
**Electronic Business Extensible Markup
Language (ebXML) —**

**Part 5:
ebXML Core Components Technical
Specification, Version 2.01(ebCCTS)**

Commerce électronique en langage de balisage extensible (ebXML) —

*Partie 5: Spécification technique des composants principaux (ebXML),
Version 2.01(ebCCTS)*



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ISO/TS 15000-5 was prepared jointly by Technical Committee ISO/TC 154, *Processes, data elements and documents in commerce, industry and administration* in collaboration with UN/CEFACT.

ISO/TS 15000 consists of the following parts, under the general title *Electronic business eXtensible mark-up language (ebXML)*:

- *Part 1: Collaboration-protocol profile and agreement specification (ebCPP)*
- *Part 2: Message service specification (ebMS)*
- *Part 3: Registry information model specification (ebRIM)*
- *Part 4: Registry services specification (ebRS)*
- *Part 5: ebXML Core Components Technical Specification, Version 2.01 (ebCCTS)*



UN/CEFACT

United Nations Centre for Trade Facilitation and Electronic Business

**Core Components Technical Specification –
Part 8 of the ebXML Framework**

**15 November 2003
Version 2.01**



UN/CEFACT

United Nations Centre for Trade Facilitation and Electronic Business

1 Status of This Document

This *UN/CEFACT Technical Specification* has been developed in accordance with the UN/CEFACT/TRADE/22 Open Development Process (ODP) for Technical Specifications. It has been approved by the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) Techniques and Methodologies Group (TMG) for promulgation as a UN/CEFACT Technical Specification in accordance with Step 7 of the ODP.

This document contains information to guide in the interpretation or implementation of ebXML concepts.

Distribution of this document is unlimited.

The document formatting is based on the Internet Society's Standard RFC format.

This version: *Core Components Technical Specification – Part 8 of the ebXML Framework*, Version 2.01 of 15 November 2003

Previous version: *UN/CEFACT – Core Components Technical Specification*, Version 2.0 of 11 August 2003

This edition is an updated version of Core Components Technical Specification Version 2.0 (first published 11 August 2003); it merely incorporates a title correction and minor first-edition errata related to ebXML references as a convenience to readers.

2 Core Components Technical Specification Administration

The leaders and editors express gratitude to the significant number of participants who contributed to the successful completion of this document.

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4 Introduction

This *Core Components Technical Specification* describes and specifies a new approach to the well-understood problem of the lack of information interoperability between applications in the e-business arena. Traditionally, standards for the exchange of business data have been focused on static message definitions that have not enabled a sufficient degree of interoperability or flexibility. A more flexible and interoperable way of standardising *Business Semantics* is required. The UN/CEFACT (United Nations Centre for Trade Facilitation and Electronic Business) *Core Component* solution described in this specification presents a methodology for developing a common set of semantic building blocks that represent the general types of business data in use today and provides for the creation of new business vocabularies and restructuring of existing business vocabularies.

The keywords MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD, SHOULD NOT, RECOMMENDED, MAY, and OPTIONAL, when they appear in this document, are to be interpreted as described in Internet Engineering Task Force (IETF) Request For Comments (RFC) 2119.1

4.1 Scope and Focus

This *Core Components Technical Specification* can be employed wherever business information is being shared or exchanged amongst and between enterprises, governmental agencies, and/or other organisations in an open and worldwide environment. The *Core Components User Community* consists of business people, business document modellers and business data modellers, *Business Process* modellers, and application developers of different organisations that require interoperability of business information. This interoperability covers both interactive and batch exchanges of business data between applications through the use of Internet and Web based information exchanges as well as traditional Electronic Data Interchange (EDI) systems.

This specification will form the basis for standards development work of business analysts, business users and information technology specialists supplying the content of and implementing applications that will employ the UN/CEFACT *Core Component Library* (CCL). The *Core Component Library* will be stored in a UN/CEFACT repository and identified in an ebXML compliant registry.

Due to the evolving nature of the UN/CEFACT *Core Component Library*, the specification includes material that focuses on the business community doing further discovery and analysis work. Some of the contents of this specification are not typical of this type of technical document. However, they are critical for successful adoption and standardization in this area to move forward.

¹ Key words for use in RFCs to Indicate Requirement Levels - Internet Engineering Task Force, Request For Comments 2119, March 1997,
<http://www.ietf.org/rfc/rfc2119.txt?number=2119>

4.2 Structure of this Specification

Due to the diversity of the intended audience, this document has been divided into five main Sections.

- Section 5: Working Process and Methodology for Business Users—Discovery, Harmonization, Assessment and How to Use [informative]
- Section 6: Technical Details—*Core Components* and *Context* [normative]
- Section 7: Technical Details—Storage and Metadata [normative]
- Section 8: Technical Details— Permissible *Representation Terms* and Approved *Core Component Type, Content, and Supplementary Components* [normative]
- Section 9: Definition of Terms [normative]

Sections 5, 6, 7 and 8 are complementary, but may also be used independently of each other. Section 5 is informative. A business audience may choose to read through the working process and methodology section (Section 5) and only reference the Technical Details (Sections 6, 7 and 8) as needed. Sections 6, 7 and 8 are normative. A technical audience may choose to focus on the technical details (Sections 6, 7, and 8), referring to the methodology (Section 5) and example (published as a supplemental document) sections as appropriate, using the current permissible *Representation Terms* and approved *Core Component Type, Content, and Supplementary Components* (Section 8) and the glossary (Section 9).

In addition, the UN/CEFACT Forum will prepare supplemental documents that may be used in conjunction with this *Core Components Technical Specification*. These supplemental documents will include:

- *Message Assembly* – expands on the *Assembly* principles and *Constraints Language* contained in the *Core Components Technical Specification* and provides specific methodology for assembling higher level *Business Information Entities* for electronic messages.
- *Core Components Primer* – details how the contents of Sections 5, 6, and 7 would be used in practice to create a library of *Core Components* and *Business Information Entities*.
- *Catalogue of Core Components* – represents the work of various organizations working in a joint endeavour to develop and publish semantically correct and meaningful information exchange parcels.

4.2.1 Notation

[Definition] – A formal definition of a term. Definitions are normative.

[Example] – A representation of a definition or a rule. Examples are informative.

[Note] – Explanatory information. Notes are informative.

[Rn] – Identification of a rule that requires conformance to ensure discovered *Core Components* are properly discovered, named and stored. The value R is a prefix to categorise the type of rule where R=A for Conformance rule, R=B for *Business Information Entity* rule, R=C for *Core Component* rule, R=D for *Data Type* rule, or R=S for *Storage* rule; and n (1..n) indicates the sequential number of the rule]. Rules are normative. In order to ensure continuity across versions of the specification, rule numbers that are deleted will not be re-issued, and any new rules will be assigned the next higher number - regardless of location in the text.

Italics – All words appearing in italics, when not titles or used for emphasis, are special terms defined in Section 9.

Courier – All words appearing in bolded **courier font** are values or objects.

4.3 Conformance

Applications will be considered to be in full conformance with this technical specification if they comply with the content of normative sections, rules and definitions.

[A1] Conformance shall be determined through adherence to the content of normative sections, rules and definitions.

4.4 Related Documents

The following documents provided significant levels of influence in the development of this document:

- ebXML Technical Architecture Specification v1.04
- ebXML Business Process Specification Schema v1.01
- OASIS/ebXML Registry Information Model v2.0
- OASIS/ebXML Registry Services Specification v2.0
- ebXML Requirements Specification v1.06
- OASIS/ebXML Collaboration-Protocol Profile and Agreement Specification v2.0
- OASIS/ebXML Message Service Specification v2.0
- ebXML Technical Report, Business Process and Business Information Analysis Overview v1.0
- ebXML Business Process Analysis Worksheets & Guidelines v1.0
- ebXML Technical Report, E-Commerce Patterns v1.0
- ebXML Technical Report, Catalog of Common Business Processes v1.0
- ebXML Technical Report, Core Component Overview v1.05
- ebXML Technical Report, Core Component Discovery and Analysis v1.04
- ebXML Technical Report, Context and Re-Usability of Core Components v1.04

- ebXML Technical Report, Guide to the Core Components Dictionary v1.04
- ebXML Technical Report, Naming Convention for Core Components v1.04
- ebXML Technical Report, Document Assembly and Context Rules v1.04
- ebXML Technical Report, Catalogue of Context Categories v1.04
- ebXML Technical Report, Core Component Dictionary v1.04
- ebXML Technical Report, Core Component Structure v1.04
- Information Technology - Metadata registries: Framework for the Specification and Standardization of Data Elements, International Standardization Organization, ISO 11179-1
- Information Technology - Metadata registries: Classification of Concepts for the Identification of Domains, International Standardization Organization, ISO 11179-2
- Information Technology - Metadata registries: Registry Metamodel, International Standardization Organization, ISO 11179-3
- Information Technology - Metadata registries: Rules and Guidelines for the Formulation of Data Definitions, International Standardization Organization, ISO 11179-4
- Information Technology - Metadata registries: Naming and Identification Principles for Data Elements, International Standardization Organization, ISO 11179-5
- Information Technology - Metadata registries: Framework for the Specification and Standardization of Data Elements, International Standardization Organization, ISO 11179-6

4.5 Overview

This *Core Components Technical Specification* provides a way to identify, capture and maximize the re-use of business information to support and enhance information interoperability across multiple business situations. The specification focuses both on human-readable and machine-processable representations of this information.

