

- TECHNICAL SUPPORT

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FOR SOFTWARE DEVELOPERS

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The data within the BIM Toolkit is documented to a common schema and API access to this information is available. In this article, NBS Labs Manager Alan Smith introduces software developers to these capabilities.

INTRODUCTION

The BIM Toolkit provides a unified classification system and clear levels of detail and information for over 5,000 construction objects. It also offers the ability to create plans of work to assign deliverables to project participants. All of this data can be exported and verified using innovative technologies developed with the BIM Academy to identify that the right information has been provided at the right time in the project lifecycle.

Right from the start of the BIM Toolkit software development cycle, we were thinking about how we could make this plan of work data accessible to other software providers so that innovative solutions can be developed using our data schema.

The areas of the toolkit we thought the industry would benefit most from were:

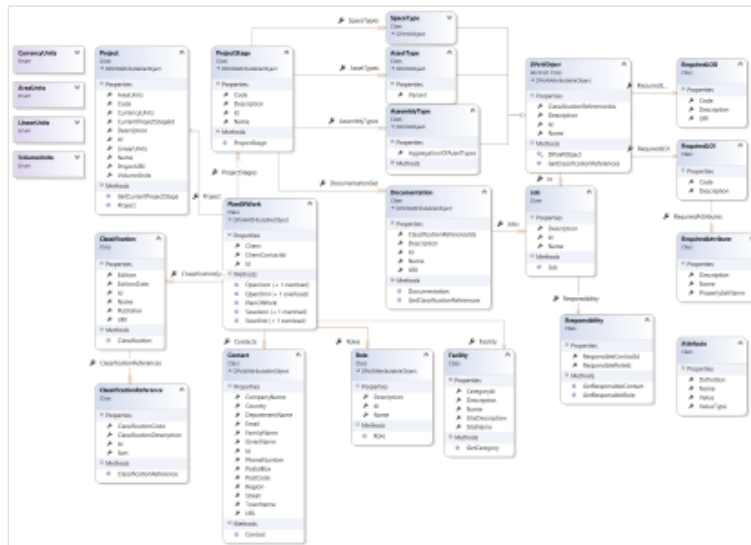
- The data within a project plan of work - such as tasks, deliverables, participants and project meta data
- The level of definition templates
- The new unified classification system

DPOW SCHEMA

The plan of work can be exported to a number of formats, offering the flexibility to use project data in a number of ways. The formats available are Microsoft Excel, COBie, IFC and JSON. Data can also be exported to a number of other formats.

For software developers - Technical Support - NBS BIM Toolkit
and apow. Upow is an export format we developed with BIM Academy to facility the conversion of digital plans of work to COBie and IFC format for verification.

The dpow file is intended to be used to digitally archive or back up projects, or to be used as a template to create a new project. For example, a dpow file could be sent electronically to bidders or a new project lead and used to create a new project. In addition, the file can also be used to transfer information for use in 3rd party platforms.



Class diagram of the dpow schema

The structure of the object model is fairly simple. A plan of work comprises of a number of project stages, which in turn have collections of roles, tasks and deliverables and their classification(s). Deliverables are separated in to Spaces, Assets and Assemblies so that they can easily be translated in to their COBie equivalents.

The dpow file itself is a JSON file, an open format that is easily readable by software applications using open source libraries, such as Json.NET. Alternatively, BIM Academy have released an XbimExchange package as part of the xBIM software development kit (<https://xbim.codeplex.com/>), which provides an easy to use dpow object model, serialization and deserialization methods and code to convert to and from COBie and IFC.

SYNDICATION OF LOD AND LOI INFORMATION

LINKING TO OBJECT DEFINITION PAGES

We wanted 3rd parties to be able to quickly link to our level of detail and level of information pages. To facilitate this, we offer a public URL with a few query string parameters to customise the output.

https://toolkit.thenbs.com/Definitions/uniclass2015_code?type=view_type&detailLevel=banding

Accepted arguments:

type

- 'lod' to display level of detail
- 'loi' to display level of information

detailLevel

- Typical LOD and LOI bandings range from 2-6

For example,

https://toolkit.thenbs.com/definitions/Ss_30_40_95_40/?type=lod&detailLevel=2

EMBEDDING AN OBJECT DEFINITION WITHIN AN IFRAME

For those looking for a bit more customisation or the ability to embed object definitions in to their own website, we would recommend linking to our object definition pages via an iframe. Alternatively, JavaScript may be added to a page to launch the definition in a new window.

```
<iframe style="width:600px;height:450px;border:1px solid black;"  
src="https://toolkit.thenbs.com/definitions/Ss_30_40_95_
```

