



**Client name :** buildingSMART Norway

**Full title of the existing Project :** IDM Authoring Using XML

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## **IDM Authoring Using XML**

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| 0.3                     | 2008-10-30  | AEC3          | Second draft for testing |
| 0.4                     | 2008-11-09  | AEC3          | Mods from testing        |

# Contents

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|                                                       |           |
|-------------------------------------------------------|-----------|
| <b>Introduction.....</b>                              | <b>3</b>  |
| Background.....                                       | 3         |
| Summary .....                                         | 3         |
| Documentation Methods.....                            | 3         |
| <b>Relationship between IDM and MVD .....</b>         | <b>4</b>  |
| Process Maps .....                                    | 5         |
| IDM and IFC objects .....                             | 5         |
| IDM and IFC relationships .....                       | 5         |
| Concept of Type Process and its specialisations ..... | 6         |
| Concept of Constraint and its specialisations .....   | 6         |
| <b>Content Development Strategy.....</b>              | <b>7</b>  |
| <b>Basic Word Templates .....</b>                     | <b>7</b>  |
| <b>Downloadable files .....</b>                       | <b>8</b>  |
| Examples .....                                        | 8         |
| Supporting files .....                                | 8         |
| Derivative files .....                                | 8         |
| <b>Required applications and components.....</b>      | <b>9</b>  |
| Using Microsoft WORD.....                             | 9         |
| Using Open Office Writer.....                         | 9         |
| Using Microsoft XML Notepad .....                     | 9         |
| Using Other XML Editor Software.....                  | 9         |
| <b>Developing Content.....</b>                        | <b>10</b> |
| Using Microsoft WORD.....                             | 10        |
| Using Microsoft XML Notepad .....                     | 11        |
| Using a web-page Editor .....                         | 13        |
| Using a generic XML Editor .....                      | 13        |
| <b>Uploading Content.....</b>                         | <b>13</b> |
| Submit your material.....                             | 13        |
| <b>Acknowledgements .....</b>                         | <b>13</b> |

## **Introduction**

This document presents forms of documentation that can be used to capture the content of IDM documents using desktop or browser based tools. The aim is to capture and develop IDM content so that the information captured can maintained and used in various ways

### ***Background***

Previously, IDM/MVD documents have been captured using a variety of forms:

- Word documents
- VISIO documents
- Confluence pages
- Other diagramming tools

### ***Summary***

A schema based on ifcXML has been created that represents the various forms of information used within the IDM documentation set as being either processes or constraints. The schema uses entities from within the IfcConstraint and IfcProcess sub-schemas and applies some enhancements to the process schema to provide support for the wider range of ideas that are present in the IDM documentation.

The schema is therefore a subset of ifcXML (referred to as idmXML within this document) and conforms to the idea of being an Exchange Requirement Model or View of the ifcXML schema.

As well as the schema, a basic stylesheet is provided. This delivers the information within an idmXML file as a consistent page layout. Note that other stylesheets could be developed and these could deliver the same content in different ways.

### ***Documentation Methods***

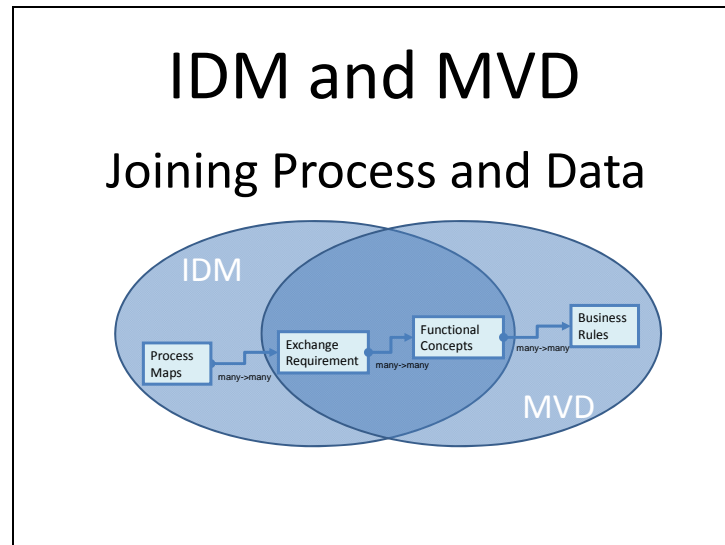
The following methods of documenting IDM are discussed here:

- Basic Word Templates
- Using Microsoft WORD
- Using Microsoft XML Notepad
- Using generic word processing tools to generate XHTML
- Using generic XML development tools.