The *Core Components* approach described in this document is more flexible than current standards in this area because the semantic standardisation is done in a syntax-neutral fashion. Using *Core Components* as part of the ebXML framework will help to ensure that two trading partners using different syntaxes [e.g. Extensible Markup Language (XML) and United Nations/EDI for Administration, Commerce, and Transport (UN/EDIFACT)] are using *Business Semantics* in the same way on condition that both syntaxes have been based on the same *Core Components*. This enables clean mapping between disparate message definitions across syntaxes, industry and regional boundaries.

UN/CEFACT *Business Process* and *Core Component* solutions capture a wealth of information about the business reasons for variation in message semantics and structure. In the past, such variations have introduced incompatibilities. The *Core Components* mechanism uses this rich information to allow identification of exact similarities and differences between semantic models. Incompatibility becomes incremental rather than wholesale, i.e. the detailed points of difference are noted, rather than a whole model being dismissed as incompatible.

Core Components Technical Specification V2.01
Part 8 of the ebXML Framework

4.6 Key Concepts

The *Core Components Technical Specification* key concepts cover two focus areas—*Core Components* and *Business Information Entities*. Each of these focus areas is discussed in the following subsections. In each subsection concepts are introduced, followed by a normative definition and, where appropriate, an example for each.

4.6.1 Key Core Component Concepts

The central concept of this specification is the *Core Component*. The *Core Component* is a semantic building block, which is used as a basis to construct all electronic business messages.

[Definition] *Core Component* (CC)

A building block for the creation of a semantically correct and meaningful information exchange package. It contains only the information pieces necessary to describe a specific concept.

There are four different categories of *Core Components*: *Basic Core Component*, *Association Core Component*, *Core Component Type* and *Aggregate Core Component*. The following definitions explain each of these:

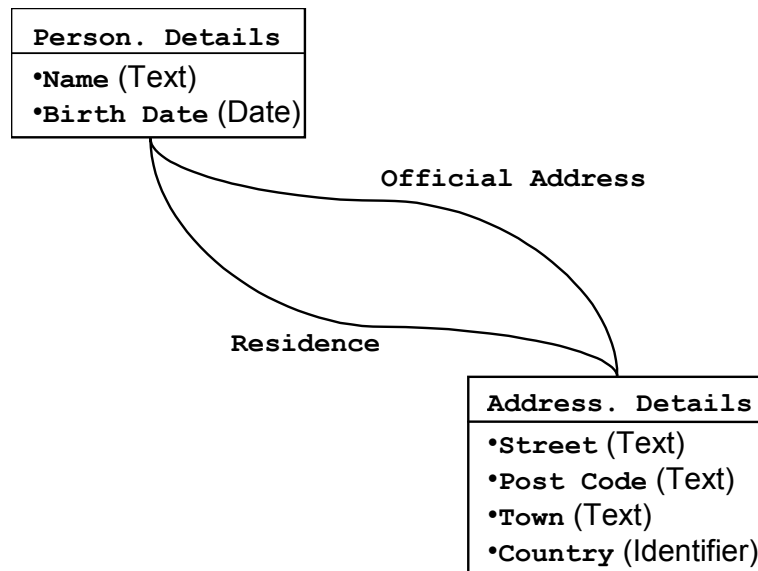
[Definition] *Basic Core Component* (BCC)

A *Core Component* which constitutes a singular business characteristic of a specific *Aggregate Core Component* that represents an *Object Class*. It has a unique *Business Semantic* definition. A *Basic Core Component* represents a *Basic Core Component Property* and is therefore of a *Data Type*, which defines its set of values. *Basic Core Components* function as the *Properties* of *Aggregate Core Components*.

[Definition] *Association Core Component* (ASCC)

A *Core Component* which constitutes a complex business characteristic of a specific *Aggregate Core Component* that represents an *Object Class*. It has a unique *Business Semantic* definition. An *Association Core Component* represents an *Association Core Component Property* and is associated to an *Aggregate Core Component*, which describes its structure.

[Example] *Association Core Component*



The example shows two *Aggregate Core Components*, **Person. Details** and **Address. Details**. Each *Aggregate Core Component* has a number of *Properties* (i.e. business characteristics). The *Aggregate Core Component* **Person. Details** has four *Properties*, namely **Name**, **Birth Date**, **Residence** and **Official Address**. The *Aggregate Core Component* **Address. Details** also has four *Properties*, namely **Street**, **Post Code**, **Town** and **Country**.

Most of these *Properties* are *Basic Core Components*. These *Properties* represent a singular business characteristic and their set of allowed values is defined by a *Data Type*. The *Data Types* **Name**, **Street**, **Post Code** and **Town** are of the *Data Type* **Text**, **Birth Date** is of the *Data Type* **Date** and **Country** is of the *Data Type* **Identifier**.

The other *Properties* are *Association Core Components*. They represent complex business characteristics and their structure is therefore defined by another *Aggregate Core Component*. **Residence** and **Official Address** are both *Association Core Components* and their structure is described by **Address. Details**.

This example will therefore result in following set of *Core Components*:

- **Person. Details** (*Aggregate Core Component*)
- **Person. Name. Text** (*Basic Core Component*)
- **Person. Birth. Date** (*Basic Core Component*)
- **Person. Residence. Address** (*Association Core Component*)
- **Person. Official. Address** (*Association Core Component*)

[Example] *Association Core Component (Continued)*

- **Address. Details** (*Aggregate Core Component*)
- **Address. Street. Text** (*Basic Core Component*)
- **Address. Post Code. Text** (*Basic Core Component*)
- **Address. Town. Text** (*Basic Core Component*)
- **Address. Country. Identifier** (*Basic Core Component*)

[Definition] *Core Component Type (CCT)*

A *Core Component*, which consists of one and only one *Content Component*, that carries the actual content plus one or more *Supplementary Components* giving an essential extra definition to the *Content Component*. *Core Component Types* do not have *Business Semantics*.

[Example] *Core Component Types*

For a *Core Component Type* of **Amount. Type**, the *Content Component* carries the value of **12**. This value has no semantic meaning on its own. But **12 Euro**, where **Euro** is the *Supplementary Component* that gives essential extra definition to the *Content Component*, does have meaning.

[Definition] *Aggregate Core Component*

A collection of related pieces of business information that together convey a distinct business meaning, independent of any specific *Business Context*. Expressed in modelling terms, it is the representation of an *Object Class*, independent of any specific *Business Context*.

[Example] – *Aggregate Core Component*

Aggregate: **Financial Account. Details**²

Definition: A service through a bank or other organization through which funds are held on behalf of a client.

Basic Core Components:

- **Financial Account. Identifier**
- **Financial Account. Name**

² See section 6.1.4 for detailed rules for developing *Core Component* names.

[Example] – *Aggregate Core Component* (Continued)

- **Financial Account. Country. Identifier**
- **Financial Account. Product Type. Identifier**
- **Financial Account. Nickname. Name**

Core Components (and *Business Information Entities*) have *Properties* that are defined by *Data Types*.

