# BUSINESS OBJECT DOCUMENT ARCHITECTURE

1.0 Overview

The purpose of the chapter is to describe the architecture of the Open Applications Group Business Object Document (BOD). The Business Object Document is the architecture used to communicate messages or business documents between software applications or components. Each Business Object Document includes supporting details to enable the destination business application to accomplish the action.

Architecturally, the Business Object Document consists of two areas:

- Control Area
- Business Data Area
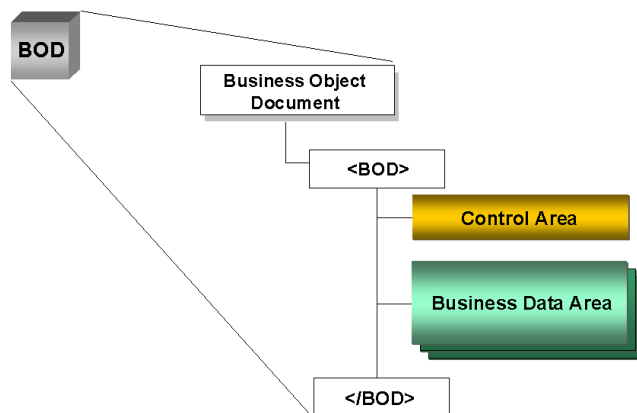
1.1 Control Area

Each BOD contains one unique Control Area located at the beginning of the BOD. The Control Area represents a segment called CNTROLAREA. Segments will be discussed in detail later in this chapter. An illustration of how the Control Area fits into the overall architecture of the Business Object Document is just below:
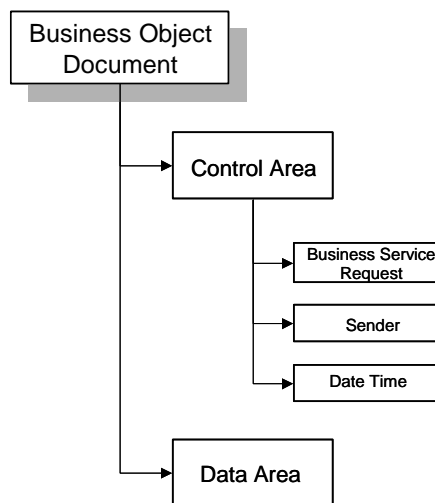
The CONTROL AREA segment is best explained by discussing each of the three major components:

- **- Business Service Request**
- **- Sender**
- **- Date Time**

NOTE: Before deciding what goes into each portion of the Control Area, it is very important to understand that this part of the BOD has two roles:

1. The first role is that of the Control Area for the BOD.

2. The second role of the Control Area is to enable the building and use of a Globally Unique Identifier (GUID). The combination of:

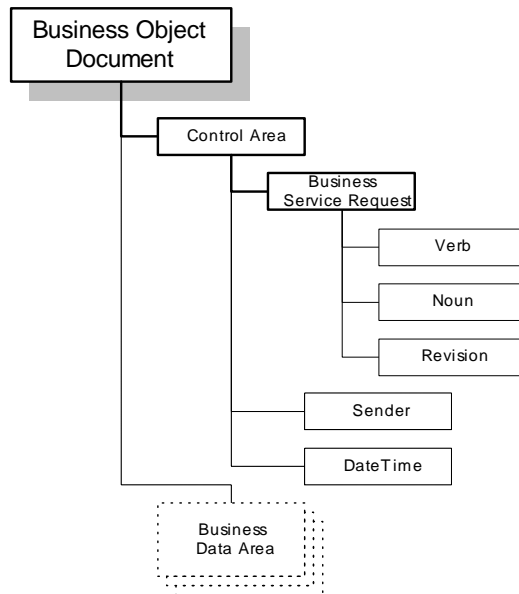- Business Service Request,
- Sender, and
- Date Time,

provides for construction of a Globally Unique Identifier (GUID) that will make each Business Object Document distinguishable. This is a critical success factor to

enable software developers to use the Globally Unique Identifier (GUID) to build the following services or capabilities:

1. Transaction logging,
2. Exception handling,
3. Re-sending,
4. Reporting,
5. Confirmations,
6. Security.

Business Service Request

The Business Service Request (BSR) is the action that the Sender application wants the Receiver application to perform. Business Service Requests are the OAGIS list of common actions for business applications to perform to solve the integration paradigm.

```
┌──────────────────┐
│ Business Object  │
│    Document      │
└──────────────────┘
        │
        │   ┌──────────────┐
        ├───│ Control Area │
        │   └──────────────┘
        │          │   ┌──────────────────┐
        │          └───│    Business      │
        │              │ Service Request  │
        │              └──────────────────┘
        │                     │   ┌──────────┐
        │                     ├───│   Verb   │
        │                     │   └──────────┘
        │                     │   ┌──────────┐
        │                     ├───│   Noun   │
        │                     │   └──────────┘
        │                     │   ┌──────────┐
        │                     └───│ Revision │
        │                         └──────────┘
        │          ┌──────────┐
        ├──────────│  Sender  │
        │          └──────────┘
        │          ┌──────────┐
        ├──────────│ DateTime │
        │          └──────────┘
        │     ┌──────────────┐
        └─────│   Business   │
              │  Data Area   │
              └──────────────┘
```

Note:

Each Business Object Document contains only one Business Service Request. Each time a different Business Service Request is needed, a new Business Object Document must be constructed.

The Business Service Request consists of three items: the Verb, the Noun, and the Revision.

BusinessServiceRequest
   - Verb
   - Noun
   - Revision

VERB

The Verb is the actual service to be performed. The Verb can be thought of as the action verb of the Business Service Request. The Verb can be up to a ten-character field.
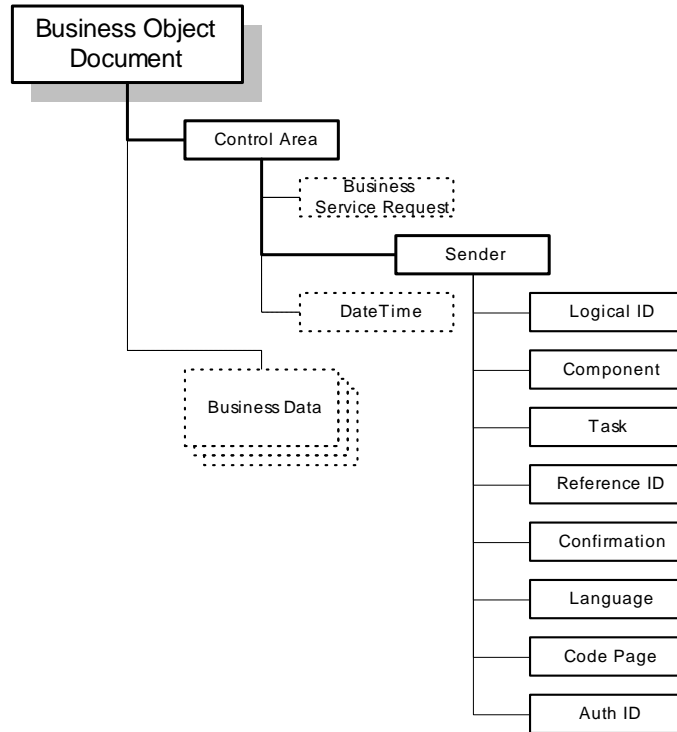
NOUN

The Noun indicates the object the service is to be performed on, such as G/L Journal Entry. The Noun can be thought of as the action item of the Business Service Request. The Noun can be up to a ten-character field.

REVISION

Revision is used to identify the version of the Business Service Request.   The version is a three-digit field, beginning with **001** and incremented each time the Business Object Document specification is changed.   Each BOD has its own revision number to specifically identify the level of that BOD, not just the release version of the OAGIS specification. The specific BOD revision number is documented in each chapter in the OAGIS specification.

