Core Component Discovery and

Analysis

v1.04

Core Components Team

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1   **Status of this Document**

This document specifies an ebXML Technical Report for the eBusiness community.

Distribution of this document is unlimited.

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

This version:

    www.ebxml.org/specs/ebCCD&A.pdf

Latest version:

    www.ebxml.org/specs/ebCCD&A.pdf

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3 Introduction

3.1 Summary of contents of document

This document describes how to identify common business processes and how to define the core components and the influence of context drivers. It also describes the importance of cross-domain analysis of the resulting definitions in order to promote interoperability and includes examples illustrating two possible approaches.

3.2 Audience

The target audience for this document includes business people with technical knowledge as well as technical people with a business interest.

4   Design Objectives

The objective is to provide guidance for the discovery and analysis of Core Components and common Business Processes used in the interchange of business information.

By describing a systematic approach this document assists users in the discovery, analysis and documentation of common Business Processes and Core Components, including the impact of context, that are used in information exchange. It also explains that the results of these activities should be compared against entries found in public repositories and that these comparisons will result in either the creation of new or the updating of existing entries within the repository.

4.1   Caveats and assumptions

This document is dependent upon tools and developments available at the time of its writing. It is expected that there will be rapid development of new applications and tools that will facilitate the discovery and analysis of components and processes used in the interchange of business information.

The instructions in this document may clarify for teaching and learning purposes how to determine those business information processes and core components that will comprise an ebXML compliant interchange.

The procedure for submission to an ebXML-compliant Repository is not covered in this document.

5   Discovery and Analysis

Discovery and Analysis consists of finding Core Components and Business Processes together with their context either by means of research and analysis of business requirements or via searching an ebXML Repository.

- Context: the addition of a semantic layer that describes the business use of an otherwise neutral set of components. When a business process is taking place, the context in which it is taking place can be specified by a set of contextual categories and their associated values. Context is used in two distinctive ways in the Discovery and Analysis process:

    - In the determination of exact business data requirements.

    - To provide a basis for harmonization of cross industry requirements.

- Discovery: the process of searching for and documenting the business data requirements for exchanging information between trading partners within a given context. A domain-specific team typically performs this work.

    - Discovery may include the harvesting of existing information.

    - It includes documenting both the common data requirements and the context(s) in which they are used.

- Analysis: the process of detailed examination of the discovered business data requirements by a harmonisation analysis team consisting of domain experts:

    - In order to ensure that they are semantically correct.

    - Provide a solution that is harmonized across industries.

    - Encourage reuse in order to maximize interoperability.

These definitions apply to the:

- Documentation of the business and data requirements.

- Finding of business processes and their components already existing in an ebXML-compliant Repository.

- Identification of business processes and their components not yet included in an ebXML-compliant Repository.

These activities are initially performed by a domain-specific individual or team, to discover work already done, and then by the harmonization analysis team when preparing for actual submission for updates to the repository.
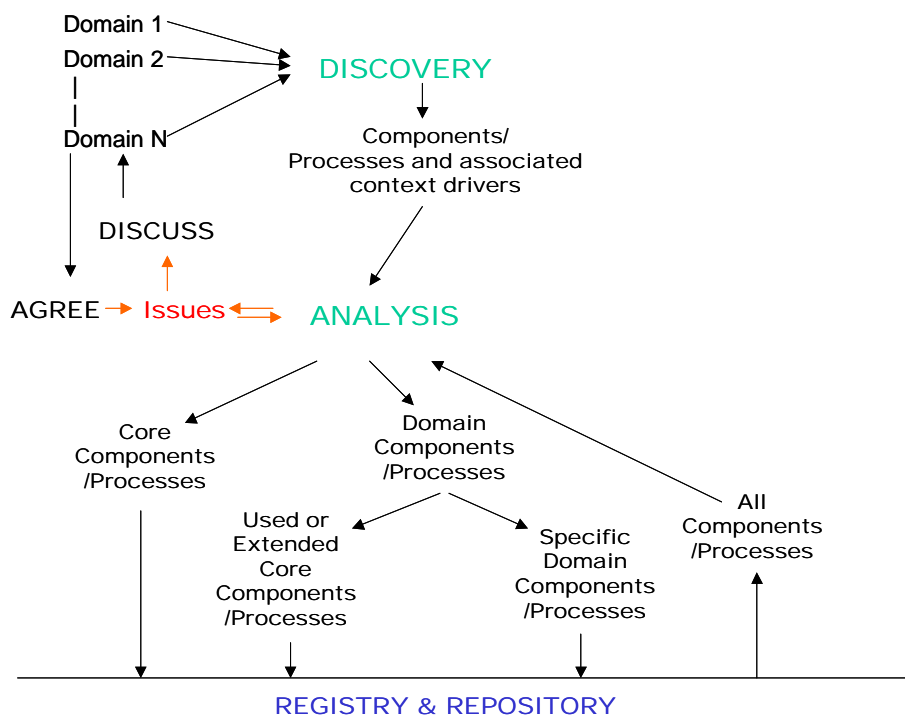
Figure: Discovery and Analysis Diagram

The documentation activity assists domain experts [finance, transport, travel, materials management, etc.] to express their business exchange requirements. It includes the collation of business process and information requirements and the context within which these requirements exist. For example, the typical order might include a buyer, seller, product/quantity details, payment and shipping. However, if the product involves hazardous materials, different geographic regions may require different information.

