NATSPEC BIM STANDARDISATION

Richard Choy - CEO NATSPEC // Construction Information

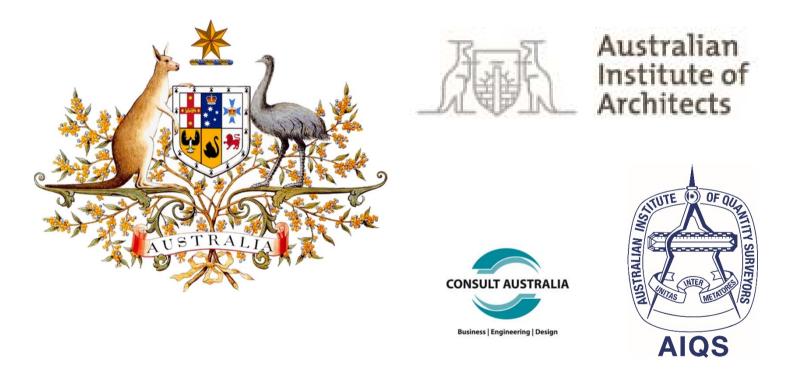


NATSPEC// Construction Information

Founded in 1975, with the objective to improve the construction quality and productivity of the built environment through leadership of information.



We are a not-for-profit organisation owned by government and industry.









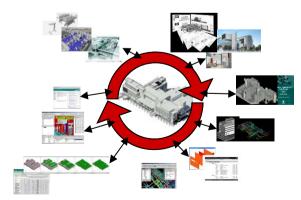
Standardise

To make one thing the same as others of that type, or to compare one thing to something accepted as a model. Cambridge Dictionary

BIM is a digital form of construction and asset operations. It brings together technology, process improvements and digital information to radically improve client and project outcomes and asset operations. BIM is a strategic enabler for improving decision making for both buildings and public infrastructure assets across the whole lifecycle. It applies to new build projects; and crucially, BIM supports the renovation, refurbishment and maintenance of the built environment – the largest share of the sector. (EU BIM Taskgroup, 2018)

Building Information Modelling

- NATSPEC believes that digital information, including 3-D Modelling and Building Information Modelling, will provide improved methods of design, construction and communication for the industry.
- Further, NATSPEC supports open global systems. This will result in improved efficiency and quality.







NATSPEC BIM Collaboration



NATSPEC



NATSPEC// ConstructionInformation

BIM Standardisation options

- BIM Library
- BIM Standard
- BIM Tools



Option: BIM Library

- Australian global consultants not happy with quality of existing BIM Libraries from around the world
- Libraries not quickly updated to be compatible with newer versions of software
- BIM MEP AUS is still a world leader





Option: BIM Standard

- Failure of MOU with NBS
- Continued work with Masterspec NZ & ICIS
- Adoption of ISO/EU Standards





BD-104 Building Information Modelling

Mirror Committee of ISO TC 59/SC 13



- ISO: International Organization for Standardization
- TC 59: Technical Committee 59 Buildings and civil engineering works
- SC 13: Subcommittee 13 Organization of information about construction works

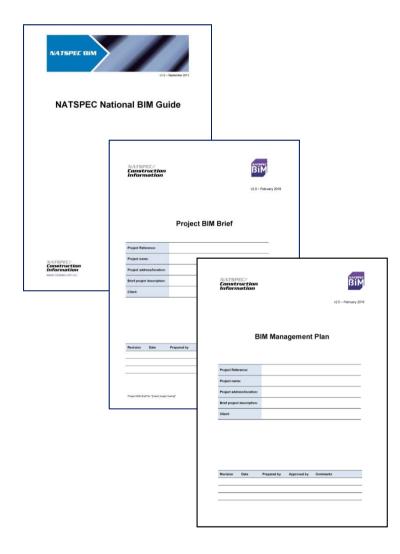
Object Standardisation

Key issues for exchange and interoperability

- Object Designation/Assignment
- Inconsistency of included properties
- Inconsistency of property naming



NATSPEC BIM Tools 2011+



Purpose:

To assist clients, consultants and stakeholders to clarify their BIM requirements for construction projects in a nationally consistent manner.