Sender

The Sender identifies characteristics and control identifiers that relate to the application that created the Business Object Document. The sender area can indicate the logical location of the application and/or database server, the application, and the task that was processing to create the BOD and a unique identifier for the Business Object Document.

```
                    ┌─────────────────────┐
                    │  Business Object    │
                    │     Document        │
                    └─────────────────────┘
                            │
                    ┌──────────────┐
                    │ Control Area │
                    └──────────────┘
                            │
                    ┌ ─ ─ ─ ─ ─ ─ ─ ┐
                      Business
                    │Service Request│
                    └ ─ ─ ─ ─ ─ ─ ─ ┘
                            │
                       ┌─────────┐
                       │ Sender  │
                       └─────────┘
                            │
              ┌ ─ ─ ─ ─ ┐        ┌──────────────┐
                DateTime          │  Logical ID  │
              └ ─ ─ ─ ─ ┘        └──────────────┘
                                 ┌──────────────┐
                                 │  Component   │
                                 └──────────────┘
          ┌ ─ ─ ─ ─ ─ ─ ─ ┐     ┌──────────────┐
            Business Data        │     Task     │
          └ ─ ─ ─ ─ ─ ─ ─ ┘     └──────────────┘
                                 ┌──────────────┐
                                 │ Reference ID │
                                 └──────────────┘
                                 ┌──────────────┐
                                 │ Confirmation │
                                 └──────────────┘
                                 ┌──────────────┐
                                 │   Language   │
                                 └──────────────┘
                                 ┌──────────────┐
                                 │  Code Page   │
                                 └──────────────┘
                                 ┌──────────────┐
                                 │   Auth ID    │
                                 └──────────────┘
```

For assisting international requirements, the Sender also indicates the language in which the description text is transmitted.

The Sender area also provides the audit trail to allow users to drill down from their Receiver business application to the information used to complete the Business Service Request.

The Sender is represented with the following definition:

SENDER
   - LogicalID
   - Component
   - Task
   - ReferenceID
   - Confirmation
   - Language
   - CodePage
   - AuthID

LOGICAL IDENTIFIER

The Sender application information in the Control Area provides the logical location of the server and application from which the Business Object Document originated.

Each system or combination of systems should maintain an external central reference table containing the logical names or logical addresses of the application systems in the integration configuration. This enables the logical names to be mapped to the physical network addresses of the resources needed on the network.

Note: The technical implementation of this Domain Naming Service is not dictated by this specification.

This logical to physical mapping may be done at execution time by the application itself or by a middleware transport mechanism, depending on the integration architecture used.

This provides for a simple but effective directory access capability while maintaining application independence from the physical location of those resources on the network.

The Logical Identifier may be up to a ten-character field.

COMPONENT

The Component represents the business application that issued the Business Object document. The Component ID may be up to a 10-character field defined by the sender of the BOD. Although the Component may differ depending on the specific implementation, it is needed to assure drill back capability.

OAGIS recommends that Component names be based on the specific Business Service Request being used. Example Components may be "**INVENTORY**" or "**PAYROLL**".

The Open Applications Group has not constructed the list of valid Component names. It is recommended that these names be agreed upon for each application integration configuration. A suggestion for naming is to use the application component names used in the scenario diagrams in section two of OAGIS.

TASK

The Task describes the business event that initiated the need for the Business Object Document to be created. The Task ID may be up to a 10-character field defined by the sender of the BOD. Although the Task may differ depending on the specific implementation, it is important to enable drill back capability.

OAGIS recommends Task names based on the specific Business Service Request being used. Example Tasks may be "**RECEIPT**" or "**ADJUSTMENT**".

REFERENCE ID

Reference ID is the Business Object Document identifier for referencing and auditing.   The Reference ID may be up to 40 characters long. This field is intended to enable the drill back from the result of an event (the BOD instance), to the original event in the originating application.

CONFIRMATION

The Confirmation request is an option controlled by the Sender business application. It is a request to the receiving application to send back a confirmation BOD to the sender. The confirmation Business Object Document may indicate the successful processing of the original Business Object Document or return error conditions if the original Business Object Document was unsuccessful.

The confirmation request is a one-character field with the following valid values:

`0` = No confirmation Business Object Document requested

`1` = Send back a confirmation Business Object Document only if an error has occurred

`2` = Send a confirmation Business Object Document regardless

LANGUAGE

The Language code is used to define the language of the data in the Business Data Area. *The Control Area is always in the American English language.*

The Language code is a three-character field that must contain a valid ISO specified language code.   The ISO standard used by OAGIS is ISO 639/2.   This is a comprehensive standard that contains most languages around the world.

A few representative codes are:

ISO 639/2 Code	Language	ISO 639/1 Code
eng	English	en
che	Chechen	
fra	French	fr
deu	German	de
gai	Irish	ga
nld	Dutch	nl
rus	Russian	ru
zho	Chinese	zh
afr	Afrikaans	af

NOTE: This list is only a representative sample. Please refer to ISO 639-2/T when choosing language codes.

NOTE: This is not meant to imply that the Business Object Document performs any translation function. It does not. This is an enabler to the systems to identify the language used in the Business Data Area portion of the Business Object Document.