The role of the harmonization analysis group is to ensure that the information requirements identified as a result of the discovery process are met with a semantically concise solution, which is structured in a harmonized manner to support the ebXML cross industry interoperability goals.

Assumptions:

- A set of globally officially recognised business harmonization procedures for the resolution of any domain-specific conflicts exists.

- A set of globally officially recognised rules for the definition of core components exists.

- An internationally authorised domain-neutral analysis process to which requests for the addition of new, or updates to existing, repository information can be passed for approval is in place.

5.1   Discovering existing or new business processes and core components

Search within an ebXML-compliant Repository for similar business processes and components.

Assumptions:

- An ebXML-compliant Repository of Business Process models (in UMM) is in place.

- An ebXML-compliant Repository of Core Components is in place.

The following flowcharts illustrate the different decision paths to take depending on whether or not the discovery activity identifies existing or new business processes and core components.

5.1.1 Domain-specific business process discovery activity
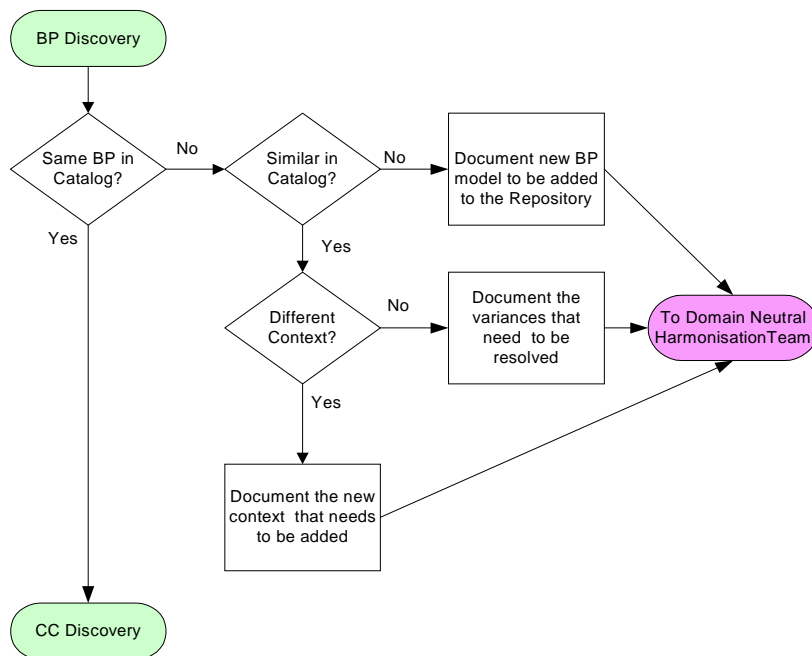
Legend: BP Business Process

                 CC Core Component

5.1.2 Domain-specific core component discovery activity
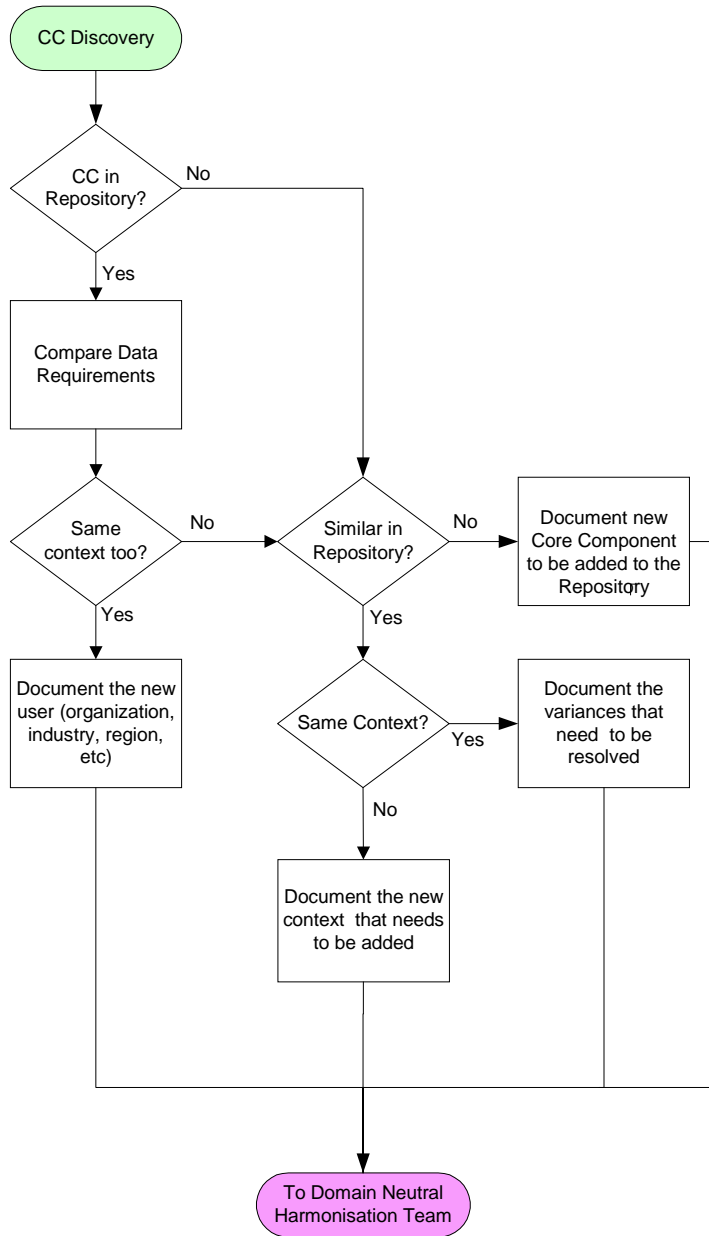
Legend: BP Business Process