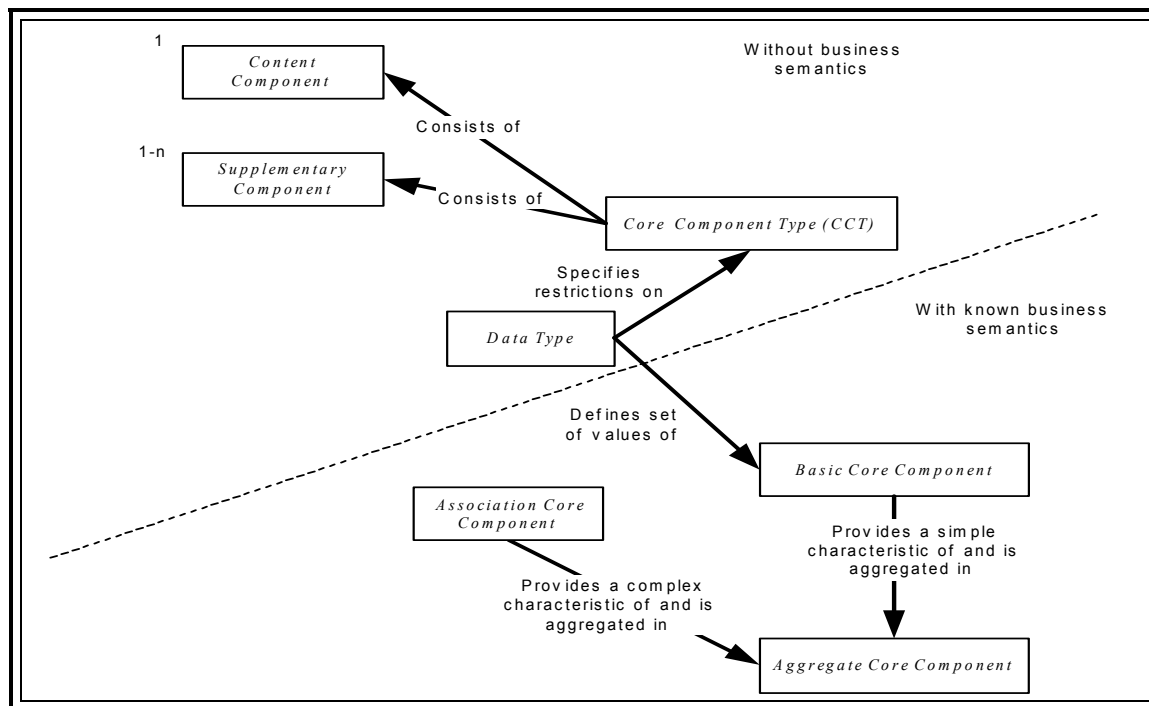
A *Data Type* represents the full range of values that shall be used for the representation of a particular *Core Component Property*. A *Data Type* must be based on one of the *Core Component Types*, but may include restrictions of the set of values of that *Core Component Type*'s *Content Component* and/or *Supplementary Component*(s).

[Definition] – *Data Type*

Defines the set of valid values that can be used for a particular *Basic Core Component Property* or *Basic Business Information Entity Property*. It is defined by specifying restrictions on the *Core Component Type* that forms the basis of the *Data Type*.

The diagram in Figure 4-1 shows the relationships between the various *Core Component* elements.

Figure 4-1. Core Component Overview



4.6.2 Key Business Information Entity Concepts

The key differentiator between *Core Components* and *Business Information Entities* is the concept of *Business Context*. *Business Context* is a mechanism for qualifying and refining *Core Components* according to their use under particular business circumstances. Once *Business Contexts* are identified, *Core Components* can be differentiated to take into account any necessary qualification and refinement needed to support the use of the *Core Component* in the given *Business Context*. The *Business Process* definition provides a high level description of the use of a message and its contents.³

[Definition] *Business Context*

The formal description of a specific business circumstance as identified by the values of a set of *Context Categories*, allowing different business circumstances to be uniquely distinguished.

When a *Core Component* is used in a real business circumstance it serves as the basis of a *Business Information Entity*. The *Business Information Entity* is the result of using a *Core Component* within a specific *Business Context*.

[Definition] *Business Information Entity (BIE)*

A piece of business data or a group of pieces of business data with a unique *Business Semantic* definition. A *Business Information Entity* can be a *Basic Business Information Entity (BBIE)*, an *Association Business Information Entity (ASBIE)*, or an *Aggregate Business Information Entity (ABIE)*.

A specific relationship exists between *Core Components* and *Business Information Entities*. *Core Components* and *Business Information Entities* are complementary in many respects. *Core Components* are intended to be the linchpin for creating interoperable *Business Process* models and business documents using a *Controlled Vocabulary*.

There are three different categories of Business Information Entities: Basic Business Information Entity, Association Business Information Entity, and Aggregate Business Information Entity. The most primitive of these is the Basic Business Information Entity. A Basic Business Information Entity is a Basic Core Component used in a specific Business Context.

[Definition] *Basic Business Information Entity (BBIE)*

A *Business Information Entity* that represents a singular business characteristic of a specific *Object Class* in a specific *Business Context*. It has a unique *Business Semantic* definition. A *Basic Business Information Entity* represents a *Basic Business Information Entity Property* and is therefore linked to a *Data Type*, which describes its values. A *Basic Business Information Entity* is derived from a *Basic Core Component*.

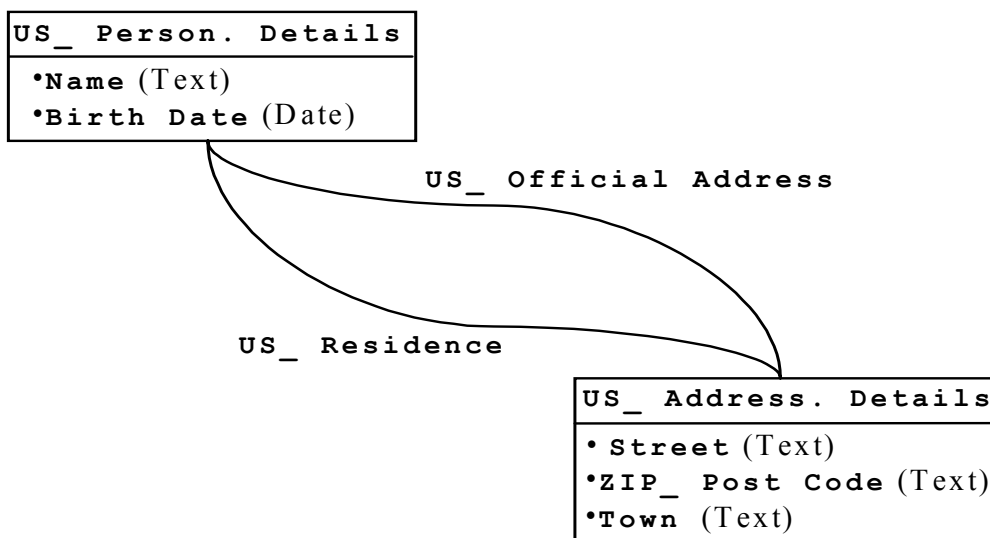
³ The *Core Components' Context* mechanism provides the more detailed linkage between specific business data and the exact circumstances of its business use.

Whenever a *Property* of an *Aggregate Business Information Entity* is of a complex nature, and has the structure of another *Aggregate Business Information Entity*, an *Association Business Information Entity* is used to represent that *Property*. An *Association Business Information Entity* is based on an *Association Core Component*, but exists in a *Business Context*.

[Definition] *Association Business Information Entity* (ASBIE)

A *Business Information Entity* that represents a complex business characteristic of a specific *Object Class* in a specific *Business Context*. It has a unique *Business Semantic* definition. An *Association Business Information Entity* represents an *Association Business Information Entity Property* and is associated to an *Aggregate Business Information Entity*, which describes its structure. An *Association Business Information Entity* is derived from an *Association Core Component*.

[Example] *Association Business Information Entity*



The example shows two *Aggregate Business Information Entities*, **US_Person_Details** and **US_Address_Details**. Each *Aggregate Business Information Entity* has a number of *Properties* (i.e. business characteristics). **US_Person_Details** has four *Properties*, namely **Name**, **Birth Date**, **US_Residence** and **US_Official Address**. The *Aggregate Business Information Entity* **US_Address_Details** has three *Properties*, namely **Street**, **ZIP_Post Code** and **Town**.