Other methods of documenting IDM are possible and some of these will be presented here in due course. This particularly includes specialist tools such as:

- Altova Authentic development

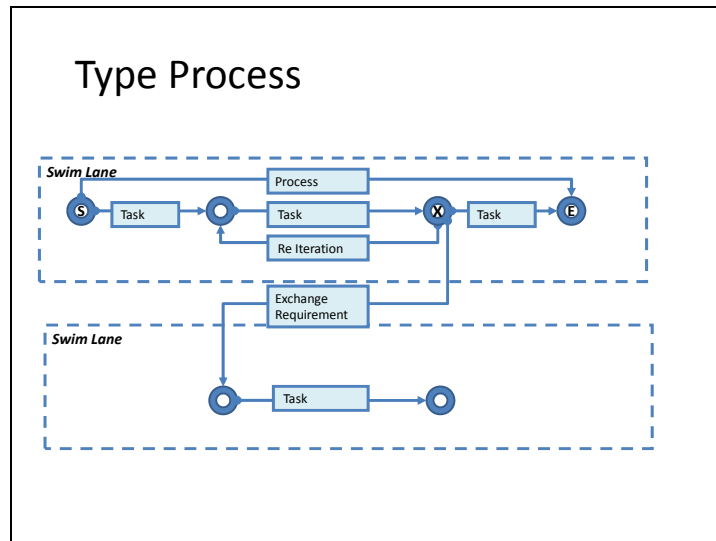
## Relationship between IDM and MVD



Data for Processes and Applications

IDM is focussed on the relationship of process and data, whereas MVD is focussed on the relationship of applications and data. IDM can be represented using the IFC Process sub-schema, whereas the MVD is represented using the IFC Constraint sub-schema.

## Process Maps



This schematic shows a generic process map made up of swim lanes containing tasks. For the purposes of IDM they constitute a library of task-types. However the presence of re-iteration indicates that these tasks are not instances, but are actually generic type-tasks which may be instantiated in an actual project. A fuller summary of the relationship between IDM concepts and their representation in IFC follows:

### IDM and IFC objects

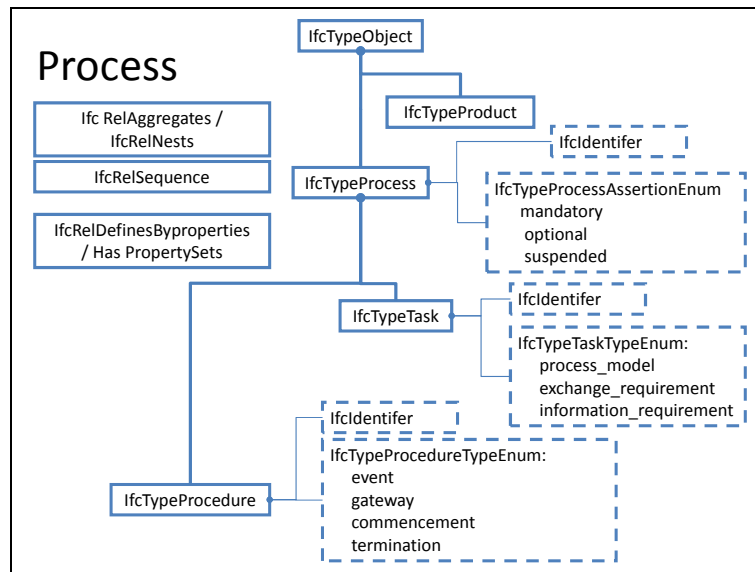
| IDM and IFC                   |                           |
|-------------------------------|---------------------------|
| <i>IDM</i>                    | <i>IFC Representation</i> |
| Process Map                   | IfcProcessModel           |
| Swim Lane                     | IfcActorRole              |
| Change Log                    | IfcOwnerHistory           |
| Start, Event, Decision, End   | Ifc(Type)Procedure        |
| Process, Exchange Requirement | Ifc(Type)Task             |
| Functional Part               | IfcObjective              |
| Business Rule (etc.)          | IfcMetric                 |
| Model View                    | IFC Constraint Model      |