               CC Core Component

5.2   Harmonization analysis activity

The harmonization team of domain experts will accept requests for the addition of new, or updates to existing, repository information. The purpose of harmonization is to ensure consistency of business process models and core components across domain-specific requests. Requests may be for business processes, or core components, or both. The following flowcharts illustrate the different decision paths to take depending on whether or not the discovery activity identifies existing or new business processes and core components.

5.2.1 Core component harmonization activity
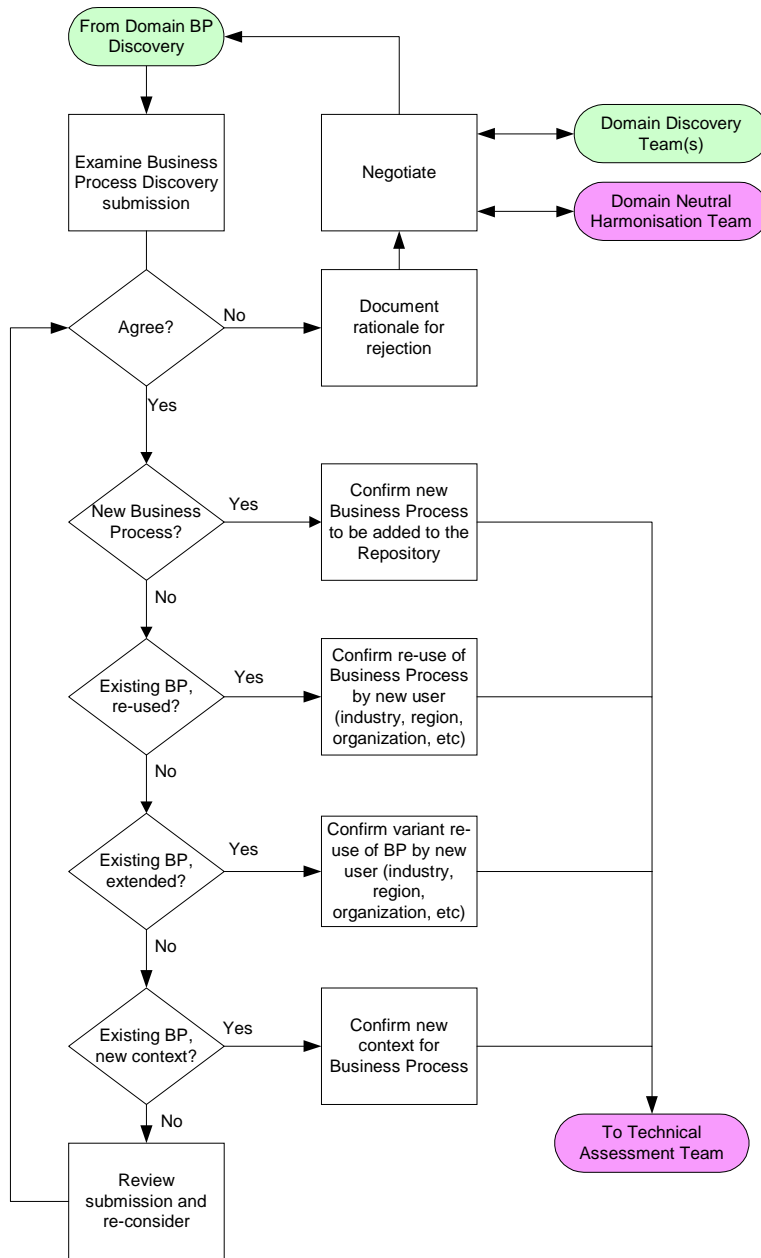
Legend: BP Business Process

               CC Core Component

5.2.2 Core component harmonization activity
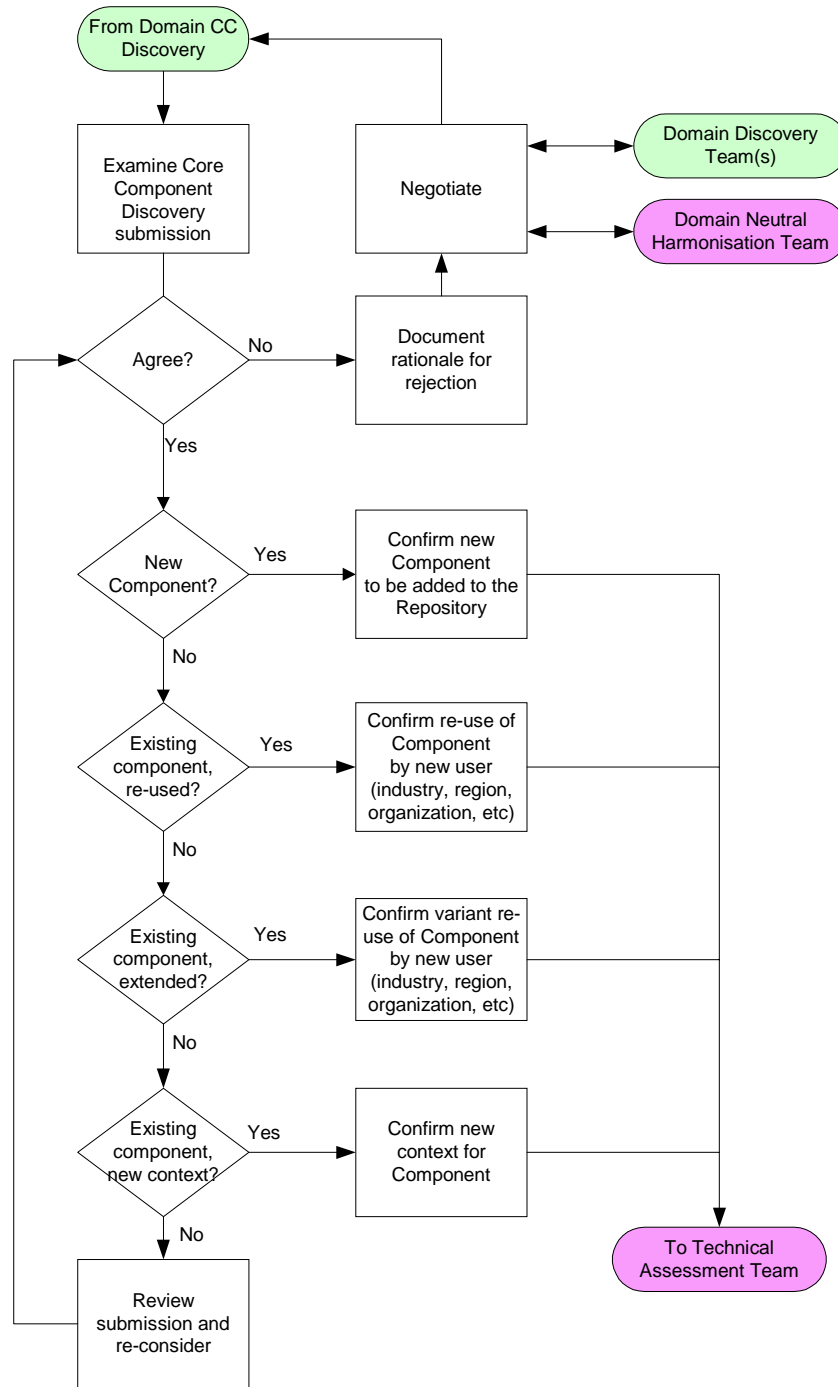
Legend: BP Business Process

               CC Core Component

6   Disclaimer

The views and specification expressed in this document are those of the authors and are not necessarily those of their employers. The authors and their employers specifically disclaim responsibility for any problems arising from correct or incorrect implementation or use of this design.

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Appendix A

Discovery example - death registry

This example is based on a simplified representation of the process and information requirements for the registration of a decedent in a death registry. In the United States, vital statistics are managed at the state level, and state laws dictate details of how this process is carried out and what information is required.

Basically, this process involves an authorized requester, typically a funeral director, who is licensed to request the registration of a decedent. The authorized requester interacts with the State level registration authority, and supplies detailed information about the decedent. Once all required information about the decedent is collected, a death certificate is issued. Subsequent to this, qualified organizations can inquire about the decedent. These inquires are of two forms, a confirmation that the decedent is registered or detailed information regarding the circumstances of the death.