NATSPEC BIM Object/Element Matrix

3 - :	$\times \checkmark f_x$ Required	d by Client Data	D	F	F	a	н і	
Curtain Wall	BIM Object or Element		General Informat	ion Use				
	Item Catergory – Curtain Wall		Basic Tool Features	Derived Data	Selection Agent	Building System	Notes by BIM Manager	
	Description: A 2D and 3D element. A vertical surfa		Frame and Glazing Information	Moterial Surface Area	Primory Creator: Architect	Item System Category - Uniformat		
	envelope. An ourtain wall shall prevent the intrusion of the	e exements.			Secondury Creators:		Software Support For Information Items	
Level of Development AIA Document E202 - 2008 Developed by Graphisoft 2001	Information Category for Information Item (See Master Information Tab)	Information Item (information about the specific object or element)	Model Element Author	Information Classification Origin	Required by Client Data	IFC Support	ArchiCAD 1	2
DD 100 - Conceptual			1		·	•	Parameter Description	ArchiCAD Variable
	Building Program & Project Meta Data	Facility ID	-		File Properties	IfcCurtainWall->IfcBuilding.Name		
a, Height, Volume, Location, and ntation.	Building Program & Project Meta Data Building Program & Project Meta Data	Facility Name Facility Description			File Properties File Properties	¥cCurtainWall->¥cBuilding.LongName ¥cCurtainWall->¥cBuilding.Description	user ID of the curtain wall length of frames in the lourtain wall	CVALL_ID CVALL_FRAMES_LENGTH
	Physical Properties of BIM Objects & Elements	Overall Length			r lie Propercies	IfcCurtainWall>)IfcQuantityLength Name="Length"	length of frames on contour in the curtain wall	CVALL_CONTOUR_FRAMES_LEN
	Physical Properties of BIM Objects & Elements	Overall Width				#cCurtainWall->#cQuantityLength.Name="Width"	length of frames on primary gridlines in the curtain wall	CVALL MAINAXIS FRAMES LEN
	Physical Properties of BIM Objects & Elements	Overall Height				NcCurtainWall->NcQuantityLength.Name="Height"	length of frames on secondary gridlines in the curtain wall	CVALL_SECAXIS_FRAMES_LENG
	Physical Properties of BIM Objects & Elements	Overall Area				#cCurtainWall->#cQuantityArea.Name="GrossSurfaceArea"	length of other frames in the ourtain wall	CWALL_CUSTOM_FRAMES_LENG
	Physical Properties of BIM Objects & Elements GeoSpatial and Spatial Location of Objects & E					IfcCurtainWall->IfcQuantityVolume.Name="GrossVolume"	surface of panels in the curtain wall	CVALL_PANELS_SURF
	GeoSpatial and Spatial Location of Objects & E		-			IfcCurtainWall.ObjectPlacement (clarify) - IfcConstraint	surface of north panels in the curtain wall surface of south panels in the curtain wall	CVALL_PANELS_SURF_N CVALL_PANELS_SURF_S
	GeoSpatial and Spatial Location of Objects & E		-			(clarify) - VcConstraint	surface of east panels in the ourtain wall	CVALL_PANELS_SURF_E
	Costing Requirements	Conceptual Cost			×	#cCurtainWall->#cCostValue.CostType="Conceptual"	surface of west panels in the curtain wall	CWALL_PANELS_SURF_V
	Costing Requirements	Conceptual Unit Cost			×	IfcCurtainWall->IfcCostValue.CostType="Conceptual" + UnitBasis	surface of northeast panels in the curtain wall	CWALL_PANELS_SURF_NE
	Costing Requirements Energy Analysis Requirements	Future Cost Assumptions				IfcCurtainWall->IfcCostValue.CostType="Whole life"	surface of northwest panels in the curtain wall	CVALL_PANELS_SURF_NV CVALL_PANELS_SURF_SE
	Sustainable Material LEED or Other Requirement	Energy Performance Basis				IfcCurtainWall->IfcEnvironmentalImpactValue or ifcPropertySet with local LEED agreement	surface of southeast panels in the curtain wall surface of southwest panels in the curtain wall	CVALL_PANELS_SURF_SV
