

# **UK Foodservice BIM Standards**

## **Interim Guidance Statement**

### **Rev 5**

April 2014

Prepared by BIM Academy in consultation with

CEDA - Catering Equipment Distributors Association  
CESA - Catering Equipment Suppliers Association  
FCSI - Foodservice Consultants Society International  
UK Foodservice BIM Standards Working Group

**BIM Academy**  
Northumbria University  
Ellison Building  
Northumberland Road  
Newcastle upon Tyne  
NE1 8ST

[info@bimacademy.ac.uk](mailto:info@bimacademy.ac.uk)  
[www.bimacademy.ac.uk](http://www.bimacademy.ac.uk)  
@bimacademy

## Document status

Project	Title	Status	Rev	Author	Checked	Issue date
UK Foodservice BIM Standards	Interim Guidance Statement	For Approval	5	M Stodgell	D Walsh	22 April 2014

CEDA, CESA and the FCSI have been working with BIM Academy to generate this interim guidance statement to the foodservice industry regarding BIM working methodology and the production and use of BIM component libraries.

### **Background:**

Building Information Modelling and the benefits it brings to the capital procurement and operation of buildings and infrastructure is not new, however its mainstream adoption is now becoming a reality. This is partly due to advances in software usability, desktop computing power and the emergence of open and internationally recognised standards to enable interoperability; however its recent growth has been increased by emerging private and public BIM mandates and standards around the globe.

The UK's BIM mandate originates from the Government Construction strategy of May 2011.

**“2.32** Government will require fully **collaborative 3D BIM** (with all project and asset information, documentation and data being electronic) as a minimum **by 2016**. A staged plan will be published with mandated milestones showing measurable progress at the end of each year.”

There has been much myth and misunderstanding which has emanated around this statement over the last 2 years. For clarity, the statement applies to all central HM Government department capital procurement; however local authorities, private developers and other public bodies are now also mandating BIM due to the potential efficiencies it brings and support mechanisms are in place to help them on their BIM journeys. There is no minimum value of works in the mandate, only a measure of ROI. The key phrase is **by 2016**, meaning BIM is business as normal in 2016 not the start of the implementation process. Fully collaborative 3D BIM has been defined as 'Level 2 BIM' and is documented in PAS119:2 (see below).

Over two years into the HM Task Group's BIM program, 2013 was the year in which all the standards published, meshed together and the results from the first early adoption projects became available. This enables industry supply chain members to align themselves with what is required, giving an opportunity to create their own supplementary standards and guidance. 2014 will see the publication of more standards.

This interim report should be read in conjunction the UK BIM Task Group website, which holds a wealth of information and presentations on the standards, together with case studies and signposting to further reading. [www.bimtaskgroup.org](http://www.bimtaskgroup.org)

### **Opportunities outside the UK:**

It is the UK Government's objective that the UK has the opportunity to take a lead with its BIM expertise and experience in the global construction market. Although adhering to UK standards, manufacturers and designers need to ensure that objects and BIM outputs can be regionalised easily for use outside the UK.

**Standards:**

In February 2013 a suite of standards was completed which are all relevant to the use of BIM and which are listed and briefly described below.

*PAS 1192:2:2013 Specification for information management for the capital/delivery phase of construction projects using Building Information Modelling.*

This publically available specification sets out the standards and collaborative workflows needed to complete a construction project to Level 2 BIM. A PAS 1192 compliant Level 2 BIM project typically requires the following deliverables: models in their original formats, COBie UK 2012 data and traditional 2D deliverables, i.e. drawings in PDF. The PAS also sets out a number of documents and roles that also need to be initiated and updated through the project lifecycle and mandates the use of a common data environment to aid collaboration and information management.

*BS 8541: 1,2,3&4 Library objects for Architecture, Engineering and Construction.*

This suite of British Standards gives guidance and recommendations covering symbology, shape, measurement, naming, attributes and classification for library objects.