There are two major external beneficiaries of the information collected in this process, the Center for Disease Control, and the Social Security Administration. These outside agencies, and the subsequent inquiry reporting are outside of this analysis process, but maybe useful for future Collaboration analysis.
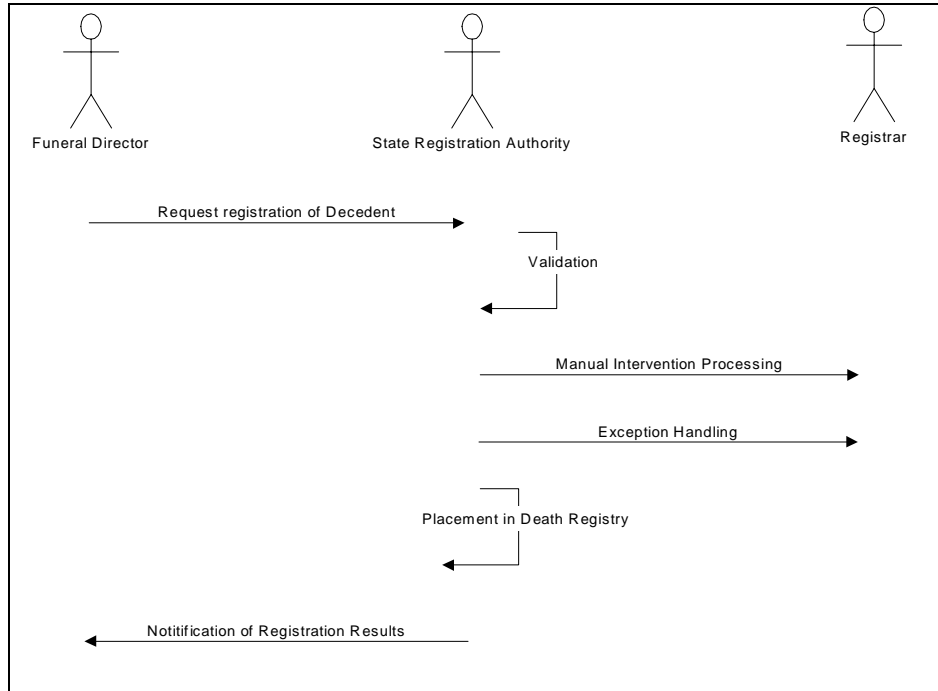
Figure 1: Activity model for registering a decedent.

Information models

In the Registration Request Business Document in this business collaboration, there are three primary information components: Registrar/State, Requester/Funeral Director, and the decedent. The first two, the role players, are of such similar information requirements that they are both shown in Registration. Below are the information models for the Registrar/State and Funeral Director [Requester].

The Registrar/State
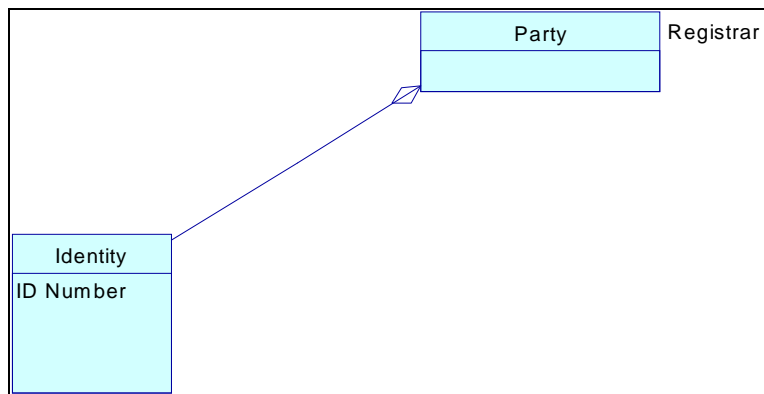
The Requester/Funeral Director
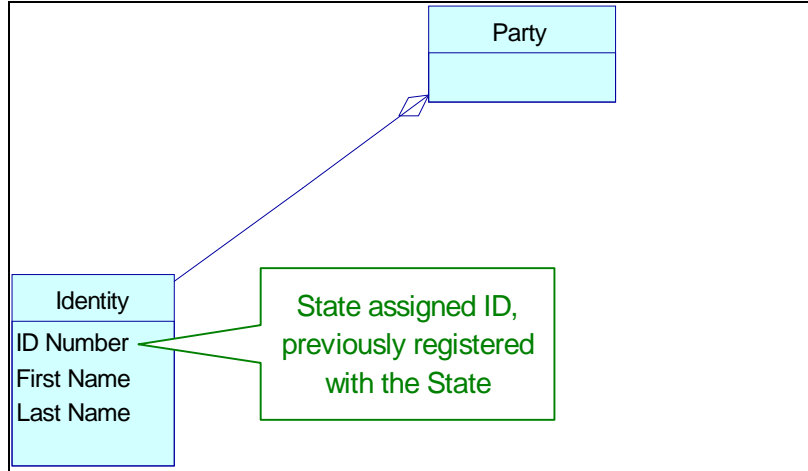
Below are the information models for the Decedent.

