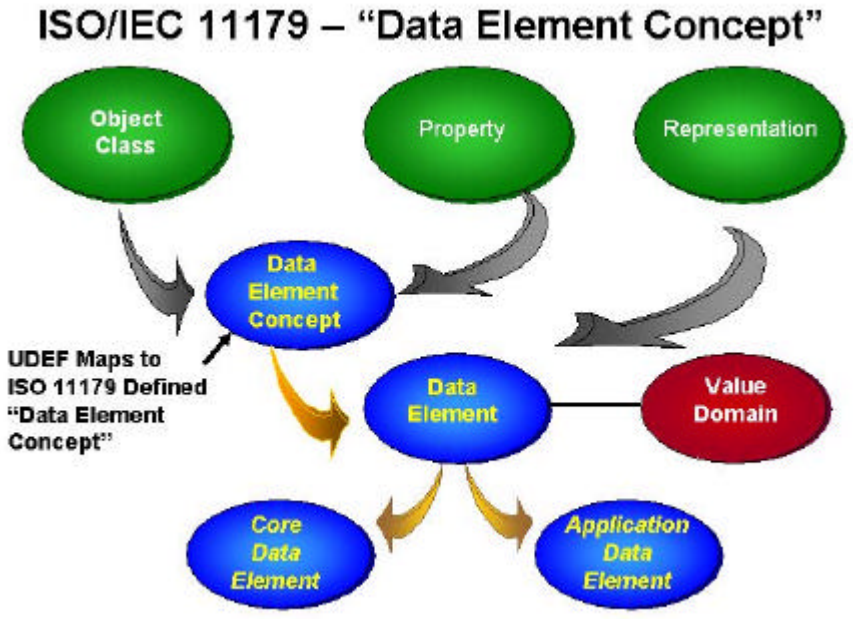
An Overview of the UDEF

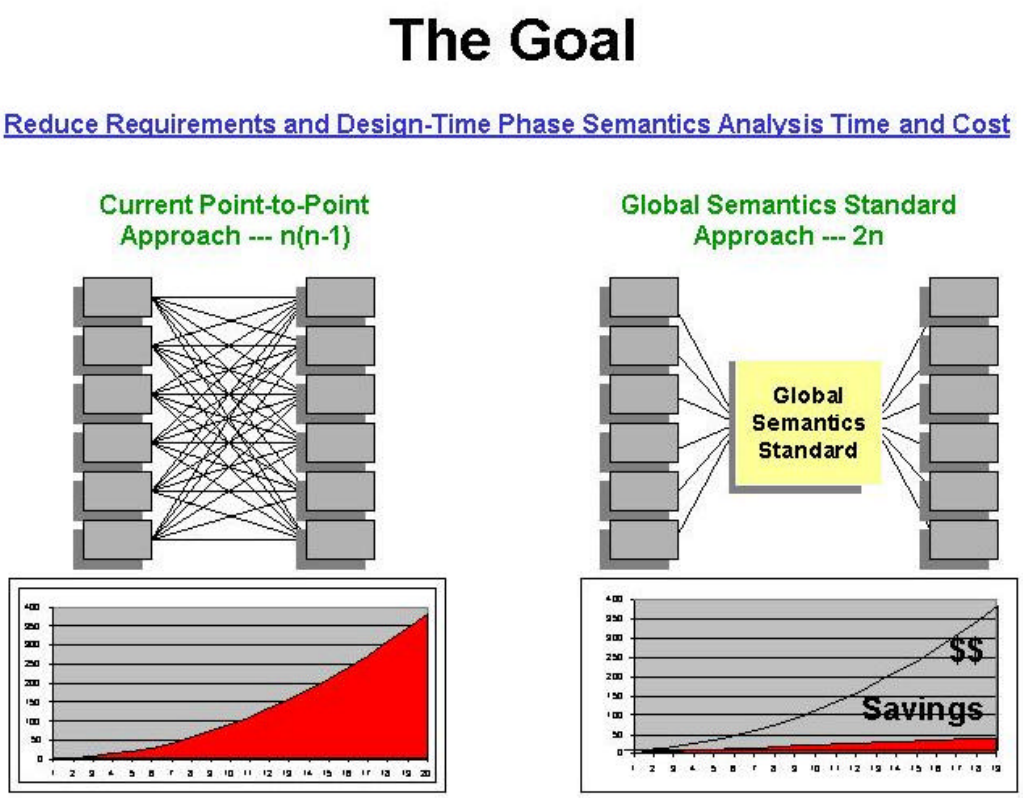
The Universal Data Element Framework (UDEF) provides a conceptual naming convention framework with associated structured unique identifiers for indexing and aligning semantically equivalent concepts. It provides a means to associate different data element names (i.e. vocabulary terms) that semantically refer to the same concept, to a standard data element concept name provided by the framework that conforms to the relevant international standard on naming conventions, ISO/IEC 11179-5. A key definition provided in paragraph 3.3.9 of ISO/IEC 11179-1 is "**data element concept** – **concept** that can be represented in the form of a **data element**, described independently of any particular representation." Interpreting the meaning of data element concepts is the essential first step of enabling semantic interoperability between disparate applications.