	Sustainable Material LEED or Other Requirement	Green Strategies				If cCurtainWall->If cEnvironmentalImpactValue or if cPropertySet with local LEED agreement	surface of the curtain wall	CWALL_SURF
	Sustainable Material LEED or Other Requirement	LEED Initiatives Bronze, Silver, Gold				IfcCurtainWall->IfcEnvironmentalImpactValue or ifcPropertySet with local LEED agreement	length of the curtain wall	CVALL_LENGTH
							height of the curtain wall	CVALL_HEIGHT
	Phases Time Sequencing & Schedule Requirem Phases Time Sequencing & Schedule Requirem	Phasing (OmniClass Table -32) Overall Duration				#cProject->#cTask.Name (stages) + #cClassificationReference to OmniClass #cProject->#cTask->#cScheduleTimeControl.ScheduleDuration	slant angle of the ourtain wall	CVALL_SLANT_ANGLE CVALL_THICKNESS
	Phases Time Sequencing & Schedule Requirem	Overall Duration				RoProject->RoTask->RoScheduleTimeControl.ScheduleUuration	thickness of the curtain wall number of panels in the curtain wall	CVALL_THICKNESS CVALL_PANELS_NR
) 200-Approximate Geometry							pattern angle of the curtain wall	CVALL_PATTERN_ANGLE
eralized Systems or Assemblies	Physical Properties of BIM Objects & Elements	Length				#cCurtainWall->#cQuantityLength.Name="Length"	type of the frame	CVFRAME_TYPE
Approximate Quantities, Size,	Physical Properties of BIM Objects & Elements	Width				#cCurtainWall->#cQuantityLength.Name="Width"	class of the frame	CVFRAME_CLASS
pe, Location, , and Orientation.	Physical Properties of BIM Objects & Elements Physical Properties of BIM Objects & Elements		-			NO STATE OF A STATE OF A STATE OF A STATE	location of the frame	CVFRAME_POSITION
	Physical Properties of BIM Objects & Elements Physical Properties of BIM Objects & Elements					IfcCurtainWall->IfcQuantityArea.Name="GrossSideArea"	slant angle of the frame width of the frame	CVFRAME_DIRECTION CVFRAME_VIDTH
	Physical Properties of BIM Objects & Elements	Maximium Size					depth of the frame	CVFRAME_DEPTH
	GeoSpatial and Spatial Location of Objects & E	Story Number				lfcCurtainWall>lfcBuildingStorey.Name	length of the frame	CVFRAME_LENGTH
	GeoSpatial and Spatial Location of Objects & E GeoSpatial and Spatial Location of Objects & E	Zone/Space Name				HcCurtainWall>HcZone.LongName (new in IFC2x4) HcCurtainWall->HcZone.Name	material of the frame	CVFRAME_MAT
	GeoSpatial and Spatial Location of Objects & E GeoSpatial and Spatial Location of Objects & E		-			ItoCurtainWall->ItoCone.Name IfoCurtainWall->IfoSpace.LongName	type of the panel class of the panel	CVPANEL_TYPE CVPANEL_CLASS
	GeoSpatial and Spatial Location of Objects & E					YoCurtainWall->YoSpace.Name	slant angle of exterior surface of the panel	CVPANEL_VERTICAL_DIRECTION
	GeoSpatial and Spatial Location of Objects & E	FloorID				IfcCurtainWall->fcBuildingStory.Name		CVPANEL_HORIZONTAL_DIRECT
	GeoSpatial and Spatial Location of Objects & E					#cCurtainWall->#cBuildingStory.LongName	width of the panel	CVPANEL_VIDTH
	GeoSpatial and Spatial Location of Objects & E GeoSpatial and Spatial Location of Objects & E					IfcCurtainWall->IfcBuildingStory.Description IfcCurtainWall->IfcBuildingStory.Elevation	nominal width of the panel height of the panel	CVPANEL_NOMINAL_VIDTH CVPANEL_HEIGHT
	GeoSpatial and Spatial Location of Objects & E GeoSpatial and Spatial Location of Objects & E					ItoCurtainWall>) ItoEulidingStory, Elevation ItoUnitAssignment -> assignment of a global length unit (m, mm, inch, feet)	height of the panel nominal height of the panel	CVPANEL_HEIGHT CVPANEL_NOMINAL_HEIGHT
	GeoSpatial and Spatial Location of Objects & E	FloorTotalHeight				#cBuildingStorey->#cQuantityLength.Name="Height"	thickness of the panel	CVPANEL_THICKNESS
▶ A10 Fou	Indations 1020 Zones-Area	a-Space B10 Colum	n B10 Bean	n B1010 F	loor B2010	0 Wall-Exterior B2020 Curtain Wall B2020	Window 🕂 🗄 🖣	