### IDM and IFC relationships

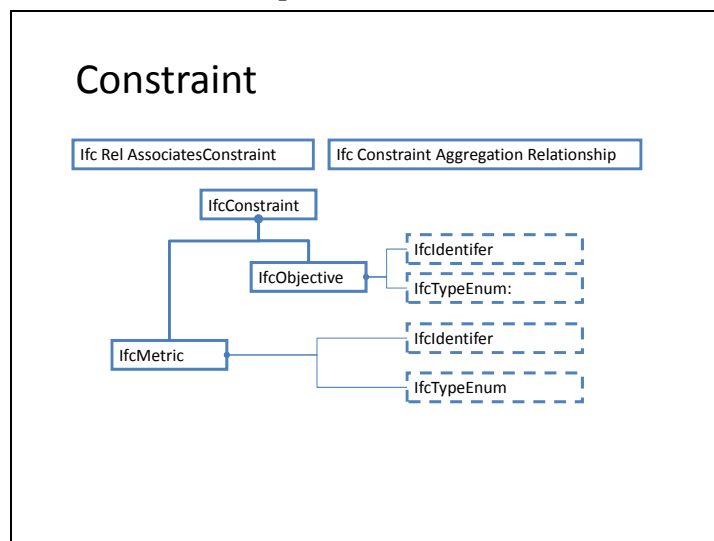
| IDM and IFC |                           |
|-------------|---------------------------|
| <i>IDM</i>  | <i>IFC Representation</i> |

|                             |                                            |
|-----------------------------|--------------------------------------------|
| Process Map                 | IFC Process Model                          |
| Process / Sub Process       | IfcRelAggregates / IfcRelNests             |
| Process / Actor             | IfcRelAssignsToActor                       |
| Process Sequencing          | IfcRelSequence                             |
| Process Attribute           | IfcRelDefinesByProperties / HasPropertySet |
| Process Constraints         | IfcRelAssociatesConstraint                 |
| Constraint / Sub Constraint | IfcConstraintAggregationRelationship       |
| Model View                  | IFC Constraint Model                       |

### Concept of Type Process and its specialisations



### Concept of Constraint and its specialisations



## **Content Development Strategy**

- (a) Basic Word templates
- (b) Download sample documents and supporting files
- (c) Download required applications and components
- (d) Develop content
- (e) Upload content

## **Basic Word Templates**

The following basic templates are made available using the Microsoft Word template (.dot) file structure. These templates are:

- pm\_doc\_template
- er\_doc\_template
- fp\_doc\_template

These templates allow process model, exchange requirement or functional part documentation to be developed offline using conventional Microsoft Word or other word processing software methods before transferring the completed documentation

## Downloadable files

### *Examples*

- pm\_example1.xml
  - pm\_example1.jpg
- er\_example1.xml
- fp\_example1.xml
  
- idm\_MEP\_MTO.xml (fuller example compiled from constituents)
  - MEP\_MTO.jpg

### *Supporting files*

- ifc2y3.xsd
  - ex.xsd
- idm2y3.xslt
  
- this documentation

### *Derivative files*

- pm\_example1.xhtml
- er\_example1.xhtml
- fp\_example1.xhtml
  
- idm\_MEP\_MTO.xml

## Required applications and components

### *Using Microsoft WORD*

- No further components are required for use with WORD 2007.