Most of these *Properties* are *Basic Business Information Entities*. They represent a singular business characteristic and their set of allowed values is defined by a *Data Type*. The *Data Types* **Name**, **Street**, **ZIP_Post Code** and **Town** are of the *Data Type Text* and the *Data Type Birth Date* is of the *Data Type Date*.

The other *Properties* are *Association Business Information Entities*. They represent complex business characteristics and their structure is therefore defined by another

[Example] *Association Business Information Entity* (Continued)

Aggregate Business Information Entity. **US_ Residence** and **US_ Official Address** are both *Association Business Information Entities* and their structure is described by **US_ Address. Details**.

This example will therefore result in following set of *Business Information Entities*:

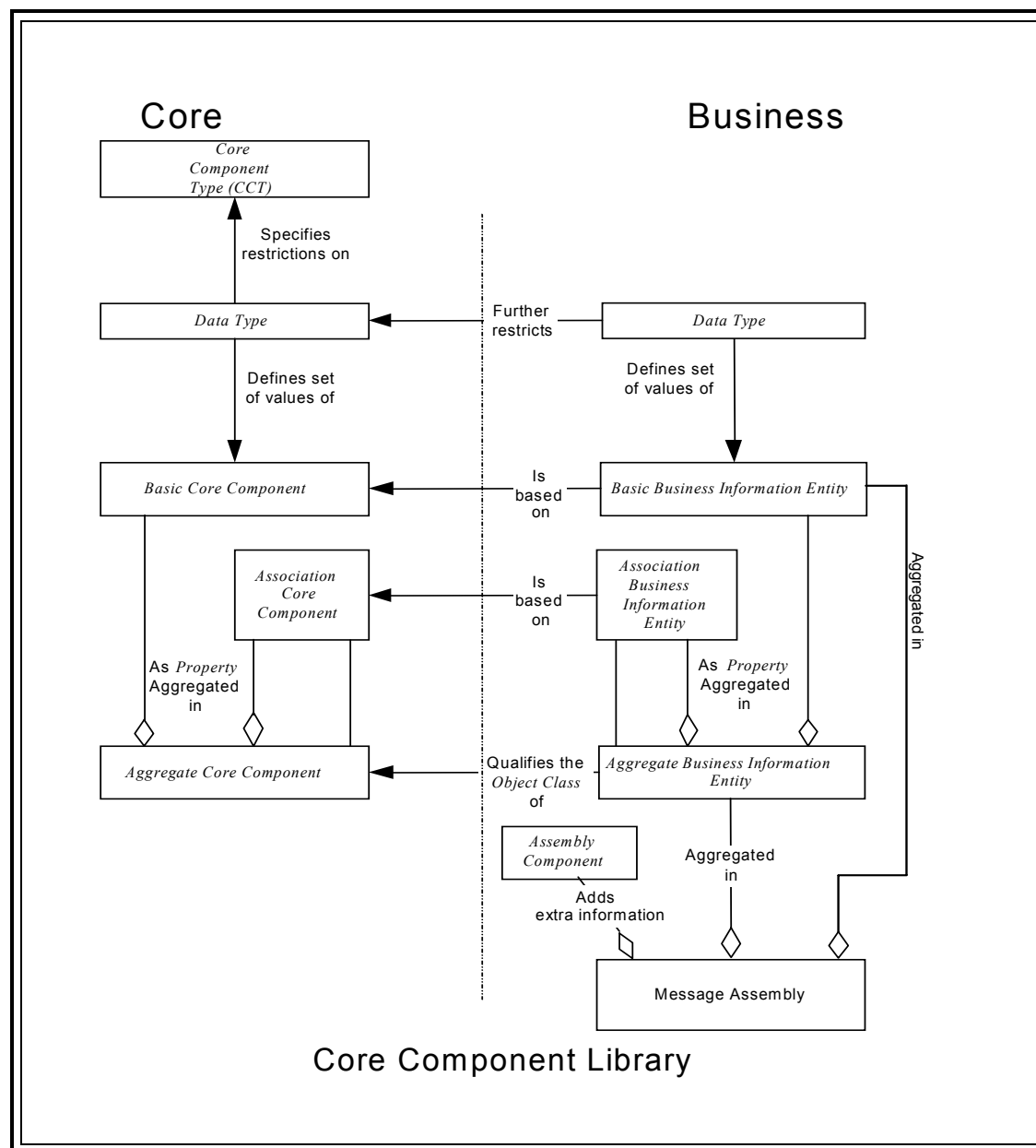
- **US_ Person. Details** (*Aggregate Business Information Entity*)
- **US_ Person. Name. Text** (*Basic Business Information Entity*)
- **US_ Person. Birth. Date** (*Basic Business Information Entity*)
- **US_ Person. US_ Residence. US_ Address** (*Association Business Information Entity*)
- **US_ Person. US_ Official. US_ Address** (*Association Business Information Entity*)
- **US_ Address. Details** (*Aggregate Business Information Entity*)
- **US_ Address. Street. Text** (*Basic Business Information Entity*)
- **US_ Address. ZIP_ Post Code. Text** (*Basic Business Information Entity*)
- **US_ Address. Town. Text** (*Basic Business Information Entity*)

An *Aggregate Business Information Entity* is a piece of business data or a group of pieces of business data with a unique *Business Semantic* definition in a specific *Business Context*.

[Definition] *Aggregate Business Information Entity*

A collection of related pieces of business information that together convey a distinct business meaning in a specific *Business Context*. Expressed in modelling terms, it is the representation of an *Object Class*, in a specific *Business Context*.

The features of the relationship between *Core Components* and *Business Information Entities* are described in Figure 4-2.

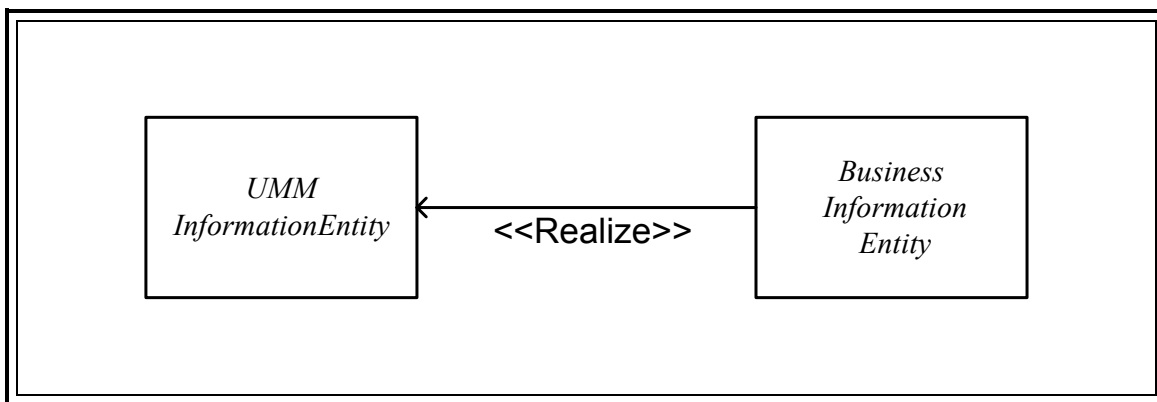
Figure 4-2. Relationships between Core Components and Business Information Entities**[Note]**

The term *Core Component* is used as a generic term that encompasses *Basic Core Components*, *Association Core Components*, *Aggregate Core Components*, and their associated *Core Component Types*. Equally, the term *Business Information Entity* is used as a generic term encompassing *Basic Business Information Entities*, *Association Business Information Entities*, and *Aggregate Business Information Entities*.

4.7 Relationship between UN/CEFACT Modelling Methodology and Core Components

UN/CEFACT has developed the *UN/CEFACT Modelling Methodology* (UMM). UMM describes a Unified Modeling Language (UML) based modelling approach to develop *UMM InformationEntities*.⁴ Within UN/CEFACT standards efforts, the *Core Component* framework of *Core Components* and *Business Information Entities* prescribes the mechanism for discovery, normalization, *Context* specialization and structure of *UMM InformationEntities*. The *Aggregate Business Information Entity-Basic Business Information Entity* framework provides the structure for components of the body of the business document. The *Core Component-Business Information Entity-Context* mapping framework provides the basis for mapping *UMM InformationEntity* realisations to business entities. The *Business Information Entity* to *Core Component* relationship provides the dictionary reference as specified in the information model abstract syntax. The UN/CEFACT *Core Component Library* is an implementation of the *UN/CEFACT Modelling Methodology* dictionary concept. The *Basic Core Component* is the realization of a non-aggregate *UMM InformationEntity* and provides the mapping to *Data Types*. The relationship between the *Core Component Framework* and the *UMM InformationEntity* is illustrated in Figure 4-3.

