# Usage Guide on Business Information Modeling (BIM) Spreadsheet (v1.1)

## Table of Contents

# 1. Introduction

## 1.1 About This Document

This document contains six sections. It serves to provide a quick guide for business analysts and system analysts on how to use the Business Information Modeling (BIM) Spreadsheet to implement BIM as described in the BIM guidelines and methodologies as described in the "XML Schema Design Guide" (the Design Guide). This document does not replace the BIM guidelines and methodologies as described in the Design Guide. Readers should have read the Design Guide and have basic understanding of the BIM guidelines and methodologies. Knowledge on XML Schemas is preferred but not essential.

## 1.2 What is BIM Spreadsheet

BIM Spreadsheet is a tool to facilitate a business analyst (or equivalent) to model data exchange in joint-up projects, following the BIM as described in the Design Guide.

BIM Spreadsheet documents data elements exchanged as a spreadsheet table, with each data element occupying one spreadsheet row. Data elements are classified as different types of Business Information Entities (BIEs). The "Key Concepts" section on this document provides a summary of BIE concepts. For complete explanation and details, please refer to the Design Guide.

## 1.3 Major Features of BIM Spreadsheet

- XML Schema generation (together with companion Schema Generation Script) following the rules of the Design Guide.
- Macro functions to assist entry of BIE information.
- Formulae for automatic generation of BIE details, following the naming rules of the Design Guide.
- Macro functions to reuse Common Schemas.
- Build your own library of BIEs for easy maintenance of BIEs that are shared use in multiple BIM spreadsheets.
- Common format to document BIEs that can be reusable in other projects.

BIM spreadsheet contains macros to facilitate the above functions. You need to enable macro to enjoy these functions when opening the spreadsheet.

## 1.4 Versions of BIM Spreadsheet

There are two versions (Microsoft Excel and OpenOffice) of BIM spreadsheets. Currently, the automated macro functions are only implemented in the Excel version. The information in this document is based on the Excel version.

The BIM spreadsheet is evolving to support additional requirements from users. You are recommended

to use the latest version of BIM spreadsheet, which can be downloaded from the Central Registry (http://www.xml.gov.hk) web site. You can transfer the data from an old version spreadsheet to new version using the import/export functions.

### 1.5 Related Documents

- XML Schema Design and Management Guide Part I: "Overview".
- XML Schema Design and Management Guide Part II: "XML Schema Design Guide".

The above document can be downloaded from the Interoperability Framework pages in the OGCIO website at http://www.ogcio.gov.hk/eng/infra/eif.htm.

## 2. Key Concepts

This section serves as a quick recap of major BIM terms. For detailed explanation of the concepts, please refer to the Design Guide.

### 2.1 Business Information Modeling (BIM)

Under BIM, data elements are grouped into classes of objects known as **object class** (e.g. car, person, particular type of electronic message, HK ID card number structure) with associated **properties** (e.g. colour, age, owner, document number). A property can be *singular* (simple ones like colour, age, person's gender) in one or more **representations** ("format" such as Count, Text, Amount), or it can be *complex* (having its own sub-elements and is represented by another object class, e.g. owner of a car represented by a "Person" object class).

Here is a simplified example of a "car" object:

| **Object Class** | **Property** | **Representation** |
|---|---|---|
| Car | Plate | Text (e.g. "AM1234") |
| | Colour | Code (e.g. R001, R002, B001),<br>Text (e.g. "red", "blue"),<br>Numeric (e.g. computer's RGB value) |
| | Owner | N/A (represented by another object class "Person" with properties such as name, gender and ID card number.) |

### 2.2 Business Information Entity (BIE)

#### a) Aggregate Business Information Entity (ABIE)

An object class is modeled as an ABIE, or a data element with properties (sub-elements). For example, we may model a car as an ABIE, with its plate, colour, owner, etc. as sub-elements. A name (known as **object class term**) is assigned to every ABIE.

In a BIM spreadsheet, an ABIE will appear as a spreadsheet row having a type “ABIE”. Its sub-elements rows will immediately follow the ABIE row.