### *Using Open Office Writer*

- Information on using this free of charge, open source word processing software and XML editor will be presented when available.

### *Using Microsoft XML Notepad*

- Microsoft XML nortepad is a free of charge utility that offers simple viewing and editing of XML files and enables them to be viewed according to the XSL presentation declared.
- Download software from <http://www.microsoft.com/downloads/details.aspx?familyid=72d6aa49-787d-4118-ba5f-4f30fe913628&displaylang=en>

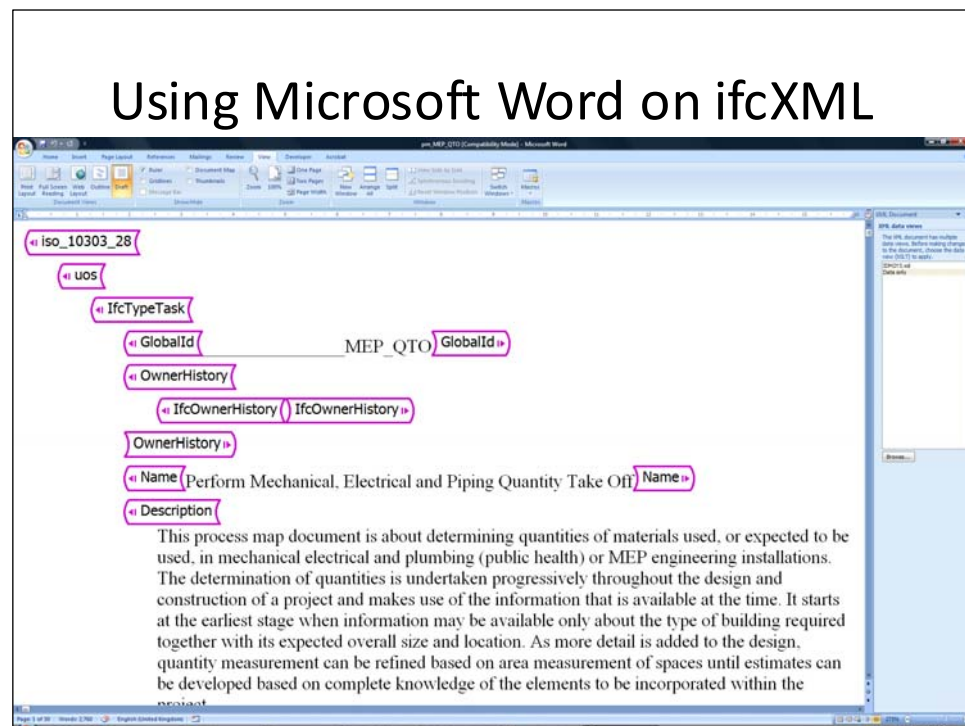
### *Using Other XML Editor Software*

- Any other XML editor software such as XML Spy, Oxygen, Amaya etc. may be used.