CODEPAGE

The Code Page represents the character set used in the BOD. The Code Page identifier may be up to a 15-character field. If not used, the Code Page identifier must be filled with spaces. Please refer to the ISO 8859 standards series to specify a code page.

If a code page is not specified, the default is ISO 8859-1.

The Open Applications Group does not directly address the need for EBCDIC to ASCII conversion or for little endian and big endian differences. The Open Applications Group position on these points is that these issues are the concern of the middleware transport mechanism, not the application.

The Open Applications Group Inc. enables the use of Multi Byte Character Sets (MBCS) by supporting the Microsoft Unicode specification. The generalized escape sequence approach will be used when the Microsoft Unicode specification does not support a specific character set.

NOTE: The Control Area is always in Single Byte format. This code determines the code page used in the Business Data Area portion of the BOD.

NOTE: The application software will not be responsible for translation from single-byte to multi-byte. This will be agreed in the setup process enabling the integration.

AUTHORIZATION IDENTIFIER

The Authorization Identifier describes the point of entry, such as the machine or device the user uses to perform the task that caused the creation of the Business Object Document.

The Authorization Identifier is used as a return routing mechanism for a subsequent BOD, or for diagnostic or auditing purposes. The Authorization Identifier may be up to a 50-character field. Valid Authorization Identifiers are implementation specific. The Authorization Identifier might be used for authentication in the business process. As an example, in the case of Plant Data Collection, the Authorization Identifier is used to fully define the path between the user of a hand held terminal, any intermediate controller and the receiving application.

In returning a BOD, the receiving application would pass the Authorization Identifier back to the controller to allow the message to be routed back to the hand held terminal.

DateTime (Creation)

The DateTime segment with qualifier Creation is used as the creation moment of this Business Object Document. This date will be set when the Sender is given its globally unique identifier and must not be modified during the life of the Business Object Document.

Additional details on the DateTime segment can be found in Appendix D of OAGIS.
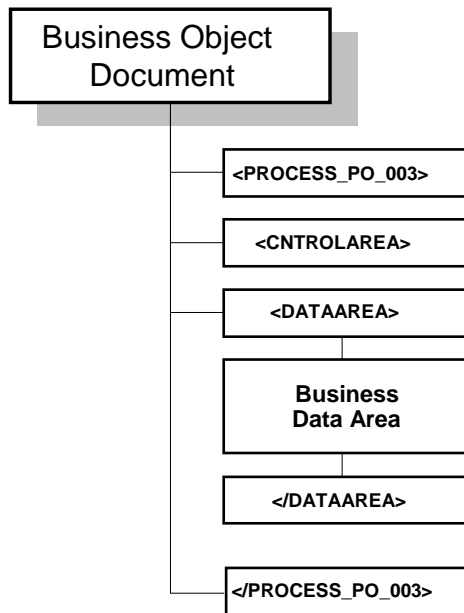
1.2 Business Data Area

The Business Data Area (BDA) of the Business Object Document contains all the codes, parameters and values needed to support the Business Service Request. For example, to send a Purchase Order or Orders to a business partner, the Business Data Area will contain all the header and line information for all of the lines representing items to be purchased.

One BOD may contain one or many occurrences of a noun for the verb and noun combination in the Business Service Request. For example, a Business Service Request to a business partner may have several Purchase Orders in a single transmission and this can be supported, each transferred in one Business Data Area of the same BOD.

The Business Data Area architecture is flexible enough to send only the data needed for the specific business application's needs. This reduces the unnecessary transmission of empty fields that could result by establishing a structure based or fixed format for the Business Data Area.

Comment [SA1]:

```
                 ┌─────────────────────┐
                 │  Business Object     │
                 │  Document            │
                 └─────────────────────┘
                          │
                          │    ┌──────────────────────┐
                          ├────│ <PROCESS_PO_003>     │
                          │    └──────────────────────┘
                          │    ┌──────────────────────┐
                          ├────│ <CNTROLAREA>         │
                          │    └──────────────────────┘
                          │    ┌──────────────────────┐
                          ├────│ <DATAAREA>           │
                          │    └──────────────────────┘
                          │    ┌──────────────────────┐
                          │    │ Business             │
                          │    │ Data Area            │
                          │    └──────────────────────┘
                          │    ┌──────────────────────┐
                          │    │ </DATAAREA>          │
                          │    └──────────────────────┘
                          │    ┌──────────────────────┐
                          └────│ </PROCESS_PO_003>    │
                               └──────────────────────┘
```

USERAREA

USERAREA identifies the user's unique area for data that is implementation specific. It is a named but unspecified Open Applications Group Field Identifier. A description of what the intent of this special use Field Identifier is below.