Figure 4-3. Relationship between Core Component Framework and UMM InformationEntity



⁴ The UN/CEFACT Modelling Methodology (UMM) is a methodology for *Business Process* and information modelling that is based on the Object Management Group's Unified Modeling Language.

5 Working Process and Methodology

This section identifies aspects of *Core Component* working processes and methodologies. It includes an overview of the discovery and usage characteristics of *Core Components*. In addition, it includes detailed recommendations for conducting discovery, storage, approval, and application of *Context*.

5.1 Overview

The analysis of *Business Processes* builds a picture of requirements, identifying the business collaboration, i.e. timing and purpose of each process step. Detailed examination of the *Business Processes* at this level reveals the individual pieces of business information that are used and at what stage they are exchanged.

5.1.1 Discovery

A *Business Process* should be modelled using a standard approach. UN/CEFACT requires the *UN/CEFACT Modelling Methodology* (UMM) as the approach.⁵ One of the results is a model, including a class diagram, which shows the business information and its inter-relationships. *Business Information Entities* can be identified from the *ebXML Business Process Analysis Worksheets and Guidelines*⁶ that provide a simplified modelling approach.

For example, if a domain team has modelled the publication of catalogue data to trading partners, the result is a *Business Information Entity* representing the distributed catalogue data made up of a set of smaller *Business Information Entities* that are its component parts. Thus, the description of an item is identified as a *Business Information Entity* for this *Business Process*.

In order to improve interoperability across *Business Contexts*, *Business Information Entities* must be based on a basic library of clearly defined semantic constructs to help ensure that they will inter-operate. This library must include a set of globally agreed semantic definitions such as those that will be contained in the *UN/CEFACT Core Components Library*.

A *Business Information Entity* is a *Core Component* used in a specific *Business Context* and given its own unique name. As *Basic Core Components* are single pieces of business information, when they are used directly in specific *Business Contexts* the structure (components) does not change, but values may be restricted.

Just as each *Basic Business Information Entity* must ultimately be based on a *Basic Core Component*, each *Aggregate Business Information Entity* must ultimately be based on an existing *Aggregate Core Component*. The underlying *Aggregate Core Component* identifies the generic, standard definition of business information that is being used in the *Aggregate Business Information Entity*. The definition of the *Aggregate Business Information Entity* is based upon the generic description, being then modified and enhanced to be specific to the *Business Context* in which the *Aggregate Business Information Entity* is used. An *Aggregate*

⁵ The UN/CEFACT Modelling Methodology (UMM) is a methodology for *Business Process* and information modelling that is based on the Unified Modeling Language.

⁶ The ebXML Business Process Analysis Worksheets & Guidelines can be found at <http://www.ebxml.org/>
Core Components Technical Specification V2.01
Part 8 of the ebXML Framework

Business Information Entity is thus directly tied to a specific *Business Process* or to a *Business Context*. (See Section 5.6 for a fuller understanding of *Context*.)

[Example]

An invoicing *Business Process* uses a piece of information such as **Invoice. VAT_ Tax. Amount.* Invoice. VAT_ Tax. Amount** is a *Basic Business Information Entity* that is based on the *Basic Core Component* of **Invoice. Tax. Amount**. The invoicing *Business Process* is using **Invoice. Tax. Amount** in a specific *Business Context* where the *Business Process Context* = **Purchasing**, and the *Geopolitical Context* = **EU**. Therefore the application of *Context* adds a specialised definition, but in all other respects the *Basic Business Information Entity* is the same as the associated *Core Component* of **Invoice. Tax. Amount**, i.e. it has the same structure and *Data type*.

*In accordance with rule [B17], VAT would be defined as Value Added Tax in the definition for the *Basic Business Information Entity* of **Invoice. VAT_ Tax. Amount**.

When an *Aggregate Business Information Entity* has a complex *Property*, that *Property* is represented by an *Association Business Information Entity*. *Association Business Information Entities* are specific to their *Business Context*, and relate to *Association Core Components*. This relationship is the same as the relationship between *Aggregate Business Information Entities* and *Aggregate Core Components* and between *Basic Business Information Entities* and *Basic Core Components*. (See Figure 6-2 for a better understanding of this concept.)

An important aspect of information interoperability is that each *Business Information Entity* is based upon a *Core Component* structure and associated semantic definitions derived from the *Core Component Library*. The structure and definition of the *Business Information Entity* may be a refined and/or restricted *Version* of the structure and definition of the *Core Component* upon which it is based.

The following section describes the procedures by which the content of the UN/CEFACT ebXML compliant *Core Component Library* may be developed and maintained.

5.1.2 How to use UN/CEFACT Core Components

This section provides a procedure for the more technical user who wants to understand how to use *Core Components*. It assumes the user is dealing with an established set of *Core Components*, *Context Categories* and metadata/storage. The established set of *Core Components* being used should be based on those discovered, harmonized, and published by recognized standards groups. It is further assumed that the recognized standards group(s) and other business association group(s) have also made available sets of *Business Information Entities* for use in a published set of *Business Processes*.

5.1.2.1 Core Components and Semantic Interoperability

Today, the e-business community generally agrees on the definition of a standard message structure expressed as an UN/EDIFACT Message Implementation Guide (MIG), an XML *Core Components Technical Specification V2.01*
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schema, or similar syntax specific representation. UN/CEFACT will produce standards based representations of these artefacts for implementation.⁷

Under the *Core Components* concept, defining and storing *Core Components* and associated *Context* mechanisms occur prior to the creation of a MIG or an XML schema. In this manner, the focus of the user changes from examining the MIG or XML schema, and moves to an examination of the semantic models. Accordingly, interoperability between syntaxes no longer depends on analysing specific instances, but naturally occurs during the *Business Process* model definition phase.

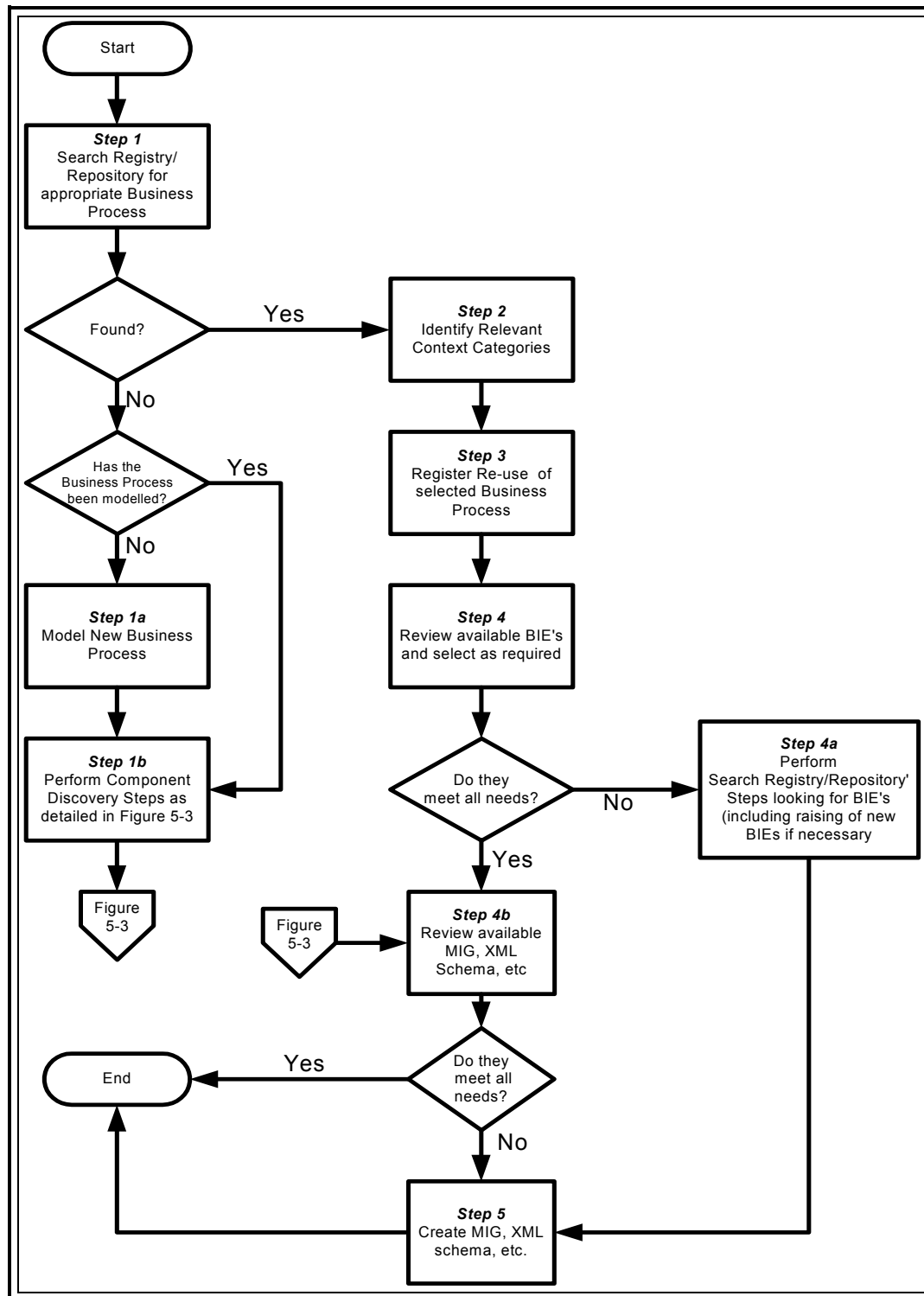
5.1.2.2 Overall Discovery and Document Design