**b) Basic Business Information Entity (BBIE)**

Simple properties of an ABIE (like plate and colour) are modeled as BBIEs. A BBIE has its **representation** (“type” such as Count, Text, Date Time, etc.), **format restrictions** (maximum length, string patterns, minimum value, etc.) and **cardinality** (i.e. its occurrence in the ABIE).

In a BIM spreadsheet, a BBIE will appear as a spreadsheet row having a type “BBIE”. Its representation (compulsory), cardinality (compulsory) and format restrictions (optional) will be put in their corresponding columns. BBIE should normally follow under its parent ABIE, except in the cases where a standalone BBIE is included in a project data element library for reuse by other project BIM spreadsheets.

**c) Core Component Type (CCT)**

CCT is a data model that provides the basic data structure to realize the representation of a BBIE. When inserting a BBIE to a BIM spreadsheet, you need to select one of the available representations for that BBIE.

**d) Association Business Information Entity (ASBIE)**

Complex property of an ABIE having its own structure is modeled by another ABIE (e.g. a property of a car describing its owner will associate to another ABIE for a generalized “person” having its own properties such as name, gender, age, etc.). This bond is modeled as an ASBIE.

In a BIM spreadsheet, an ASBIE will appear as a spreadsheet row having a type “ASBIE”. Its representation is the name (i.e. object class term) of the associated ABIE.

**e) Business Document**

We exchange **business document** (e.g. a purchase order, an application e-form or a confirmation message) as the basic unit of information exchange in a business transaction rather than individual data elements. A business document is typically a collection of BBIEs and ABIEs (associate through ASBIEs). This structure makes a business document just another “big” ABIE called a **root ABIE**.

In a BIM spreadsheet, a business document will also appear as a spreadsheet row having a type “ASBIE”. Its representation is the name of the associated ABIE (known as *Object Class Term* of that ABIE).

## 2.3 Common Schemas

Common Schemas are BIEs that have been concertedly aligned among B/Ds. They are reusable across

projects and can reduce repetitive efforts to agree on a definition and format for data elements. Common Schemas can be found in the Central Registry web site.

### 2.4 Project Library of BIEs

In a large project with large number of business documents and BIEs, likely there are BIEs that will be commonly used among the business documents. By building a library of these common project BIEs and reuse them in the business documents, any update on these common project BIEs can be reflected in the business documents reusing them. While Common Schemas mainly aims at reducing the repetitive effort in alignment of interfacing data format, a project library aims at reducing the repetitive maintenance effort within the project scope.

### 2.5 External Schemas

A project may identify XML Schema from international or industry standards suitable for adoption. Such schemas are referred as external schemas. BIM spreadsheet allows business analysts to include full or portion of an external schema as part of the project schema.

## 3. Basics of the BIM Spreadsheet

### 3.1 Spreadsheet Layout

BIM spreadsheet includes a header pane at the top with macro buttons and a normal data view/edit pane as in every spreadsheet.

### 3.2 Macro Buttons

A number of macro buttons are implemented to trigger macro functions to:

| **Button name** | **Functions** |
|---|---|
| Insert Data Item… | 1. Insert a new BIE (ABIE, BBIE, ASBIE or Business Document) **above** the current active spreadsheet cell (one with a bold border); or<br>2. Reuse a BIE from Common Schemas or your own project library. |
| Select Data Item… | 1. Jump to a particular ABIE in the spreadsheet; or<br>2. Select all BBIEs and associated ABIEs of a particular ABIE. |
| Show/Hide Less Commonly Used Columns… | Some columns of the spreadsheet is hidden by default as they are less commonly used during most browsing and editing as well as making more manageable print-outs. This button toggle display of these columns. |
| Export to XML… | Export the entire spreadsheet to an XML file for XML Schema generation, preparation of project library, and import of data to another BIM spreadsheet. |
| Import from XML… | Import and append exported data from another BIM spreadsheet. |