A **data element concept** that conforms to a rigorous rules-based naming convention establishes a common (canonical) name to refer to synonymous element names across disparate applications and data standards. Concepts based on a rigorous naming convention provide a semantic layer in the form of a common vocabulary of terms. The semantic richness of the name allowed in the UDEF-based semantic layer is not limited by artificial constraints such as length that are typically imposed on application designers. In this way equivalency of the meanings of data element concepts tagged with different data element names can be established by normalizing them to the same canonical concept. This identifies the meaning of the data field in relation to the semantic layer of defined concepts. Due to the abstract nature of the UDEF taxonomy and the associated rules for expanding UDEF using words that adhere to the rules of English for proper grammar, data element concept names based on UDEF typically do not need a separate definition since the UDEF name itself captures the relevant metadata that might be found in the definition.



The UDEF provides a mechanism by which point-to-point semantic alignment approaches can be eliminated or greatly reduced – saving time and money. It provides a semantic layer, identifying a

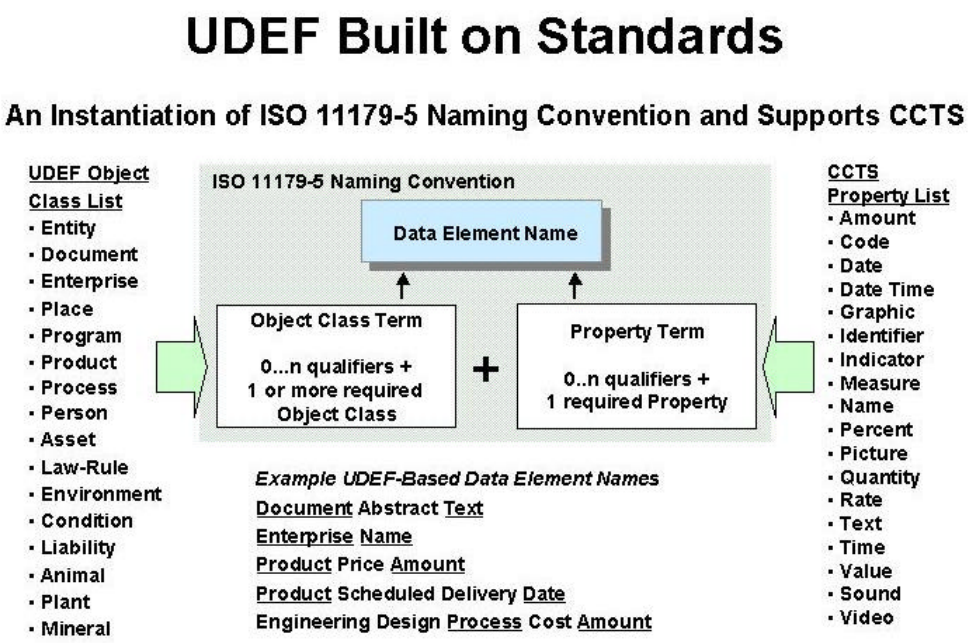
common vocabulary of terms at the conceptual level to which tag names can be mapped. An equivalency of tag names is established if mapped to the same UDEF concept term. In addition, once mapped, the UDEF can establish the assignment of a unique identifier, similar to the Dewey decimal system, to all data concept names (whether XML or not) representing the same conceptual meaning. The benefits of such an approach are many, with primary focus on reducing costs associated with the management and maintenance of point-to-point mapping solutions. With the UDEF, once equivalency is established via mapping and assignment of a UDEF identifier, mapping solutions would be focused on establishing additional mappings between the UDEF and newly integrated data concept structures, simplifying changes at the interface level.