The Decedent Information Model
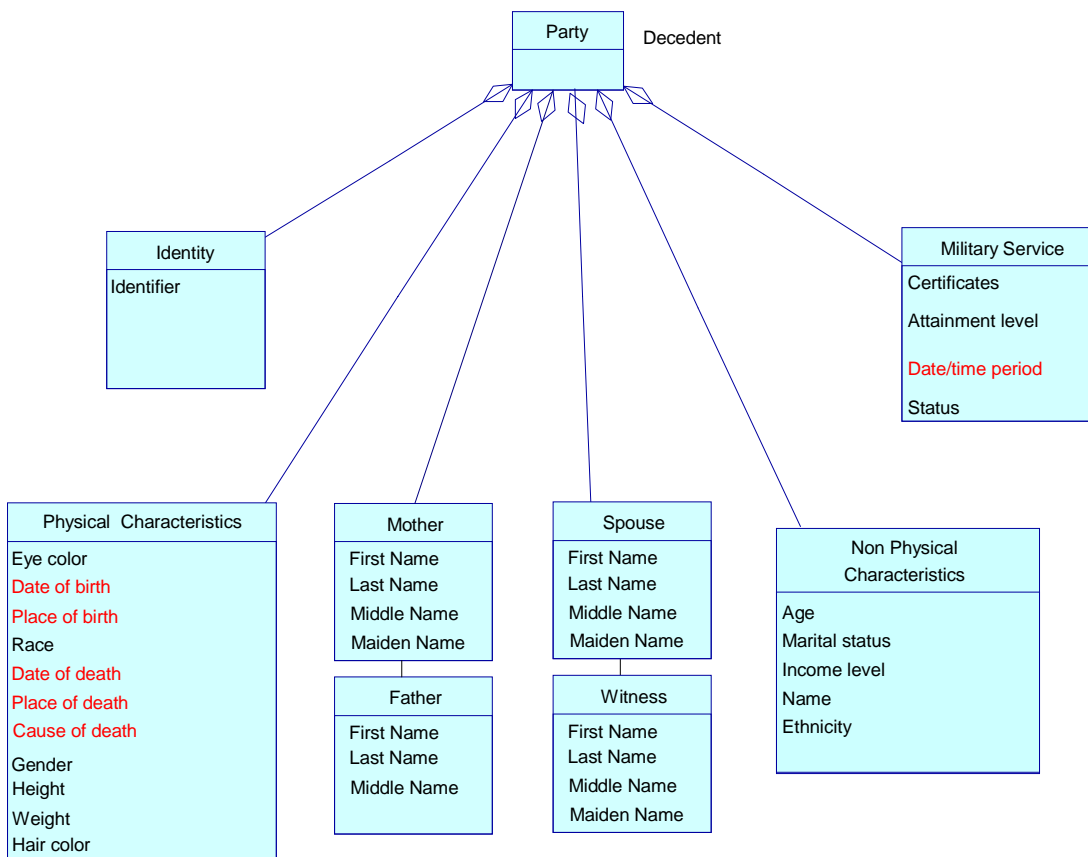
Analysis to determine requirements

Scope

Before proceeding, it is important to identify our overall objectives and which of these objectives is addressed by each decision.

Objectives

- Ensure that the information requirements expressed in the model are met with semantically concise and explicit solutions

- Re-use existing components as far as possible to meet cross industry inter-operability goals

Analysis of information models

The analysis involves the information models involving the three parties as shown above. Two of these information models depict descriptive information about individual parties, which in these cases persons whereas the other information model describes parties which are organizations.

Logical business groups

Using natural language as a content guide, shown below are the highest-level abstractions, or Logical Business Groups for Core Components.

These include:

Parties

Places

Things/Items

Events

And for each of these high level classifications, there could be

Identification

Characteristics
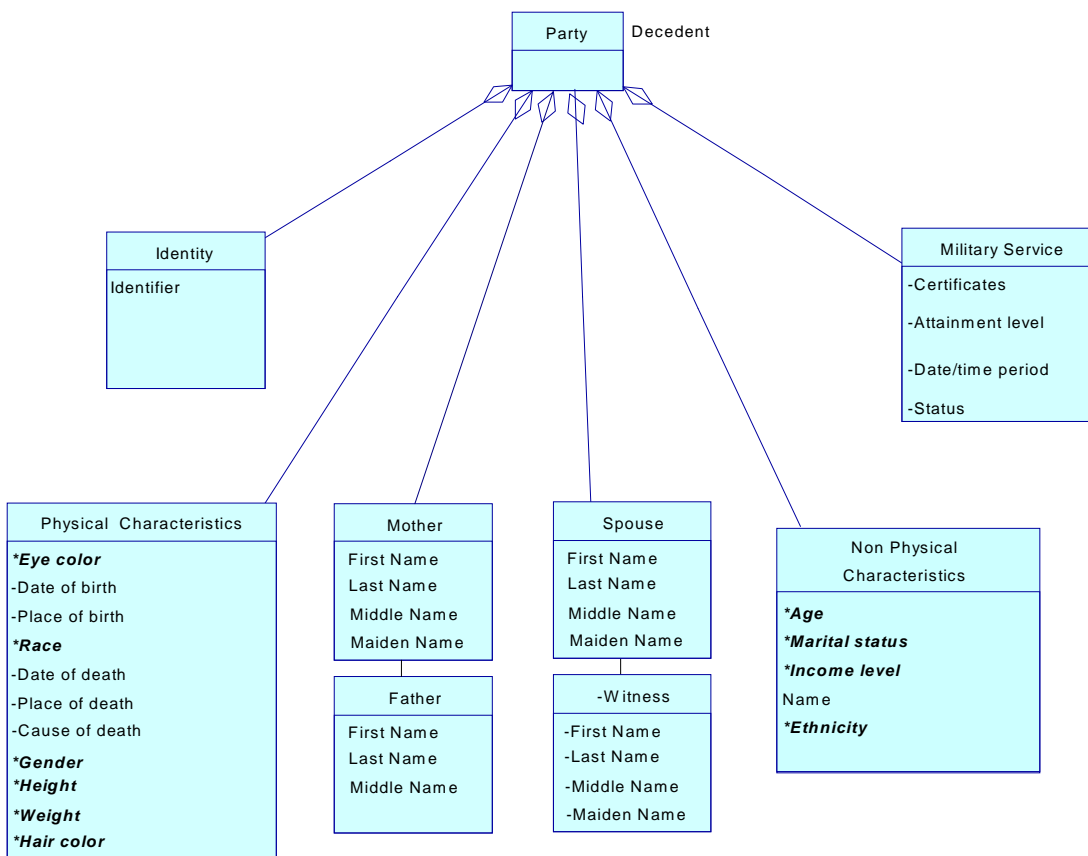
Message level grammatical decomposition

Step 1. determine all associated party details.

Step 2. determine the elements which specify the identity. The ID number and the Name, fall into this category.

Step 3. locate all details associated with the **events**. Events must have a date/time value and a type. Typically, there will be a place/location associated with events that happen to people.

> In this example, the death is an event, which is a focus of this business document. As a result, the death event is a complex object including parties [witness], locations, and other events [causal chain]. Therefore, a second level of decomposition is required in order to fully decompose this event.

Step 4. the definition of related parties. The mother, father, spouse are all parties associated with the decedent. These are distinct from the witness, which is a party associated with the event, the death. It is typical in Business Documents to have other parties, which are not actors in the business process, such as witnesses, relatives, contacts, etc. The fundamental question here is whether they are related to the event or the party (decedent).

In this example, the mother, father and spouse are literally related to the decedent, by definition but are not associated to the event or registration event unless they are also the witness party.

Step 5. definition of places/locations. Places answer *where*, and there are three (3) fundamental types: mailing/delivery, physical (longitude/latitude), and telecommunication.

Discovery results

The resulting core component definitions can be documented in various ways two of which are indicated below.

Party, Individual - Actor

Party Type

Identifier Number
First Name
Last Name
Middle Name
identification.details
code.details
text.details

Party, Individual - Direct Object

Party Type

Identifier Number
First Name
Last Name
Middle Name
identification.details
code.details
text.details

Event

Event Type

Date/time of event
Place of event
identification.details
code.details
text.details
dateAndTime.details
date
time

Human Characteristics with
fixed value ranges

Characteristic type
Characteristic Value
identification.details
code.details
text.details

Human Characteristics with
Units of Measure

Measurement Value
Unit type code
identification.details
code.details
text.details

Experience

Type of experience
Certificates
Attainment level
Date/time period
Status
identification.details
code.details
text.details
dateAndTime.details
date
time

Decedent

Identifier Number
First Name
Last Name
Middle Name

**Human Characteristics
with fixed value ranges**

Eye color
Race
Age
Marital status
Income level
Gender
Hair color
Ethnicity

**Human
Characteristics
with Units of
Measure**

Height
Weight

Death Event

Date/time of death
Place of death
Cause of death

Spouse Indv Party

First Name
Last Name
Middle Name
Maiden Name

Mother Indv Party

First Name
Last Name
Middle Name
Maiden Name

Father Indv Party

First Name
Last Name
Middle Name

Birth Event

Date/time of birth
Place of birth

**Military Service
Experience**

Certificates
Attainment level
date/time period
Status

Appendix B

Discovery example – manufacturing business process

The following steps demonstrate the discovery process using 'manual' techniques rather than automated tools. Users familiar with the business process and business data requirements should perform this activity. Initially, new users may follow these steps in order to fully understand the discovery activity. After that, the use of automated tools is recommended in order to have more consistent, uniform results.

Step 1. Concisely describe the business process/exchange.   Describe the business process at a level of detail sufficient to identify the business information that is required.

> e.g. "A manufacturer wants to send a supplier his requirements for a certain product."

> Then describe the business process to a level of detail that will identify the business information required.

Step 2. Break the business exchange into logical groupings of like business information (families)

> e.g.