IFC - Difficult to interrogate

IFC4 Add2 - Addendum 2 [Official]

Cover Contents	 Scope Normative references 	 5. Core data schemas 6. Shared element data schemas 	A. Computer interpretable listi B. Alphabetical listings
Foreword Introduction	 Terms, definitions, and abbreviated terms Fundamental concepts and assumptions 	 Domain specific data schemas Resource definition data schemas 	C. Inheritance listings D. Diagrams

6.1.3.12 IfcCovering

6.1.3.13 IfcCoveringType

6.1.3.14 IfcCurtainWall 6.1.3.15 IfcCurtainWallType

6.1.3.16 lfcDoor

6.1.3.17 IfcDoorStandardCase

6.1.3.18 IfcDoorType

6.1.3.19 IfcMember

6.1.3.20 IfcMemberStandardCase

6.1.3.21 IfcMemberType

6.1.3.22 IfcPlate

6.1.3.23 IfcPlateStandardCase

6.1.3.24 IfcPlateType

6.1.3.25 IfcRailing

6.1.3.26 IfcRailingType

6.1.3.27 IfcRamp

6.1.3.28 IfcRampFlight

6.1.3.29 IfcRampFlightType

6.1.3.30 IfcRampType

6.1.3.31 IfcRelConnectsPathElements

6.1.3.32 IfcRelCoversBldgElements

6.1.3.33 IfcRelCoversSpaces

6.1.3.34 IfcRoof

6.1.3.35 IfcRoofType

6.1.3.12 IfcCovering

۲

•

Natural language names

Change log

6.1.3.12.1 Semantic definitions at the entity

▼ Entity definition

A covering is an element which covers some part of another element and is fully dependent on that other element. The type, that (if given) is expressed by the IfcCoveringType.

NOTE Definition according to ISO ISO 6707-1: final coverings and treatments of surfaces and their intersections.

Coverings are elements with relationships to the covered element and the space on the other side, they may contain c information, assigned by IfcRelAssociatesMaterial, and others.

EXAMPLE Coverings include wall claddings, floorings, suspended ceilings, moldings and skirting boards.

NOTE A more basic information about claddings, floorings, and ceilings of a space can be attached to IfcSpace's using the Pset_SpaceCommon proquantities would be interpreted from the space quantities.

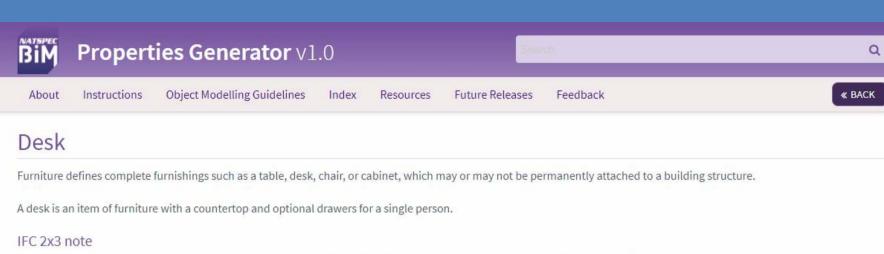
Coverings can be assigned to

- a space represented by IfcSpace
 - using the inverse relationship CoversSpaces pointing to IfcRelCoversSpaces. The space is then acce which space a covering is facing towards.