## 3.3 Commonly Used Spreadsheet Columns

| Column | What to Enter | Remarks |
|---|---|---|
| UID | Unique string for every row (suggest to use project ID + 6-digit sequential number, e.g. XML000123) | Required. The leading character string within the UID of the topmost data row will be taken as the project ID for afterward UID generation when inserting a new BIE. |
| Dictionary Entry Name | Official name of a data element following the naming rules of the XML Schema Design Guide | Required. Generated automatically for most cases. May need manual correction in some special occasions. |
| Ver. | Version number of this BIE (e.g. 1.0, 2.0, 2.1a) | Required. For BBIE and ASBIE, it copies the version of the row above automatically. |
| Business Terms | The term(s) commonly used in the business world to represent the item. | Optional. Manual entry. |
| Item Type | Which type of BIE (ABIE, ASBIE, BBIE or Document) | Required. Select during item insert or choose one from the drop down list for the cell. Changing this value will trigger some changes in colours and some auto-generated values such as the Dictionary Entry Name. |
| Item Definition | Clear and concise definition of the BIE. | Required. Manual entry. |
| Usage Rules | Any additional information about how this BIE should be used and/or what are the acceptable values. | Optional. Manual entry. |
| Object Class Term | ABIE: object class term of itself;<br>Document: Name of the business document;<br>BBIE or ASBIE: object class term of parent ABIE | Required.<br>ABIE, Document: Manual entry;<br>BBIE or ASBIE: Automatically copy the value from the row above. |
| Property Term | ABIE: Always “Details”;<br>Document: Always “Document”;<br>BBIE: property term of the item;<br>ASBIE: object class term of the associated ABIE. | Required.<br>ABIE: Automatic fill-in the value “Details”;<br>Document: Automatic fill-in the value “Document”;<br>BBIE or ASBIE: Manual entry. |
| Cardinality | ABIE, Document: N/A;<br>BBIE or ASBIE: specifies its occurrences within the parent ABIE | Required for BBIE and ASBIE.<br>ABIE, Document: Automatic fill-in the value “N/A”;<br>BBIE or ASBIE: Manual entry. |
| Rep. Term or Object Class Term of asso. ABIE | ABIE, Document: N/A;<br>BBIE: One of the representation terms from the CCT list.<br>ASBIE: Object Class Term of the associated ABIE. | Required for BBIE and ASBIE.<br>ABIE, Document: Automatic fill-in the value “N/A”;<br>BBIE: Manual selection from Excel’s drop down list.<br>ASBIE: Manual entry. |

| Column | What to Enter | Remarks |
|---|---|---|
| Version of asso. ABIE | ABIE, BBIE: N/A<br>ASBIE/Document: Indicates which version of the ABIE that this ASBIE/Document references to. | Required for ASBIE and Document.<br>In most cases, the formula should be able to locate a correct version number for you. If you see "#N/A" (not "N/A") in this field, either the associated ABIE not exist or you've type its name incorrectly. |
| Core Component Type | ABIE, ASBIE, Document: N/A<br>BBIE: The CCT that this BBIE bases on. | Automatic fill-in by spreadsheet formula when you have selected item type and representation term (for BBIE). |
| Primitive Data Type | ABIE, ASBIE, Document: N/A<br>BBIE: The data type that this BBIE bases on. | Automatic fill-in by spreadsheet formula when you have selected item type and representation term (for BBIE). |
| Format Restrictions on Content Component | These columns specify any data format specification of the item (e.g. field length, acceptable values). | For BBIE only. Optional.<br>Apply restrictions on data values in addition to the representation chosen. Refers to description of format restrictions in the Design Guide for details. |

### 3.4 Colour Convention

| Description | Examples |
|---|---|
| Item Type | **ABIE**, ***ASBIE***, BBIE, ***Document*** |
| A field that does not require manual edit | Details |
| A BIE copied from a Common Schema | **PRJ000003** |
| A BBIE that is reusing a Common Schema or a project library | Code |
| A BBIE being reused by other project BBIEs in the same spreadsheet | PRJ000002 |
| A BBIE reusing another project BBIE in the same spreadsheet | Text |
| Major fields that you should input but haven't yet | x..y |

Note that colour and formatting do NOT affect XML Schema generation. It is used for easier visual identification only.

