 - ABIE, ASBIE, and BBIE
 - Complex types
 - Root element
 - Data types
 - Code lists

- [GNR1]** DON XML element, attribute, and type names **MUST** be in the English language, using the Oxford English Dictionary for Writers and Editors (Latest Ed.). Where both American and English spellings of the same word are provided, the American spelling **MUST** be used.
- [GNR2]** DON XML element, attribute, and type names **MUST** conform to CCTS dictionary entry names with all separators and spaces removed.
- [GNR3]** DON enterprise XML element, attribute, and type names **MUST NOT** use abbreviations or other word truncations (e.g. acronyms), except those in the approved list published by the cognizant FNC.
- [GNR4]** Abbreviations and acronyms **MUST** be submitted to an FNC for approval.
- [GNR5]** The abbreviations and acronyms list approved by the BSC and FNC **MUST** be used.
- [GNR6]** DON XML element, attribute, and type names **MUST** be in singular form unless the concept itself is plural (example: goods).

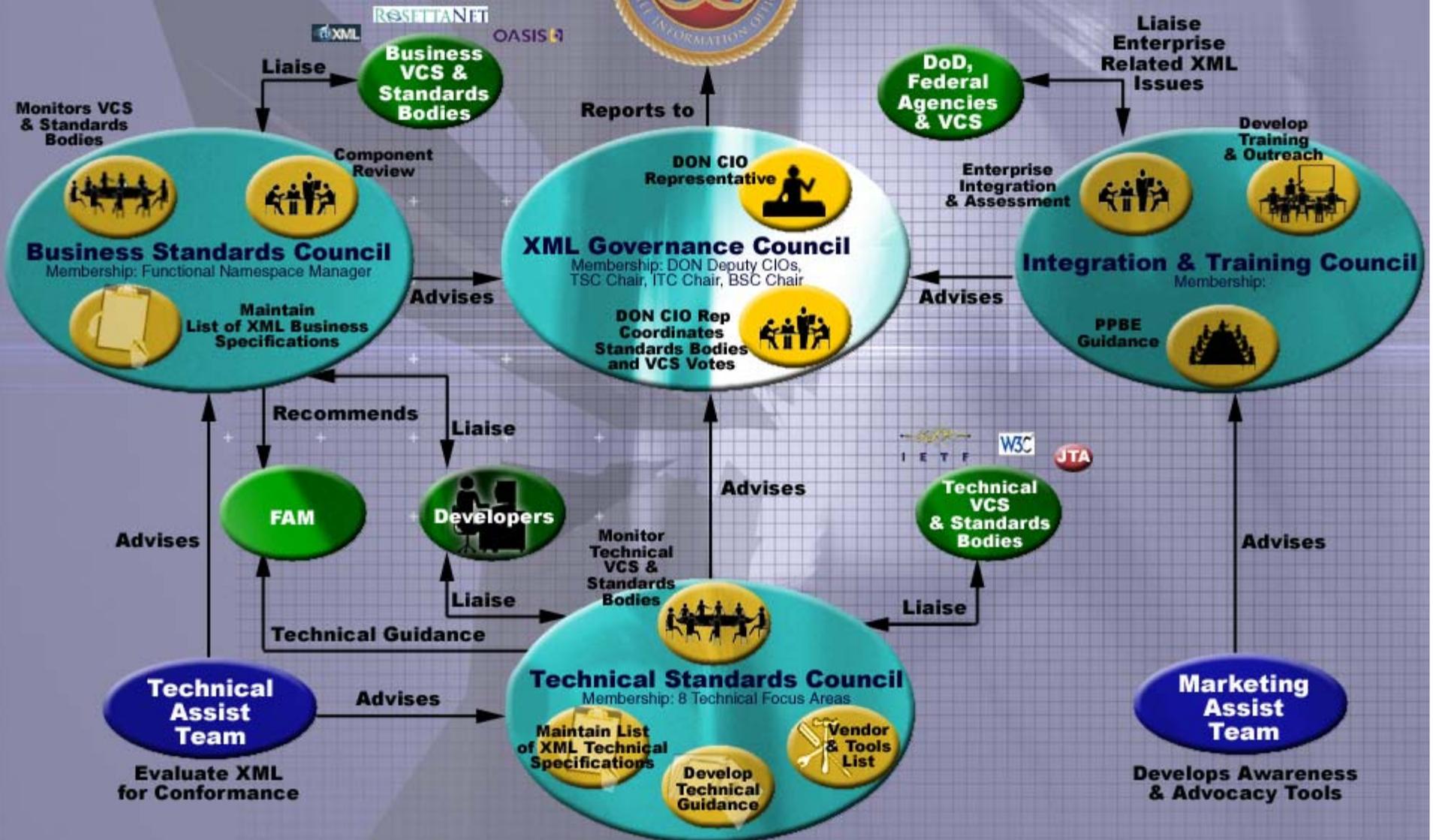
[DOC1] Every data type definition MUST contain a structured set of annotations in the following sequence and pattern:

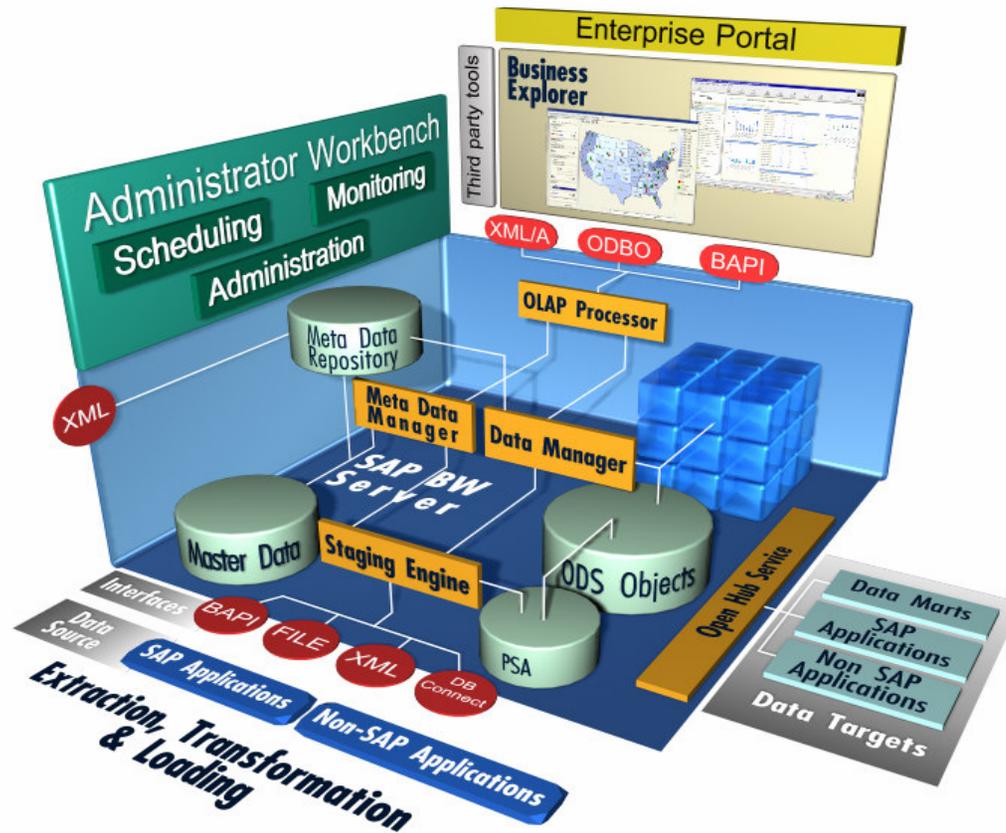
- **UniquelIdentifier (mandatory):** The identifier that references a data type instance in a unique and unambiguous way.
- **CategoryCode (mandatory):** The category to which the object belongs. For example, BBIE, ABIE, ASBIE.
- **DictionaryEntryName (mandatory):** The official name of a data type.
- **Definition (mandatory):** The semantic meaning of a data type.
- **Version (mandatory):** An indication of the evolution over time of a data type instance.
- **QualifierObjectClass (optional):** The qualifier for the object class.
- **ObjectClass:** The object class represented by the data type.
- **Qualifier Term (mandatory):** A semantically meaningful name that differentiates the data type from its underlying UDT.
- **Usage Rule (optional, repetitive):** A constraint that describes specific conditions that are applicable to the data type.

- **This section provides an overview of the:**
 - **Standards adherence to W3C and OASIS recommendations**
 - **W3C XMLDIGSIG**
 - **W3C XMLENC**

- **This section provides a detailed Schema example package**
 - **Main document (Appendix E) includes a subset of the overall package**
 - **Electronic file (.zip) contains the complete example package**

DON XML Governance





- NetWeaver Master Data Model will be based on ISO 11179 and ISO 15000-5
- NetWeaver XML will be based on ISO XML naming and design rules

1. **The DON XML NDR provides a comprehensive set of XML design rules, applicable guidance and working Schema examples**
2. **The DON XML NDR supports the DON XML Vision for global DON interoperability**
3. **The DON XML NDR is suitable as a baseline for federal XML guidelines**
4. **The NDR is supported by a robust governance structure**