Overall discovery and document design can be thought of as a series of steps that starts with determining the availability of existing *Business Process* definitions and ultimately results in standard business documents. Figure 5-1 illustrates this process. Specific steps to be followed are further described below.

- Step 1: Search the registry/repository⁸ – A search should be made in the registry to find the *Business Process* that meets the business requirement.
- Step 1a: If no existing *Business Process* is found to be appropriate, then the new *Business Process* should be modelled using *UN/CEFACT Modelling Methodology* and submitted to the registry.
- Step 1b: Conduct a thorough analysis of the business information requirements by following the *Core Component* discovery steps (Section 5.2)
- Step 2: Identify relevant *Context Categories* – Access the registry interface and identify the relevant *Context Categories* of the selected *Business Process* by determining the following *Context Categories* (See Section 6.2.2):
- *Business Process Context* – Identify the interaction between trading partners to achieve a given business objective.
 - *Product Classification Context* – Determine the goods or services concerned in the collaboration.
 - *Industry Classification Context* – Determine the relevant trading partner industries.
 - *Geopolitical Context* – Determine where the *Business Process* is to be conducted. Determine if the *Business Process* crosses regional, national, or international boundaries.
 - *Official Constraints Context* – Determine any legal restrictions or requirements on this *Business Process*.

⁷ The term XML schema includes XML Schema as defined in World Wide Web Consortium XML Schema Part 1: Structures XML Schema Definition Language, XML Document Type Definitions, Schematron, SOX, Relax NG, ASN.1, XDR, or any other notation that specifies the form and information content of an XML document.

⁸ See the list of referred documents for explanation of 'registry/repository' within the ebXML architecture.

Figure 5-1. Steps from Business Process Discovery to Core Component Discovery

- *Business Process Role Context* – Identify the roles played by the trading partners. These can be derived from the *Business Process*.
- *Supporting Role Context* – Determine what other significant parties will be using the data in the messages. Determine their role in the overall process.
- *System Capabilities Context* – Determine any major restrictions derived from system, a class of systems or standard in the business situation. Identify the type of system.

The registry will provide a list of pre-defined *Business Information Entities* that are available to the selected *Business Process*, and which meet the *Context* criteria specified. These will come with identified relationships to the *Core Components* upon which they are based, and the *Context* rules/values that fully qualify them. The registry should also return partial matches with an indication of how closely they match the specified *Context*.

- Step 3: Register re-use of the selected *Business Process* in the set of *Contexts* in which it is being used. Registration of each re-use ensures the gradual development of a library of re-uses that will be available to the widening user base.
- Step 4: Review the available *Business Information Entities* and select the appropriate subset that meets the needs of the *Business Process* requirement that is being developed.
- Step 4a: If the *Business Information Entities* available for the specific *Business Process* do not address all of the data requirements, the registry of all *Business Information Entities* should be searched to see if the appropriate *Business Information Entities* already exist. The procedure for this is described under Search Registry/Repository (Section 5.2), which includes the steps to raise any new *Business Information Entities*, required because no appropriate *Business Information Entities* can be found.
- Step 4b: If all required *Business Information Entities* are already available, review the available MIG, XML schema, and/or other syntax-specific message description and select the appropriate one(s) for use that meet the technical implementation/solution requirements identified. If no appropriate technical implementation/solution is already available, continue with Step 5 to create new ones.
- Step 5: Create MIG, XML schema, etc. – The resulting semantic model (the set of *Business Information Entities*) is manually or programmatically rendered into a syntax-specific message description. The resulting MIG, XML schema or other syntax specific message description is submitted to the registry where it is associated with the *Business Information Entities* it represents.

[Note]

When selecting a *Business Process* and defining the required messages, searches may be made against potential trading partners' data requirements and processes. The *Context Rules* and *Business Information Entities* represent useful metadata in determining the best possible match between the user and their partners. The fact that the rules can be made available in processable formats means that the comparison itself could be automated and made available as a feature of the repository implementation.

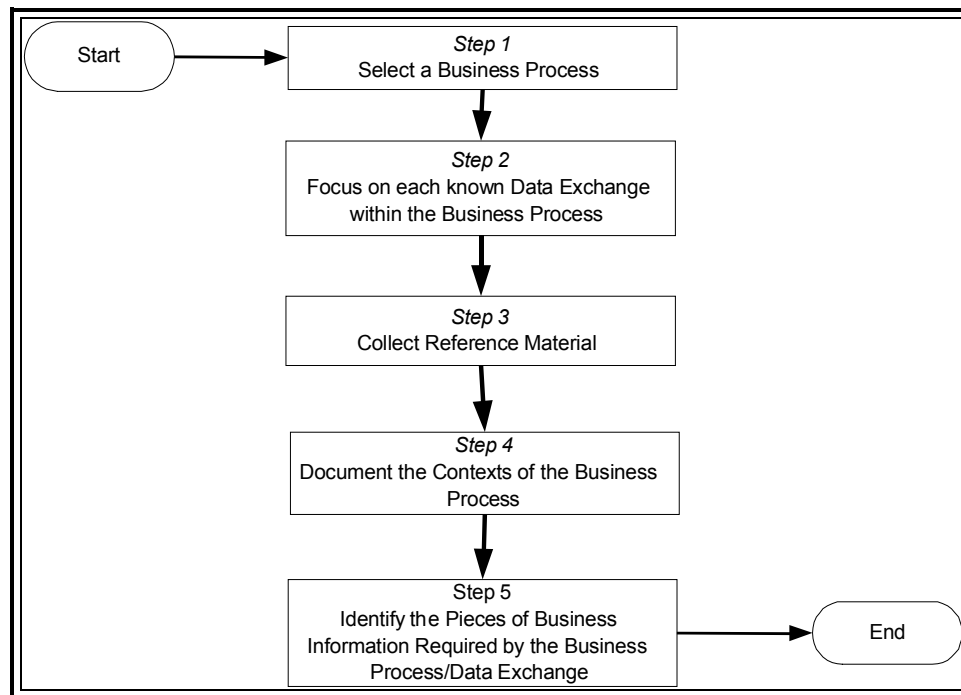
5.2 Core Components Discovery

The steps in *Core Component* discovery are preparation and search for candidate common information building blocks. In order to properly define the UN/CEFACT *Core Component Library*, domain or project groups must follow the prescribed preparation and search steps as outlined in the following subsections. See the *Core Components Primer* supplemental document for a detailed end-to-end example of discovering *Core Components*.

5.2.1 Core Component Discovery – Preparation Steps

These steps identify pieces of business information such as *Aggregate Business Information Entities* and their properties. An analysis of *Business Information Entities* from a variety of similar *Business Processes* leads to the underlying core structures and semantics of the *Core Components*. Figure 5-2 graphically portrays the prescribed preparation steps that are described below.