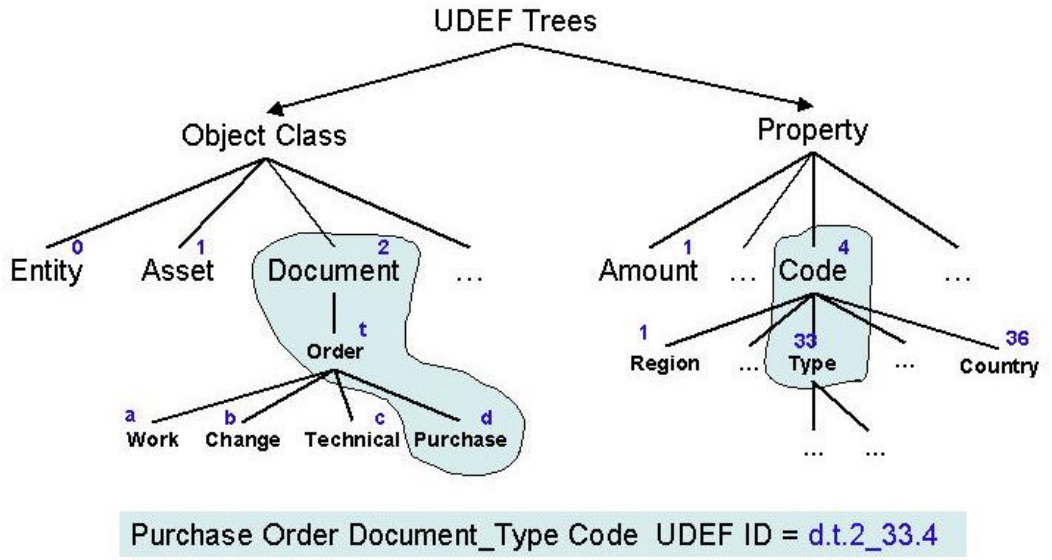


Rather than attempt to define a single standard across all functions and then to get all standards bodies to adopt it, the UDEF approach applies the principles found in the library to find a book – namely the Dewey Decimal system – a structured ID that is assigned to every book based on its classification in controlled taxonomy. Only the librarian needs to be an expert in the Dewey Decimal system, the library users leverage that taxonomy by entering a card catalog according to some piece of relevant information such as subject or author. Each book is categorized based on taxonomy driven rules and the result yields a consistent Dewey Decimal system ID. The underlying Dewey Decimal system structured ID then helps the user find a particular book on the shelves. In a similar fashion, the Universal Data Element Framework (UDEF), a controlled vocabulary taxonomy, provides a structured ID that can be independently applied to disparate applications.

The UDEF is an instantiation of the naming convention and unique identification specified by ISO/IEC 11179-5. It also supports the ebXML Core Components Technical Specification (CCTS), published as ISO 15000-5. The UDEF controlled vocabulary includes sixteen object class terms that are

intrinsically intuitive to nearly everyone and eighteen property terms that are the same as the allowable core components representation types specified by ISO 15000-5 in Tables 8-1 and 8-3.