The NBS BIM Toolkit site is currently in BETA. [VIEW](#)

BETA UPDATES

Classification:

Tell us what you think

Submit a bug



Banding: ▼

Update iframe

New window

Model



2D Section

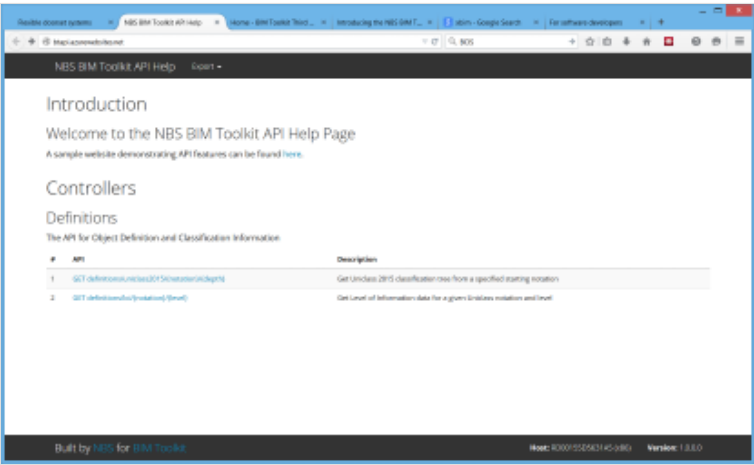


The above illustrations are for *Interlocking tile roofing systems* from the NBS section *Unit roofing systems*. This is indicative of the LOD requirements for *Interlocking tile roofing systems*.



BIM TOOLKIT API

We also wanted to offer 3rd parties access to a REST API to query and navigate our unified classification system, and programmatically obtain level of information properties.



BIM Toolkit API

The API exposes 2 methods:

- A method to query the Uniclass2015 classification system:

definitions/uniclass2015/{notation}/{depth}

{notation} - a node of the classification tree, for example Ss_70

{depth} - the number of branches under the notation to return

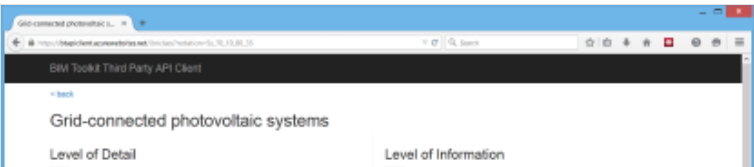
- A method to get a specific LOI banding for an object, which will return the property set that must be completed for the object to pass verification.

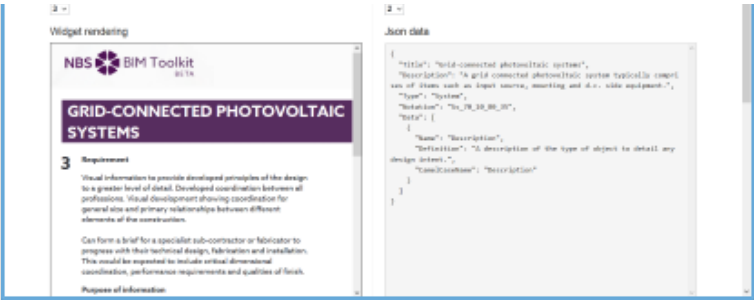
definitions/loi/{notation}/{level}

{notation} - the Uniclass2015 classification of the object, for example Ss_30_40_95_40

{level} - the LOI banding to retrieve

We have made a sample .NET web application available to demonstrate the capabilities of the BIM Toolkit API. The sample shows retrieval of the Elements, Products, Spaces and Systems table and the downloading of object definitions in JSON format.





BIM Toolkit API sample application

WANT TO KNOW MORE?

If you would like to know more about dpow, syndication of object definitions, or the BIM Toolkit API or would like a copy of the sample API application please contact us at info@thenbs.com.

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FURTHER READING



AN INTRODUCTION TO THE TOOLKIT

Dr Stephen Hamil
2nd July 2015



STEPHEN HAMIL'S BLOG



VERIFICATION
Prof Stephen Lockley
7th May 2015

BIM TOOLKIT

- Definitions
- Support
- Websites terms and conditions
- Acceptable use policy
- End User Licence
- Agreement
- Privacy policy
- Cookies

NBS

- Specifications
- National BIM Library
- Product Selector
- Standards
- Building Regulations
- Knowledge

RIBA

- Architecture.com
- RIBA CPD
- RIBA Journal
- RIBA Bookshops
- RIBA Appointments
- RIBA Insight