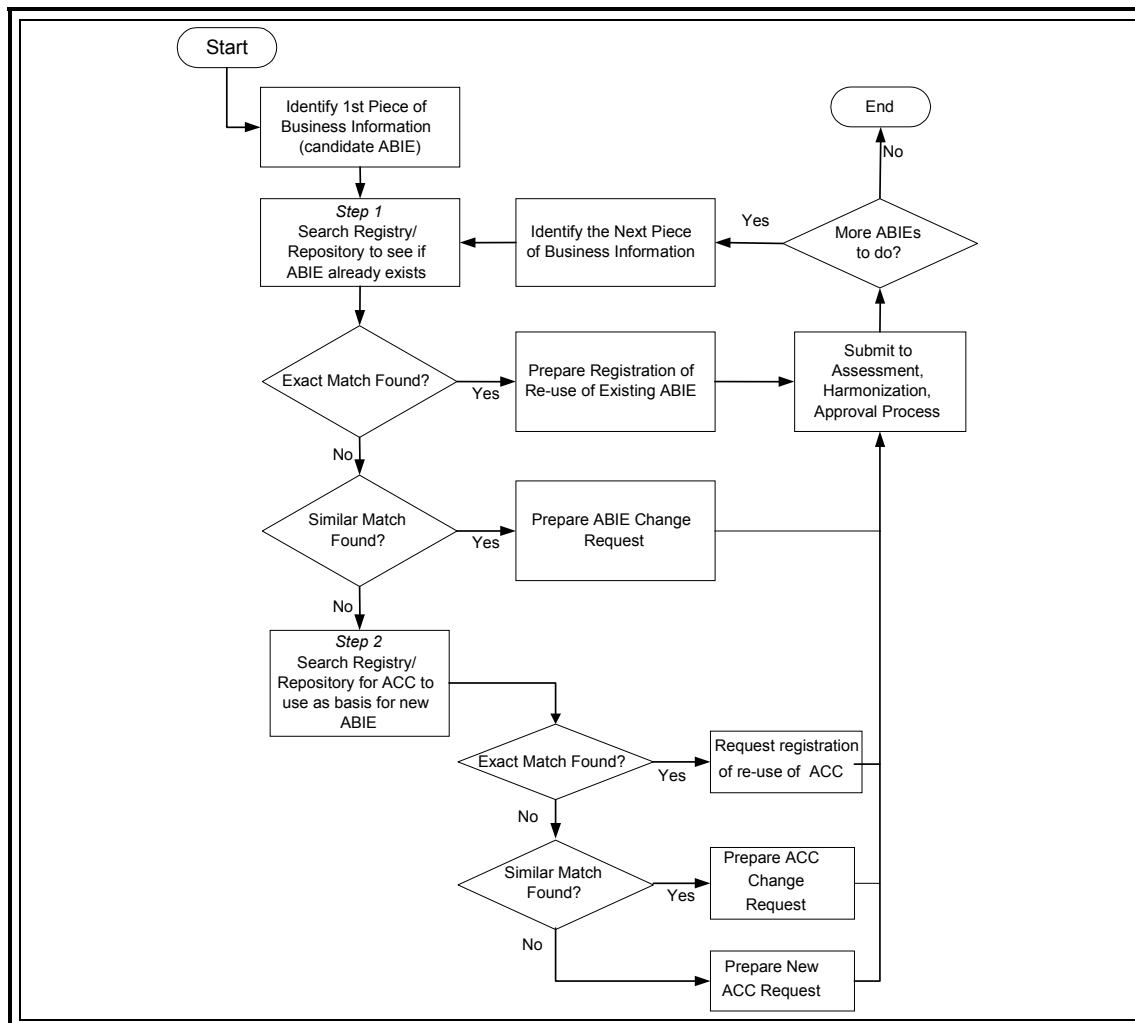
- Step 1. Select a *Business Process* that provides a wide range of business information content within the domain being addressed. The broader the range of the chosen *Business Process*, the greater the opportunity to discover candidate *Core Components*. (e.g. **Make a Payment, Place an Order, Issue an Invoice**)
- Step 2. Focus on each known data exchange within the *Business Process* that contains key business information (e.g. **Payment Order, Purchase Order, Invoice**).
- Step 3. Collect all the business information and associated details relevant to the chosen business exchange for the previously identified *Business Process*. Use a cross section of Message Implementation Guides, RosettaNet Partner Interface Process (PIP), Business Process Information Models (BPIMs) or similar domain-specific artefacts as sources of information about the business exchange.
- Step 4. Document the *Context(s)* of the *Business Process* being analysed. Identify what is applicable for each category of *Context*, i.e. whether it is none, in all *Contexts*, or one or multiple specific *Context* value(s). (See Section 5.6 for a more detailed explanation of how to determine *Context*).
- Step 5. Compile a list of the pieces of information required for the *Business Process*.
 - If starting from a model (UN/CEFACT recommends UMM models of *Business Processes*), identify the objects (*Aggregate Business Information Entities*) that are needed.
 - If not starting from a model, collect the pieces of information into object-like groups (*Aggregate Business Information Entities*). It is important to recognise and avoid pieces of information that are purely used for legacy system or syntax purposes.
 - For each *Aggregate Business Information Entity*, capture its unique semantic definition, any *Business Terms* by which it is commonly known and any other information identified in the previous steps.
 - At this point of preparation, and before searching the registry/repository, these are candidate *Aggregate Business Information Entities*.

Figure 5-2 Preparation Steps

5.2.2 Core Component Discovery – Search Registry/Repository

Having identified the need for a number of candidate *Aggregate Business Information Entities* in the preparation Step 5 identified in Section 5.2.1 above, repeat the following steps for each *Aggregate Business Information Entity*, as shown in Figure 5-3.

- Step 1** It is recommended to start with *Aggregate Business Information Entities* at the highest level of aggregation. Search the *Catalogue of Business Information Entities* for an existing *Aggregate Business Information Entity* with the same definition.
- **Exact Match:** If there is an *Aggregate Business Information Entity* with a definition and composition that meets the business need, register the re-use including *Business Context* and any *Business Terms*. (Go to next *Aggregate Business Information Entity*)
 - **Similar Match:** If there is an *Aggregate Business Information Entity* with a definition that potentially could be modified to meet the business need, prepare an *Aggregate Business Information Entity* change request for submission to the harmonization and approval process. Proposed changes have to be assessed to ensure that any adaptation is sensible, reasonable and applied in the most appropriate way. This, together with registration of re-uses, will ensure the availability of a real and usable pool of material to a widening user base. Include re-use, *Business Context* and any *Business Terms*. (Go to next *Aggregate Business Information Entity*)
 - If there is not an *Aggregate Business Information Entity* with a suitable definition, go to Step 2.

Figure 5-3 Search Steps**[Note]**

Exact is 'a precise match in all details'.

Similar is 'of the same kind without being identical'.

Employment of common sense and good judgement is essential in making these determinations.

Step 2 Search the *Catalogue of Core Components* for an existing *Aggregate Core Component* that has the appropriate generic definition and structure from which the new required *Aggregate Business Information Entity* can be formed.

- If there is an existing *Aggregate Core Component* with a definition and structure that meets the business needs, register the re-use of the *Aggregate Core Component* as an *Aggregate Business Information Entity* including the definition and name

created according to the *Naming Convention*. (Go to next *Aggregate Business Information Entity*)

- If there is an *Aggregate Core Component* with a definition and structure that potentially could be modified to meet the business need, prepare an *Aggregate Core Component* change request for submission to the harmonization and approval process. Include the re-use of the *Aggregate Core Component* as an *Aggregate Business Information Entity*, including the definition and name created according to the *Naming Convention* (See Section 6.1.4), and the *Business Context* in which it is used. (Go to next *Aggregate Business Information Entity*)
- If there is not an *Aggregate Core Component* with a suitable definition and structure, prepare a new *Aggregate Core Component* request for submission to the harmonization and approval process. Include the re-use of the *Aggregate Core Component* as an *Aggregate Business Information Entity*, including the definition and name created according to the *Naming Convention*, and the *Business Context* in which it is used. (Go to next *Aggregate Business Information Entity*)

5.2.3 Core Component Discovery – Basic and Association Business Information Entities

This procedure is exactly the same as that described in Section 5.2.2, except that the reader should read *Basic* or *Association Business Information Entity* for *Aggregate Business Information Entity* and *Basic* or *Association Core Component* for *Aggregate Core Component*.