## 4. Pre-requisite of Using the BIM Spreadsheet

### 4.1 Download Related Files

- BIM spreadsheet template
- Common Schemas spreadsheet (spreadsheet and XML versions)
- Schemas Generation Script

The above files can be downloaded from the Central Registry web site at http://www.xml.gov.hk/.

### 4.2 Sketch Your BIE Hierarchy

You should plan your BIE structure before entering data to the spreadsheet. It is useful to have a sketch diagram (like figure 4-5 in the Design Guide) on hand to visualize the hierarchy and associations among BIEs.

## 5. Basic Usage

### 5.1 General Notes

1. There should NOT be any blank row between the BIEs.
2. By default, a unique UID of the form “PRJnnnnnn” will be generated for you when inserting a new BIE. If you want to replace ‘PRJ’ by your own project code, manually change it after you have inserted the first BIE row. The macros will then follows your specified code for subsequent UID generations.
3. When using normal spreadsheet copy and paste function, check that the values are correct (e.g. UID may become duplicate, object class term may become invalid).
4. BIM spreadsheet contains formatting formulae for easier identification of different BIE types as well as highlights some unfinished entries. However, such formatting is not significant in schema generation.
5. You should already have your data structure ready before filling-in the BIM spreadsheet. You can add the BIEs from top-down, bottom-up or any order you want. Bottom-up approach has an advantage that you can usually select the associated ABIE from a list instead of typing when adding ASBIE.

### 5.2 Insert a New BIE

This is achieved by clicking the “Insert Data Item” button on top-left of the spreadsheet. A new row is inserted **above** the current selected spreadsheet cell.

#### a) ABIE

1. Click the “Insert Data Item” button on top-left of the spreadsheet. Select “ABIE ” and click the “Continue” button.
2. Enter the object class term. Click OK. Notice that the macro has already automatically inserted most needed information for you.
3. You should also see orange, double underline text in the definition column. This means that the field should be filled-in but not yet. Give a clear and concise definition for this data item in this column.

#### b) BBIE

1. Click the “Insert Data Item” button on top-left of the spreadsheet. Select “BBIE” and click the

"Continue" button.

2. Enter the property term (name of this property, e.g. "Colour", "Full Name"). Then type or select a representation for this BBIE. When finished, click OK. Note that the object class term is carried automatically from the last ABIE above the current row.
3. Again, give a definition for this data item in this column.
4. Replace the invalid cardinality value ("x..y") by the value you needed. Example values are "0..1" for an optional item, "1" for a mandatory item, "0..*" for optional repeated items without upper bound on occurrence, "1..5" for a mandatory item that can appear one to five times.
5. Optionally set desired format restrictions (e.g. maximum length) on corresponding columns.

#### c) ASBIE

1. Click the "Insert Data Item" button on top-left of the spreadsheet. Select "ASBIE" and click the "Continue" button.
2. Enter the property term (name of this property, e.g. "Owner"). An ASBIE associates a property to another ABIE. Type the object class term of this associated ABIE (e.g. "Owner", "Postal Address") or select it from the drop down list (if that ABIE already exists in the current spreadsheet).
3. When finished, click OK. Note that you may ignore the check box option and leave it unchecked at this moment. This option will be explained in the advanced usage section.
4. Again, give a definition for this data item in this column.
5. Set the cardinality value.
6. If the associated ABIE has not yet been added to the spreadsheet, you will see an error indicator "#N/A" appears in the "Version of asso. ABIE" column. This is normal and will be resolved after you have added the associated ABIE later.

#### d) Business Document

1. Click the "Insert Data Item" button on top-left of the spreadsheet. Select "Business Document" and click the "Continue" button.
2. Set the object class term to be the name of the business document. (e.g. "Application Form", "Application Return Receipt").
3. Select from the drop down list or type in the object class term of the root ABIE associated with the business document. When finish, click OK.
4. If the associated root ABIE has not yet been added to the spreadsheet, you will see an error indicator "#N/A" appears in the "Version of asso. ABIE" column. This is normal and will be resolved after you have added the associated ABIE later.

## 5.3 Update a BIE

You may update the attributes of BIEs directly on the spreadsheet after adding them as mentioned in section 5.2. Typically, you will need to update the definition and cardinality columns. You may also want to add business terms, usage rules and some format restrictions as needed.