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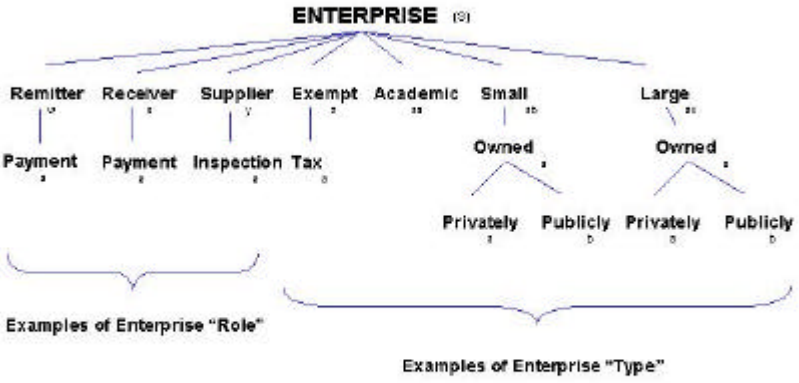
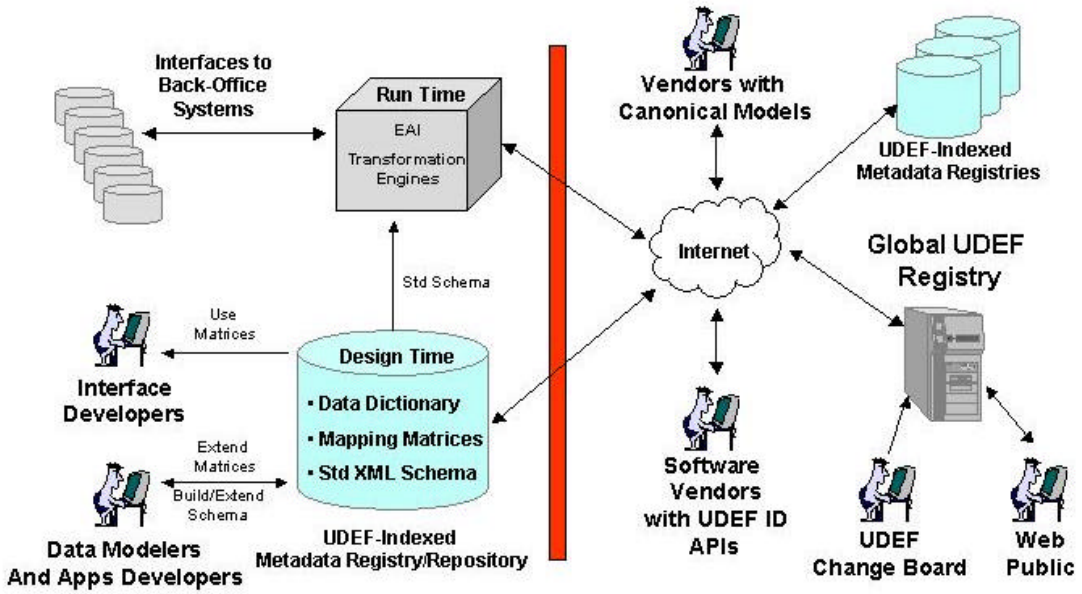
The UDEF is “enterprise” centric since the top-level object classes are all defined in the context of an enterprise. The UDEF is built around the basic premise that the “enterprise” establishes the critical cornerstone “context” for the semantic meaning of concepts that need to be exchanged between applications or systems either within the enterprise or between enterprises. The underlying assumption is that the “enterprise” manages data that is relevant to that enterprise. When a particular enterprise needs to share data with another enterprise, each needs to interpret meaning of the data in the context of the other enterprise. For example, the widely used and widely understood concepts of “product” and “asset” are tightly inter-connected and very dependent on the “enterprise” role context. The term “product” conveys an implied context that associates the term with an enterprise that performs a product producer or product seller role. The term “asset” conveys an implied asset possessor or asset buyer role by the enterprise. The product of one enterprise could be the asset of another enterprise. Tax laws and standard accounting practices re-enforce this distinction even though the two terms are addressing the same object. Each enterprise (product producer and asset owner) typically manages data that are common to the other as well as data that are unique to each. For example, an asset purchased by the owner enterprise may have a depreciation schedule that would be irrelevant to the product producer enterprise. Yet the two enterprises would likely share some common data such as the name, identifier, dimensions, etc. of the product/asset.



Examples of Core Component Object Class Qualifiers and Associations

The following diagram provides a summary view of the overall concept of operation that is based on a global metadata architecture that embraces the UDEF.

A Metadata Managed Architecture



Centralized metadata registry/repository

- **Enables reuse to reduce costs**
- **Encourages standardization**