The **USERAREA** is defined by embedding XML tags for each new Field Identifier or new Segment needed within this area. When a new Field Identifier or a new Segment is determined to be necessary, and it is not included in the OAGIS specification, new tags can be developed by the project team for the specific integration project. These new tags can then be used to describe the fields and segments within the **USERAREA**. The **USERAREA** may contain multiple fields or segments coded in this way. Specific directions for using the **USERAREA** are just below:

1. Create a DTD with the content model for your extension tags.
2. Add an entity reference to this DTD to the resources DTD as a header for each message.
3. Messages are constructed with your tags in the **USERAREA**.
4. The parser should then validate the content of your tags embedded within the **USERAREA** against the DTD where they are defined.
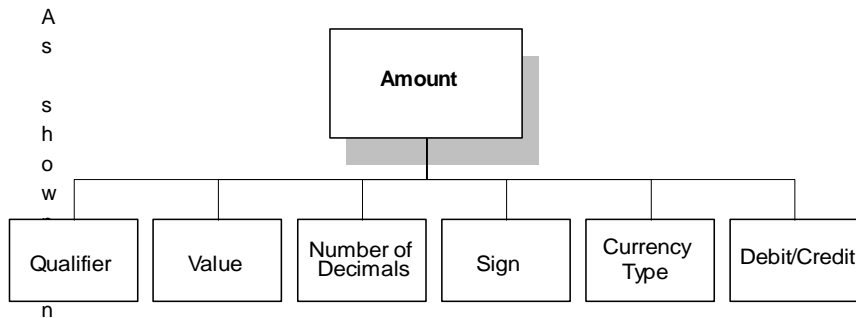
NOTE: This use of meta data tags is intended to be a temporary, but practical solution, and is not a violation of OAGIS compliance. The new Field Identifiers and the new Segments may then be submitted to the Open Applications Group as proposed additions to OAGIS. The Open Applications Group will make best efforts to quickly consider all proposed submissions.

The **USERAREA** is always the last Field Identifier in a Data Type.

SEGMENTS

Segments, much like Field Identifiers, specify the data values that follow the Data Definition Area. Segments are the solution for passing complex values that require several characteristics or properties to be interpreted by the receiver. Data, such as amounts, have several characteristics that need to be defined to be passed on as a series of character fields.

Many Segments include qualifiers, which distinguish different meanings of the same data. For example, DateTime (Creation) describes the date of creation, while posting dates are described as DateTime (Effective).

A
s

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```
                        ┌──────────────┐
                        │   Amount     │
                        └──────────────┘
    ┌──────────┬──────────┬──────────┬──────────┬──────────┬──────────┐
┌─────────┐┌─────────┐┌─────────┐┌─────────┐┌─────────┐┌─────────┐
│Qualifier││  Value  ││Number of││  Sign   ││Currency ││Debit/   │
│         ││         ││Decimals ││         ││  Type   ││Credit   │
└─────────┘└─────────┘└─────────┘└─────────┘└─────────┘└─────────┘
```

the example diagram, monetary amounts are communicated by including attributes that can be broken down into several fields in character format.

These segments define the common fields used for integrating ERP applications. These segments are used to define complex attributes that require several properties to be whole.

Each segment has a set of supporting attributes. All segments contain the QUALIFIER attribute, and many have TYPE and INDEX attributes as well.

Each Segment type has a different set of requirements. More on the structure of Segments may be found in Section One, Chapter Two of OAGIS, XML Architecture, or in Section Four, Appendix D, the Segment Data Dictionary.

The size of Segments differs from Field Identifiers because Segments represent a predetermined series of fields that occur together to give meaning and context.

Transaction Integrity

OAGIS requires that all OAGI-compliant applications are able to resend the Business Object Document either through reconstructing or by re-sending the original Business Object Document. It is strongly recommended that all BOD's sent or received be logged in an application specific or central application logging facility.

This could be accomplished by special services within a middleware application or within the business application software itself.