You may change the property term and/or select another representation term if you want. However, you should not change the object class term for an ASBIE or BBIE entry as the entire row should be moved under the new ABIE instead. It is better to insert a new ASBIE/BBIE as usual under the new ABIE and delete the entire old ASBIE/BBIE row.

Although you can change the BIE type from one to another, some formulae may have been overridden when inserting that entry and cannot be recovered by simply changing the BIE type column. Again, a better alternative is using the “Insert Data Item…” button to add a new row instead.

In most cases, the pre-built formulae can automatically generate a correct “Dictionary Entry Name” and “Version of Associated ABIE” for you. However, in some cases manually correction is required. For example, a property term “Surname” with representation term “Name” will generate an undesired name “Sur. Name”. Manual adjustment to “Surname. Name” is required.

No update should be needed for cells with a grey background. Only specific columns of a BIE reused from a Common Schema or project library should be updated (see later sections).

## 5.4 Showing Hidden Columns

The BIM spreadsheet contains about 70 columns of information. However, typically for most BIEs only a small portion of the columns is more frequently used. Therefore, by default the BIM spreadsheet shows only a concise view of the most frequently used columns, while other columns are kept hidden. To unhide these columns, you may simply click on the “Show / Hide Less Commonly Used Columns” button. To hide these columns again, click the same button again.

## 5.5 Delete a BIE

Before you remove a BIE. of any type from the spreadsheet, you should make sure that there is no dependency on that BIE by other BIEs. Followings are some dependency cases:

- An ABIE to be deleted is referenced by another ABIE through an ASBIE. An indication of this situation is the object class term of the ABIE to be deleted can be found in the Property Term column.
- A BBIE to be deleted is reused by another ABIE on the same BIM spreadsheet. This can be easily identified by a green background of the UID and Dictionary Entry Term columns.

To remove a BBIE or ASBIE from the spreadsheet, you can simply by selecting the **entire spreadsheet row**, right click on the row and select ‘Delete’ from the pop-up menu. Note that this is not the same as clearing the content by pressing the Del key.

To remove an ABIE from the spreadsheet, you can select **all spreadsheet rows belonging to that ABIE**, then right click on the row and select 'Delete' from the pop-up menu.

## 5.6 Reuse a Common Schema

To reuse a Common Schema:

1. Click the "Insert Data Item" button on top-left of the spreadsheet. Select the last option ("A Common Schema") and click the "Continue" button.
2. Select the ABIE or a BBIE you want to insert from list of available data items. When finish, click OK.
3. One or more rows will be inserted into the spreadsheet. Fill-in the "Item Definition" and "Cardinality" fields (marked as orange italic text).

## 5.7 Review your BIE

A project schema may include hundreds of BIEs grouped as ABIEs. The BIM spreadsheet provides a way for easy location and filtering of a particular ABIE and related BIEs.

1. Click the "Select Data Item" button.
2. Select your target ABIE from the list.
3. To locate the highlighted ABIE, click the 'Jump To' button.
4. To show all related BIEs for the highlighted ABIE, click the 'Show All Childs' button. A separate "Result" worksheet page will be opened with these related BIEs. Note that worksheet page is for viewing only and no update should be made. Click the "Close This Page" button to return to the usual editing worksheet page.

## 5.8 Export to an XML File and Generate XML Schemas

When you have finished your entry, you are ready to generate XML Schemas using the Schema Generation Scripts. Before that you need to convert your spreadsheet data to a XML file using these steps:

1. Click the "Export to XML" button.
2. Enter the name of the XML file to be saved. Then click Save.
3. The XML file in step 2 above is encoded in UTF-16. Change the encoding from UTF-16 to UTF-8 by opening it using Microsoft Windows' Notepad. In the "Open" dialogue box of Notepad, select "All Files" in the "Files of type:" drop-down menu, then click the XML file in step 2 above. You would see "Unicode" is shown in the "Encoding:" field. Now click the "Open" button.
4. You have now opened the XML file in step 2 above. Click "File", "Save as", "UTF-8" in the

"Encoding:" drop-down menu, then click "Save". When asked to confirm replacement of the existing file being opened, click "Yes".