About Instructions Obje	ct Modelling Guidelines Index	Resources Future Releases	Feedback	« BACI
A B C D E	F G H I J K	L M N O P	Q R S T U	V W X Y Z
F				
Flooring (10)				
Carpet	Ceramic Floor Tiling	Resilient Floor Finish	Stone Floor Tiling	Terrazzo In Situ Flooring
Cementitious Floor Topping	Engineered Panel Flooring	Seamless Resin Flooring	Terrazzo Floor Tiling	Timber Flooring
Foundations (11)				
Beam Footing	Driven Pile	Pile Cap	Undefined Footing Type	
Bored Pile	Jet-Grout Pile	Screw Pile	Undefined Pile Type	
Caisson	Pad Footing	Strip Footing		
Furnishings (8)				
Bed	Desk	Fixed Furniture	Sofa	
Chair	Filing Cabinet	Shelf	Table	
G				
Gates (1)				
Gate				

Acoustic Insulation

Thermal Insulation



For IFC2x3 use the IfcObjectType of IfcFurnitureType and include the 'Name' attribute/property completed with the value of 'Desk'.

Source	Property Categories	Classification		
COBie IFC 2x3 IFC4 Add2 NATSPEC BIM	Admin data Code compliance data Construction logistics data Cost data	(Select the classificatio Masterformat	n you'd like to be included in the Excel export) 12 55 16 : Detention Desks 12 59 23 : Desk System Furniture 12 51 23 : Office Tables	
NATSPEC Spec	Facilities management data	NatspecWorksection	0571 Workstations	
	Geometric data		0572 Miscellaneous furniture	NATSPEC
	Manufacturer data Scheduling data Spatial and location data	Omniclass Table 21 Elements	21-05 20 50 30 : Furniture	BiM



Desk

Furniture defines complete furnishings such as a table, desk, chair, or cabinet, which may or may not be permanently attached to a building structure.

A desk is an item of furniture with a countertop and optional drawers for a single person.

IFC 2x3 note

For IFC2x3 use the IfcObjectType of IfcFurnitureType and include the 'Name' attribute/property completed with the value of 'Desk'.

IfcElementType	lfcFurniture	=IfcExportAs (REVIT)
IfcPredefinedType	DESK	=IfcExportType (REVIT)
Suggested Filename:	Desk	
Suggested LOD (Design Model)	300	
Suggested Primary Discipline	Interiors	

-					
-	\sim		10	~	\sim
	o	u			-
-	-	-		-	-

Property Categories

COBie	Admin data
IFC 2x3	Code compliance data
IFC4 Add2	Construction logistics data
NATSPEC BIM	Cost data
NATSPEC Spec	Facilities management data
	Geometric data
	Manufacturer data
	Scheduling data

-				
1	Spatial	and	location	data

Classification			
(Select the classificatio	n you'd like to be included in the Excel export)		
Masterformat	12 55 16 : Detention Desks		
	12 59 23 : Desk System Furniture		
	12 51 23 : Office Tables		
NatspecWorksection	0571 Workstations		
	0572 Miscellaneous furniture		
Omniclass Table 21 Elements	21-05 20 50 30 : Furniture		

Q

« BACK

Curtain wall

A curtain wall is an exterior wall of a building which is an assembly of components, hung from the edge of the floor/roof structure rather than bearing on a floor.

IfcElementType	IfcCurtainWall =IfcExportAs (REVIT)	
IfcPredefinedType	NOTDEFINED =IfcExportType (REVIT)	
Suggested Filename:	CurtainWall	
Suggested LOD (Design Model)	300	
Suggested Primary Discipline	Architectural	