Manufacturing Business Exchange

```
                    ┌──────────────┐
                    │   Planning   │
                    │   Schedule   │
                    └──────┬───────┘
          ┌────────────┬───┴────┬────────────┐
  ┌───────────────┐ ┌──────────────┐ ┌──────────────┐ ┌──────────────┐
  │ Document Level│ │Trading Partners│ │Product Details│ │ Requirements │   **Logical Business Group**
  └───────────────┘ └──────────────┘ └──────────────┘ └──────────────┘
```
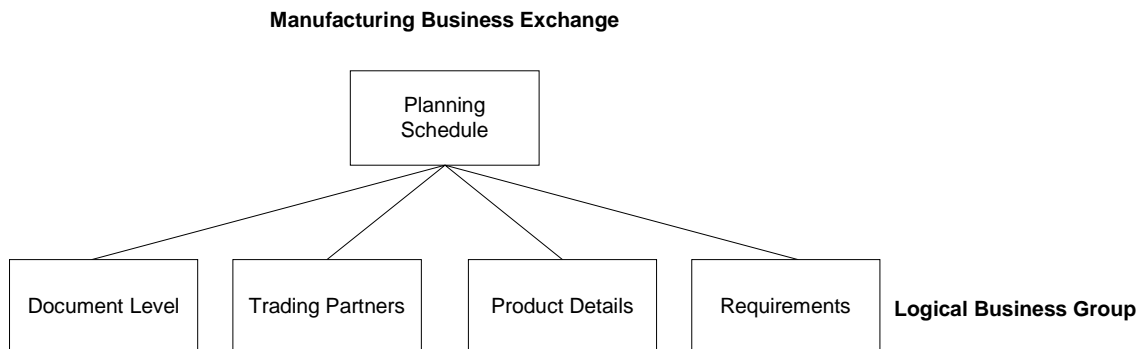
Step 3. Name each logical group (family).

      e.g.   Document Level

               Trading Partners

               Product Details

               Requirements
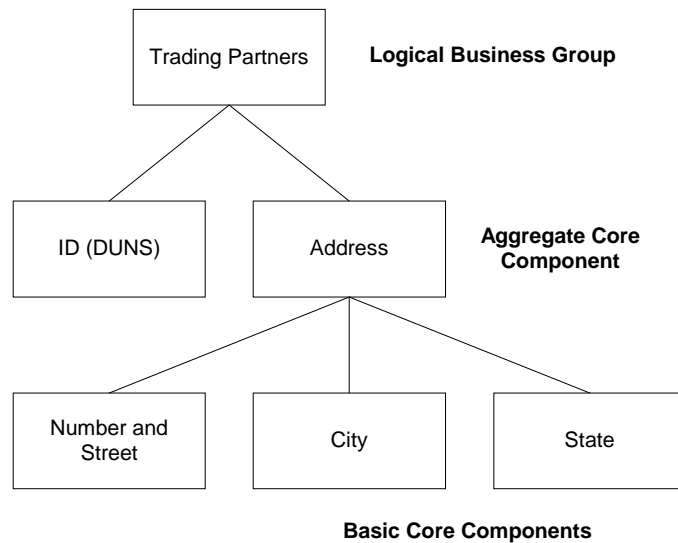
Step 4.   Take each family and break it down into smaller logical units

      e.g.

```
                    ┌──────────────────┐
                    │ Trading Partners │   Logical Business Group
                    └──────────────────┘
                           /    \
              ┌───────────┐      ┌───────────┐
              │ ID (DUNS) │      │  Address  │   Aggregate Core
              └───────────┘      └───────────┘      Component
                             /        |        \
                  ┌────────────┐ ┌────────┐ ┌────────┐
                  │ Number and │ │  City  │ │ State  │
                  │   Street   │ │        │ │        │
                  └────────────┘ └────────┘ └────────┘
                         Basic Core Components
```

Step 5. Write down each detail item. Those that can logically be further broken down are Aggregate Core Components.

      e.g. Address would need to be broken down further as it is an aggregate.

Step 6. Continue the breaking down process until all the business entities have been identified down to the lowest levels.

Step 7. Document the Core Components, both Basic and Aggregate, in the CC Discovery Form.

Once the aggregate core components for the specific business process have been documented, the Core Component Repository should be reviewed to determine if these aggregates are already included.

- If included, then the two aggregates should be compared to determine if the one in the Repository meets the business requirements. This review should include all the information for each of the basic core components listed for the aggregate.

- If the existing information does not meet the business needs, then a comment(s) as to the problem should be documented.

- If a basic core component(s) is missing, then a request should be prepared including in each case the following information:

  - core component type (if applicable);

  - data type (if applicable);

  - category type;

  - definition;

  - dictionary entry name – object class,

  - property term and representation type;

  - remarks,

  - synonyms,

  - and domain group.

- If a required aggregate is missing, then a request should be prepared including the proposed name and definition plus a list of its embedded entities. In the cases where the embedded entities themselves are also newly identified then the appropriate level of information on each of these should also be provided depending on whether they are basic or aggregate core components.

In determining the names of the aggregates and the basic core components, the ebXML Naming Convention document should be used and the name should always be derived from the definition.