5. You can then use the exported XML file encoded in UTF-8 to generate XML Schemas. For detailed procedure, please refer to the documentation of the Schema Generation Scripts.

# 6. Advanced Usage

## 6.1 Build a Project Library of BIEs

In a large project, there may be some data items that will be used repeatedly in the project schema. It is preferable to build a project common library of data items for easier maintenance.

Basic steps for building of project library/libraries and re-using the data items in the library are as follows:

1. Make a copy of the blank template of the BIM Spreadsheet. Then start input the data items (BIEs) just like a usual project schema spreadsheet. (Refer to section 5 on how to insert and edit BIEs.)
2. If you want to include standalone BBIEs in the library (i.e. without attached to a parent ABIE), it is better to place all these BBIEs at the beginning of the spreadsheet and give them an arbitrary object class term.
3. Select which ABIEs and BBIEs are open to be reused by others. Tag these BIEs by setting their "Maturity Level" to anything other than "N/A". Note that this column is hidden by default. Use the "Show / Hide Less Commonly Used Columns" button to hide/unhide it.
4. When finished, follows the steps in section 5 to export the spreadsheet to an XML file. This file should be placed in the same directory as the project BIM spreadsheets that will reuse this project library.

## 6.2 Multiple Project Libraries

The BIM Spreadsheet 1.1 supports import and reuse of multiple project libraries. Prepare these project libraries as mentioned above and export them using different names. Place all the exported XML files together with the project BIM spreadsheets that will reuse them in the same directory. Users will be prompted to select XML file when reusing a data item from project libraries.

When using multiple project libraries, the same data item should be duplicated across different spreadsheets. Unless the number of common data items (ABIEs and BBIEs) in your project is really huge, it is not recommended to make too many or to build a hierarchy of project libraries. In fact, it should be more efficient and easy to maintain a single project library spreadsheet and is the recommended approach for tens or even hundreds of common data items. The final design of project libraries should depends on your project data design as well as your flow of data design and maintenance (e.g. whether one person, one party, or multiple parties will be responsible for the maintenance.)

## 6.3 Reuse BIE from a Project Library

Once you have prepared your project library, you can reuse the BIEs in your project spreadsheet using these steps:

1. Click the “Insert Data Item” button.
2. Select reuse an ABIE or BBIE from “Your project library” (the second last radio button). Then click Continue.
3. Select “Reuse from a project library file (XML export)” and select the library (XML file) from the list. Then click Continue.
4. Pick one BBIE or ABIE from the list. Then click Continue.
5. For an ABIE, the macro will create an ASBIE to reference your selected ABIE. You need to enter the property term of this ASBIE. Click OK will finish and bring you back to the spreadsheet view.
6. For a BBIE, the macro will copy the select BBIE from the project library (while keeping a reference for any future library maintenance).
7. Update the item definition and cardinality columns (and others if necessary).

## 6.4 Reuse BBIE from Your Spreadsheet

For a project with small number of data items that will be exchanged with other parties (hence a relatively small XML Schema), it may more convenient to keep everything in a single spreadsheet. However, there may still exist a few BIEs that will be shared by multiple ABIEs (e.g. a case reference number in input and output messages). An ABIE is shared use within the same spreadsheet by nature (Multiple ABIEs reference it through their ASBIEs). You are required, however, to explicitly reuse a BBIE within the same spreadsheet.

1. Click the “Insert Data Item” button.
2. Select reuse an ABIE or BBIE from “Your project library” (the second last radio button). Then click Continue.
3. Select “Reuse another BBIE in the current spreadsheet”. Then click Continue.
4. Specify a property term for the BBIE.
5. Pick the BBIE to be reused from the drop down list. Note that the list will not show BBIEs that are: (i) reusing a Common Schema, (ii) reusing another project library, and (iii) reusing another BBIE in the current spreadsheet.
6. Click OK to go back to the spreadsheet view.
7. Update the item definition and cardinality columns (and others if necessary).

Note that the representation term column of the inserted BBIE will contain a hyperlink to the master copy BBIE. Clicking it will jump to the master copy, where you can make global change to the master

copy if required.