Source

Property Categories

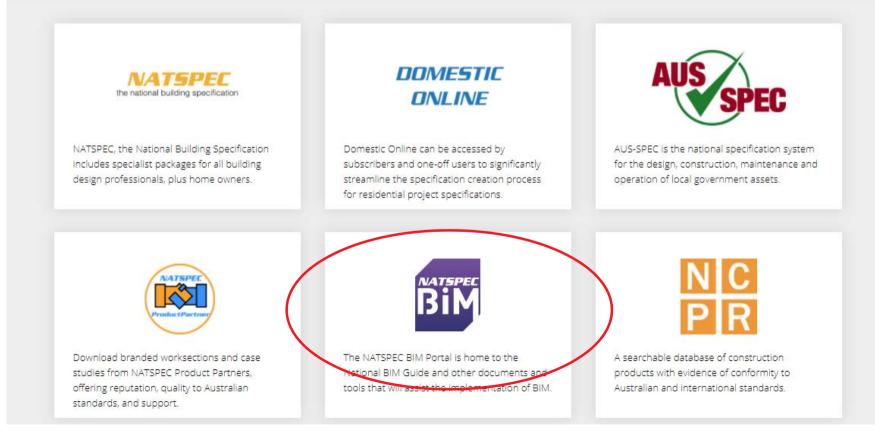
Classification

BIM Forum	Admin data	Masterformat	08 44 00 : Curtain Wall and Glazed Assemblies
IFC 2x3	IFC 2x3 Code compliance data	NatspecWorksection	0432 Curtain walls
IFC4 Add2Construction logistics dataNATSPEC BIMCost dataNATSPEC SpecFacilities management dataGeometric dataGeometric data	Omniclass Table 21 Elements	21-02 20 10 40 : Fabricated Exterior Wall Assemblies	
		Omniclass Table 22 Work Results	22-08 44 00 : Curtain Wall and Glazed Assemblies
	Manufacturer data Performance data	Omniclass Table 23 Products	23-13 33 19 11 : Cladding and Curtainwall Panels
	Scheduling data		23-13 33 27 11 : Curtain Walls
	Spatial and location data	Uniclass Elements	EF_25_10 : Walls
	Specification data	Uniclass Systems	Ss_25_10_20 : Curtain walling systems
	Sustainability data	Uniformat	B2010.40 : Fabricated Exterior Wall Assemblies



ile Home Insert Draw	Page Lavout Formulas Data Review View Developer Help \bigcirc T	
	Page Layout Formulas Data Review View Developer Help 🖓 T	ell me what you want to do
0 - I × 0	fx Curtain Walls	
A	В	c
urtainWall		
CElementType:	IfcCurtainWall	= IfcExportAs (REVIT)
CPredefinedType:	NOTDEFINED	= IfcExportType (REVIT)
aggested Filename:		
uggested LOD (Design Model):	300	
aggested Primary Discipline (Design Model):	Architectural	
ATSPECCode	0432	Classification data
ATSPECTitle	Curtain walls	Classification data
ATSPECVersion	Apr-18	Classification data
niclass2015ElementsCode	EF_25_10	Classification data
niclass 2015 Elements Title	Walls	Classification data
niclass2015ElementsVersion	1.2	Classification data
niclass2015SystemsCode	Ss_25_10_20	Classification data
niclass2015SystemsTitle	Curtain walling systems	Classification data
niclass2015SystemsVersion	1.9	Classification data
mniclassTable21Code	21-02 20 10 40	Classification data
mniclassTable21Title	Fabricated Exterior Wall Assemblies	Classification data
mniclassTable21Version	2012-05-16	Classification data
mniclassTable22Code	22-08 44 00	Classification data
mniclassTable22Title	Curtain Wall and Glazed Assemblies	Classification data
mniclassTable22Version	'2013-08-25	Classification data
mniclassTable23Code	23-13 33 19 11	Classification data
mniclassTable23Title	Cladding and Curtainwall Panels	Classification data
mniclassTable23Version	'2012-05-16	Classification data
mniclassTable23Code	23-13 33 27 11	Classification data
mniclassTable23Title	Curtain Walls	Classification data
mniclassTable23Version	'2012-05-16	Classification data
niformatCode	B2010.40	Classification data
niformatTitle	Fabricated Exterior Wall Assemblies	Classification data
niformatVersion	2010	Classification data
asterformatCode	08 44 00	Classification data
asterformatTitle	Curtain Wall and Glazed Assemblies	Classification data
asterformat Version	2016	Classification data
reatedBy	NATSPEC BIM	Admin data
reatedByURL	NATSPEC BIM	Admin data NATSPE
odifiedIssue	NATSPEC BIM	Admin data

NATSPEC BIM Portal



Questions

FOR FURTHER INFORMATION GO TO WWW.NATSPEC.com.au

NATSPEC// ConstructionInformation