*COBie UK 2012 – Construction Operations Building Information Exchange*

This is a formal data schema based on the original US Corps of Engineering COBie standard but regionalised for the UK. It hierarchically describes the spaces and components in a building asset and is used to describe and pass data from the Building Information Model to the client. This will be during the construction phase, for analysis of cost and carbon; and at handover to populate asset and facilities management databases. For more information go to <http://www.bimtaskgroup.org/cobie/> where templates can be found to guide the production of product COBie UK 2012 compliant data for various product areas. It should be noted that the currently published templates are not exhaustive and some types of food service equipment are not available or miss critical parameters. End user clients may also require extra project specific data. COBie UK 2012 is destined to become a British Standard ( BS1192: 4) in the summer of 2014.

*IFC – Industry Foundation Classes*

This is an internationally recognised standard (ISO 16739:2013)

It is a software platform neutral, open specification for a data model and file format that describes object based models. Its primary use is to facilitate Building Information Modelling interoperability and information sharing - <http://www.buildingsmart.org/>

*Uniclass 2*

Replacing Uniclass 1 of which CAWS (Common Arrangement of Work Sections) was a subset, this new classification system is designed to aid search and retrieval of data through organisation and structuring of information to be used throughout the lifecycle of a building or infrastructure asset and addresses many of the limitations of Uniclass 1 and its US equivalent, Omniclass.

*CIC BIM Protocols*

This document adds a supplementary legal agreement to existing forms of contract to create additional obligations between the employer and contracted party regarding the provision of Building Information Models.

## Design and production workflows:

3D co-ordinated CAD gives designers improvements in efficiency as well as accuracy of traditional drawn information, together with the benefit of visual communication of their designs through rendered perspectives. Object orientated 3D co-ordinated CAD brings the addition of data rich objects and the ability to utilise this information for other purposes. This is when 3D CAD becomes BIM. In order to harvest these benefits and to achieve the deliverables such as COBie set out in the Government mandate designers and installers need data rich objects with which to populate their models to aid selection, specification and eventual replacement during operation.

This can be done in two ways.

- *Manufacturer's Objects*

Manufacturer's specific objects need the optimum degree of geometric and data complexity to allow for interface co-ordination, design visualisation and data parameters. Historically many manufacturers' early BIM objects have been criticised for being over complex in terms of 3D geometry and yet do not have the depth of detail in terms of embedded data. Manufacturers can gain a commercial advantage by providing easy to use BIM object libraries of their products as it means designers and contractors design managers subsequently do not have to add information other than serial numbers, commissioning and installation information etc. Manufacturer objects are also used to replace conceptual generic objects when a choice of specification is made.

- *Generic Objects*

Generic 3D objects of sufficient universality can be used with empty parameters that can then be inputted either into the model or an external database when actual details are known – for example manufacturer, model, voltage, supply pipe size, etc. They are mainly useful at an early stage when the manufacturer has not been selected or if performance specification only is required.

To this end manufacturers, as a minimum, should supply their equipment data using the food service industry agreed parameters (see below), which have been mapped to the COBie UK 2012 parameters, as an excel document. Some of the key functions of utilising BIM, 3D co-ordination, visualisation and the production of 'assembly' drawings can be problematic with generic components as their overall dimensions, lack of detail and interfaces with mechanical and electrical service inlets and outlets in particular are not common (e.g. location of waste pipe). Generic objects are particularly important to represent bespoke products, e.g. ventilation systems, server counters or irregular fabrication elements, acting as place holders until detailed design has been completed.

It is often overlooked that traditional 2D drawings and schedules also need to be produced for all work packages in a project utilising BIM. Both generic and manufacturers objects need to be able to provide consistent, clear and accurate representation in 2D form to BS 8541 guidelines, particularly for assembly drawings.

Also of note is the temptation for architects, designers and MEP consultants to use manufacturer's objects to design facilities without specialist knowledge of the operational and health and safety requirements needed. It is recommended that objects should include a warning as needing specialist design knowledge to use.