## 6.5 Generate XML Schemas with Project Libraries

Generating XML Schemas for a project spreadsheet with BIEs reusing from one or more project libraries is very similar to one without reusing others. You can simply execute the Schema Generation Script for each of the XML export of the project spreadsheet and all related project libraries. For example, suppose your project spreadsheet (P) is reusing 3 project libraries (A, B, C). You need to export spreadsheet P as XML, Then you should execute the Schema Generation Script for each of the XML export of P, A, B and C. You will get 4 XML Schema files (XSDs) where the XSD for P will import XSDs for A, B, and C.

## 6.6 Update BIEs in a Project Library

The major benefit of setting up of a project library is to allow easier maintenance of shared BIEs. To do this, simply open the project library spreadsheet and edit as usual. However, there are some points you need to take care when you edit:

1. You should not change the name of the XML export file of the project libraries.
2. You should not update the UID column in the library manually. It is the key to maintain cross-references among the spreadsheets.
3. Don’t forget to export the updated spreadsheet to overwrite the old XML file.

## 6.7 Refresh Your Spreadsheet after Project Library Update

If you have updated your project library, you should replace the original XML export of the library by a latest export. Then follow these steps to incorporate the updates in each of your project spreadsheets with BIEs reusing the updated project library (If you have multiple libraries, you should do the refresh after you have finish updating all libraries):

1. Click the “Insert Data Item” button.
2. Click the “Refresh reused project items” button.
3. The macro will then scan all BIEs and look for those reusing a project library. It checks the library and refreshes the columns if corresponding column in the library had been changed.
4. Only those columns marked with pale yellow background will be refreshed. Other columns are either automatically generated or those you can customize after insert. In particular, the property term of a reused BBIE will not be refreshed if you have changed the corresponding master copy. It is because we only reuse the type and attribute information of a BBIE when we reuse it, while there should be freedom for those BIEs reusing it to choose their own “field name” (property term). The “Property Term” column is not a key to reference a library BBIE.
5. The default-hidden “Reuse of Common BIE” columns contain key information to link to the master copy of the BIEs. You should not directly update these columns.

### 6.8 Reuse BIE from an External XML Schema

While you can reuse other BIEs from your project libraries, from the Common Schema, or libraries from other projects using the same BIM Methodology, there are occasions where you may need to import a data item from another XML Schema (e.g. an industry standard). The BIM Methodology supports reusing an external XML Schema through a special ASBIE.

To include data items from an external XML Schema, you can:

1. Click the “Insert Data Item” button.
2. Select ASBIE and continue.
3. Tick the “Associated ABIE or data element defined in another file or Schema” check box.
4. Give a property term and click OK.
5. A new ASBIE with “External” representation term will be inserted into the spreadsheet.

The “External “ ASBIE contains 5 columns (default hidden) under the “External Schemas” heading:

1. Namespace – Namespace of the external XML Schema. Optional.
2. Namespace prefix – If you specify a namespace, you must also give a prefix to differentiate the XML tags defined by that external XML Schema and those XML tags defined by your project.
3. Schema Location – Physical location of the external XML Schema file. This column is not mandatory for generation of project schema. However, it is generally necessary to give a proper schema location for the XML parser to check XML data against an XML Schema at run time.
4. Type Name – If you want to reuse a particular XML Schema type in the external XML Schema, associate it to the ASBIE by specifying its type name.
5. Element Name – If you want to reuse a particular XML element in the external XML Schema, associate it to the ASBIE by specifying its element name.

Note that if you leave all 5 columns blank, the Schema Generation Script will generate “<xs:any>” for this BIE. xs:any is a feature of XML Schema to allow flexibility in the XML file to incorporate unforeseeable changes. However, this flexibility disable checking on XML tags, data representations, field lengths, etc. Any well-formed XML codes can be included in the position where this ASBIE locates.

## 7. Contact Information

You can contact the Office of the Government Chief Information Officer of HKSAR Government via email to ifcg@ogcio.gov.hk, or visit us at http://www.ogcio.gov.hk/eng/infra/eif.htm.

**- END -**