5.2.4 Data Types, Property, and Identifying Similarities

When looking for similarities between existing *Business Information Entities* and *Core Components*, and those *Business Information Entities* that are required but not present, the user should consider *Property* and *Data Types*. If a *Core Component* is found that has a very similar *Property* to an existing *Core Component*, but a different *Object Class*, then that *Property* should be used for the new *Core Component* that is to be created where the basic structure and semantics are similar. The key to the similarities of *Property* is that they share a *Data Type*. If a new *Core Component* is requested, these identified similarities at the level of *Property* should also be identified.

[Example]

There is an existing *Basic Business Information Entity* for **Invoice. Total_ Tax. Amount**, based on a corresponding *Basic Core Component*. The user needs a *Basic Business Information Entity* for **Order. Total_ Tax. Amount**, but after searching the registry/repository determines this does not exist. Because both the existing *Basic Business Information Entity* of **Invoice. Total_ Tax. Amount** and the desired *Basic Business Information Entity* of **Order. Total_ Tax. Amount** share strong similarities—they are the same *Property* and share a specific *Data Type*, but are applied to different *Object Classes*—the user would identify this similarity, and use it to take the appropriate action in the discovery process.

5.3 Preparation for Submission

Following the search of the *Core Component Library*, there may be a need to prepare submissions for the harmonization and approval process. (See Section 5.4)

- Preparation of submissions will be carried out by the business domain or project group making the discovery.
- Harmonization and approval will be conducted by appropriate Assessment, Harmonization and Approval teams to be set up as part of the UN/CEFACT electronic business standards forum.

The different types of submissions that may be required are detailed below.

The following submissions are simple documented requests, following procedures to be established by the Assessment, Harmonization and Approval teams.

- To request registration for a re-use of an existing *Aggregate Business Information Entity*
- To make a Change Request for an existing *Aggregate Business Information Entity*
- To make a Change Request for an existing *Aggregate Core Component*

The following submissions require more significant preparation, as part of the *Core Component* working methodology, to be carried out by the business domain or project group conducting the discovery and analysis.

- Preparation for Requesting a new *Basic Core Component*
- Preparation for Requesting a new *Association Core Component*
- Preparation for Requesting a new *Aggregate Core Component*
- Preparation for Requesting a new *Basic Business Information Entity*
- Preparation for Requesting a new *Association Business Information Entity*
- Preparation for Requesting a new *Aggregate Business Information Entity*

Each of these needs to initially follow the same steps in applying the *Naming Convention* (Section 6.1.4) to arrive at the name of the new item.

5.3.1 Applying the Naming Convention to a New Item

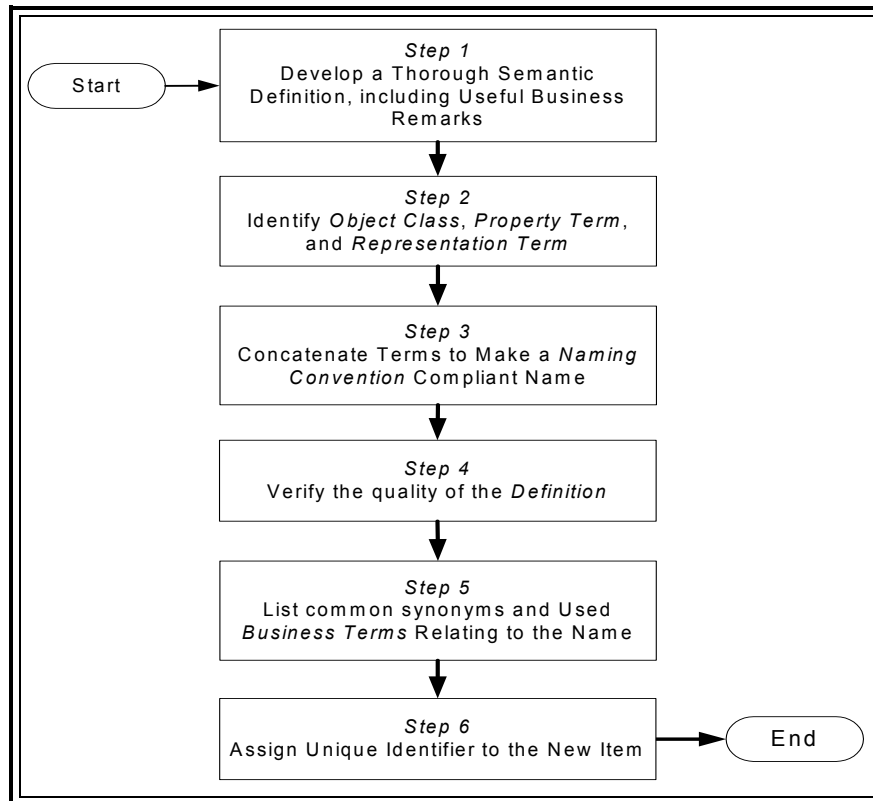
For all new items, the *Naming Convention* and associated rules defined in Section 6.1.4 must be applied. Figure 5-4 shows the steps that must be taken, each of which is described in the accompanying text.

Step 1. Develop a thorough semantic definition and include any useful business remarks as comments. Semantic definitions should:

- use words different to those being defined provided that no ambiguity is thereby introduced,

- be globally applicable,
- be generic (i.e. able to cover the same business concept for different products/services),
- be applicable across multiple industries or domains, and
- be simple and clear to enable unambiguous translation to other languages

Figure 5-4 Applying the Naming Convention



Step 2. Follow the *Naming Convention for Core Components or Business Information Entities* (Section 6.1.4) to identify as appropriate:

- *Object Class Term*
- *Property Term*
- *Representation Term*
- *Qualifier Term(s)*

[Note]

When creating names for *Business Information Entities* that have properties identical to those of other existing *Business Information Entities*, the name of the *Property* should be used to validate the correct naming of the new *Business Information Entity*. Consistent naming of similar *Business Information Entities* and *Core Components* contributes to their usability.

Step 3. Concatenate the terms to create a *Naming Convention* compliant *Dictionary Entry Name*.

[Note]

The resultant name may seem artificial in that it might not be the same as any of the *Business Terms* used for that concept. However, rigor of the *Naming Convention* enables future translation of the name into other languages.

Step 4. Verify the quality of the definition by adding the words “[*Dictionary Entry Name*] is” to the front of the definition, where [*Dictionary Entry Name*] is the agreed name.

Step 5. List common synonyms or *Business Term(s)* that are used within the domain to identify the piece of business information (e.g. **Account Number**, **Account Identifier**).

[Note]

Some *Business Terms* are used for several different pieces of business information. It is perfectly acceptable to have the same *Business Term* listed as a synonym for two or more pieces of business information. For example, as shown in Figure 5-5, **Account Number** is a synonym for **Financial Account Identifier** and for **Sales Account Identifier**.

Figure 5-5 Core Component Catalogue Extract

Temp Identifier	Definition	Remarks	Business Terms	CCT	Dictionary Entry			
					Name	Object Class	Property Term	RepresentationTerm
C00010	A Financial is a service through bank or other organisation through which funds are on behalf of a or goods or are supplied on	Not a general ledger.	Account	n/a	Financial Account. Details	Financial Account	Details	
F00012	A Sales Account is relationship a vendor and a customer.	Usually includes a contract specifying the terms of	Account	n/a	Sales Account. Details	Sales Account	Details	

Same Business Term

Step 6. Assign a Temporary Identifier to the new item in the form of a 6 digit alphanumeric string, chosen at the discretion of the user.

5.3.2 Preparation for Submitting New Items

This section contains illustrative procedures for submitting new items. The following subsections address submitting new *Aggregate Core Components*, new *Basic Core Components*, and new *Aggregate Business Information Entities* that re-use an existing *Aggregate Core Component*. Similar submission procedures will need to be used for submitting *Association Core Components*, *Basic Business Information Entities*, and *Association Business Information Entities*.

5.3.2.1 New Aggregate Core Components

The development of a new *Aggregate Core Component* requires adherence to the *Naming Convention* rules for naming and definition. Once named, the new aggregate's constituent parts need to be individually examined. The following diagram and text describe the procedure to be followed.