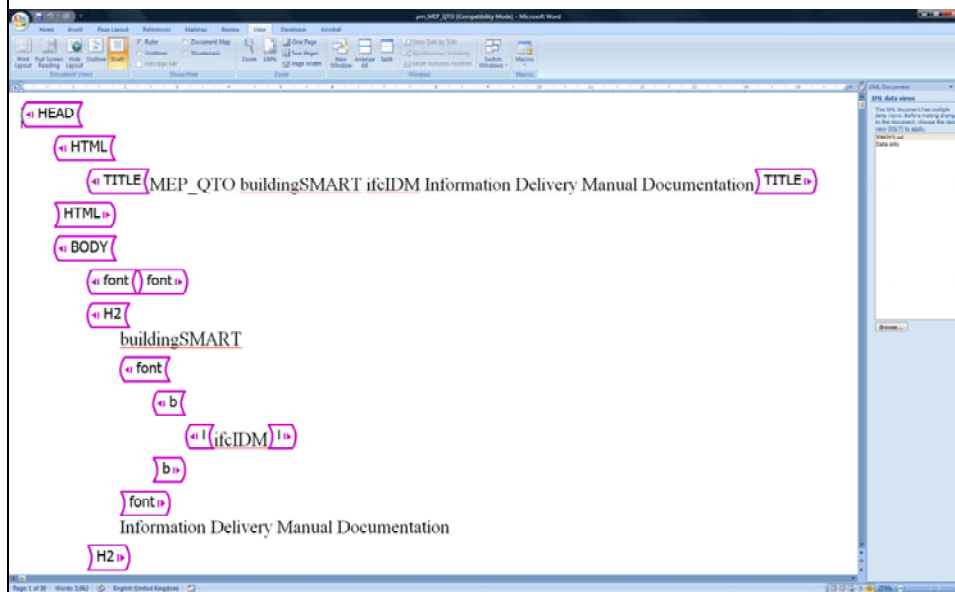
## Developing Content

### Using Microsoft WORD

- Open an example or your work in progress using Microsoft WORD.
- Notice the right hand panel offering two views – you can work with either.
  - Data Only
    - This shows the content with the idmXML tags
  - Ifc2y3
    - This shows the content with the HTML tags
- Most editing tools remain valid, particularly cut-and paste.
- Images and stylistic mark-up must be confined to the Description fields.
- Under the Developer menu, the structure of the HTML or idmXML can be seen as a second window.
- Save