**Objects:****Platform specific objects and open standard objects (IFC)**

Manufacturers can opt to produce interoperable objects in the IFC file format (Industry Foundation Classes). These have the advantage of containing all the data needed and the 3D geometry and can be imported and used in all the major BIM authoring software platforms. Although IFC does support parametric design of components, at this time we understand this is not implemented directly in any of the major software platforms. For these platforms this means that each iteration of a product needs its own bespoke IFC file. Although this could produce many hundreds of files it does benefit foodservice designers as the object cannot easily be changed within the overall project wide BIM Model.

Parametric objects allow for automatic customisation of the object on insertion into the model to pick product options. To this end some manufacturers may choose to author platform specific components to take advantage of this at a native level. Some BIM object providers recommend providing objects in the four main software formats plus IFC. ie Revit, ArchiCAD, Bentley and Vectorworks. It is acknowledged, however, that year on year IFC support within these software packages and its implementation in products such as CESA BIM and AutoScheme may negate this advice.

It should be noted that DWG 'Block' objects although giving a 3D representation of an item do not contain the data needed and are difficult to reuse efficiently for BIM. Where existing object based 3D models of manufacturers items exist already in other software packages (eg. Inventor or Solidworks), workflows do exist to utilise that geometry for BIM object creation but extreme care must be taken regarding degree's of complexity and often it is simply more efficient to remodel for use as BIM components. There are numerous examples of manufacturers in other sectors who have produced over complex objects derived from existing 3D CAD resulting in severe computing performance issues and ultimate rejection by designers.

In 2011 the FCSI released their Revit Foodservice Equipment Standards. This is a very comprehensive document which, although Revit specific, gives guidance on general production of objects, particularly regarding degrees of geometric complexity. The standards are US based in their specification and therefore could not be simply implemented in the UK.

**CESABIM**

CESA has partnered with AutoScheme to supersede its CESACAD online service to implement the needs of BIM. CESABIM uses a cloud based objects database together with locally installed software to provide manufacturers objects in IFC format. The CESABIM interface, following production of manufacturer's objects by the service, allows object customisation to include product options before the designer downloads the specific IFC object needed for the project. This provides the interoperability of IFC together with parametric benefits.

Full members of CESA, CEDA and FCSI are entitled to a free subscription to "Autoscheme Factory" to take advantage of this system for use with any BIM software that supports IFC imports.

**Parameters (also known as attributes or properties)**

There is a hierarchy of parameters to be included in BIM object library components as follows:-

- International interoperability i.e. IFC parameters
- National ie COBie UK 2012 parameters
- Professional / trade body parameters
- Project / product specific parameters

The recently completed UK Foodservice BIM standards working group object parameter standards provide for an exhaustive list of food service equipment specific parameters. Many parameters from the list only apply to specific categories of equipment, ie ventilation parameters do not apply to a gas oven range. This list has full support from CEDA, CESA and FCSI and forms the basis for the future BIM standards for the foodservice industry in the UK and ultimately is hoped the EU.

It is important that any new parameter names and formats are also agreed and standardised for various products and that they are mapped to the IFC/COBie product types and Uniclass 2 classifications. This process is now complete for v1.0 of the UK Foodservice BIM standards working group parameters, with representatives from CEDA, CESA and FCSI contributing to the process.

To this end, at present it is recommended that as a minimum that the UK Foodservice BIM standards working group parameters should be utilised for manufacturers' product datasets.

The completed UK Foodservice BIM standards working group parameter list is located in appendix A of this document and will be available shortly from [www.cesabim.com/standards](http://www.cesabim.com/standards). Product templates in line with these parameters will, in time, be made available for all product categories relating to commercial food equipment. As a short term measure manufacturers could choose an appropriate or similar COBie UK 2012 data template from the BIM Taskgroup website and expand on it utilising the UK Foodservice BIM standards working group parameters and, where needed, give feedback on this process to the BIM working group through CEDA, CESA or FCSI communication channels.