## Using Microsoft Word on HTML



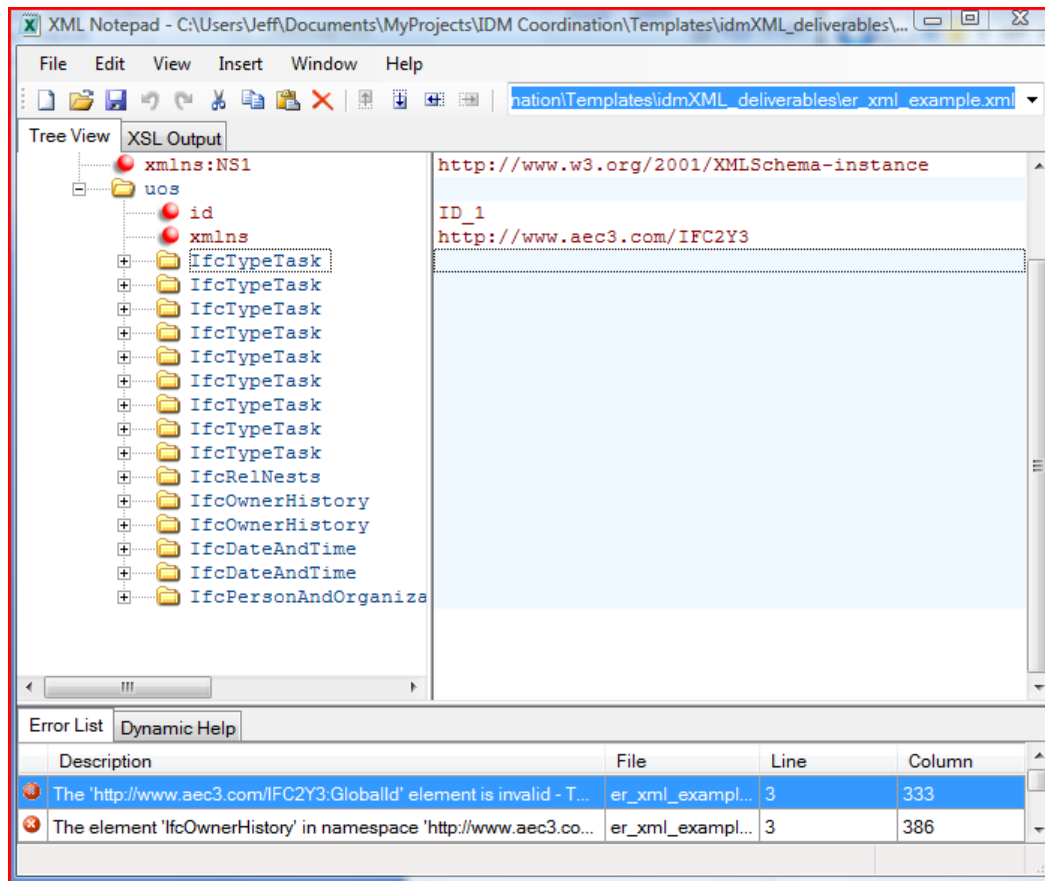
### *Using Microsoft XML Notepad*

Microsoft XML Notepad is a free software utility that can be used to populate an XML file with data.

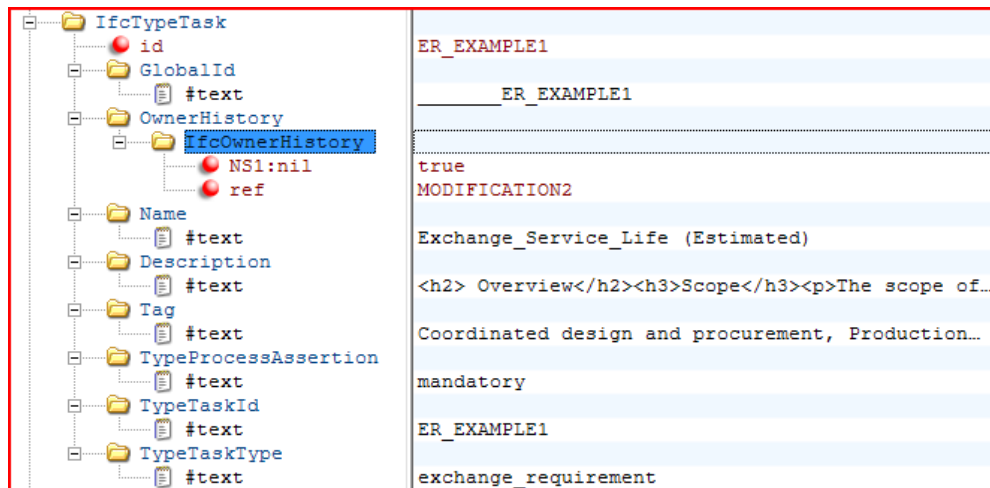
The XML template files provided with IDM contain only sample numbers of entities. These need to be copied for additional requirements. In the XML Notepad, entities can be duplicated. Use the right hand mouse button and selected the appropriate (duplicate) operation.

Date should be entered against the indicated datatype for an attribute. For instance, the Description attribute for a type of task has a datatype shown as #text (meaning that the IfcText datatype is used). Enter data against this item and NOT against the Description attribute itself.

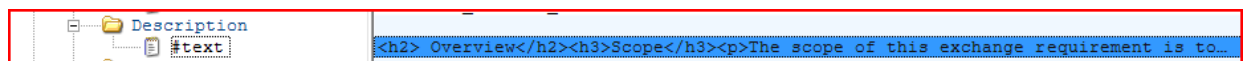
Note that data that is entered against a datatype shown as #text can be in XHTML format. Transformation of this data for presentation is taken care of by the transformation file used.



Screen showing tree view of entities used for exchange requirements



Element data and attributes entered in the right hand pane of the Notepad.



Description text entered as an attribute in XHTML format

### ***Using a web-page Editor***

- If pages are created following the template style and saved as XHTML it is possible to transform the results into idmXML. Note that HTML pages –in general – cannot be transformed.

### ***Using a generic XML Editor***

- If pages are created using a generic XML editor, it is possible to develop content directly. Reference can be made to the buildingSMART ifcXML handbook for guidance on the complying with the idmXML schema.

## **Uploading Content**

### ***Submit your material***

- Via email to the IDM coordinator
- Directly to the IDM website

## **Acknowledgements**

The following people have made significant contributions to the project

- Jeff Wix AEC3, UK
- Nick Nisbet AEC3, UK

Nicholas Nisbet  
London  
November 2008

Concluded.