Guideline

System, service and component names and tags

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About

BIM-MEP^{AUS} is an industry initiative lead by the AMCA to support the use of best practice building services BIM for digital project delivery and life cycle asset management.

Contact

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Document formatting convention

The following text formats are used in BIM-MEP^{AUS} documents:

Text type		Used for
Italicised text	BIM Execution Plan	The generic title for a type of document
Bold italicized text	**BIM-MEP ^{AUS} specification**	The name of a referenced document
Red bold text	**LOD**	First reference to a term or abbreviation that is defined in the BIM-MEP^{AUS} website glossary
Blue text	www.bimmepaus.com.au	Hyperlink / web link
Blue italicized text	Explanatory notes	Explanatory or reference notes

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1 INTRODUCTION

1.1 Scope

The use of consistent system, service and component names and tags are critical for reliable data management and analysis, engineering calculations and workflow automation.

This guideline provides an overview of the naming and tagging conventions used by BIM-MEP[AUS] to create a common data environment.

To assure a single point of truth for BIM-MEP[AUS] names and tags, the website provides open access to the following tables:

- BIM-MEP[AUS] System table
- BIM-MEP[AUS] Product table.

Related BIM-MEP[AUS] naming conventions guidelines include:

- BIM-MEP[AUS] Guideline – Disciplines and Roles
- BIM-MEP[AUS] Guideline - Shared parameters
- BIM-MEP[AUS] Guideline – Units of measure
- BIM-MEP[AUS] Guideline – Nomenclature.

1.2 References

In developing the BIM-MEP[AUS] naming conventions, the following have been considered in general order of precedence:

- Terminology used in the latest editions of ISO and Australian Standards
- Established Australian industry practice
- Professional association practice guidelines
- Data standards and guidelines
- BIM standards & guidelines
- Autodesk® Revit®.

Many project design and construction documentation packages have also been reviewed to assess industry practice and assure that the naming conventions developed can meet industry requirements for scope and clarity.

The following key points are noted:

- Current industry alignment with respect to naming conventions is reasonably consistent, however there is no single point of truth in terms of naming conventions which is limiting the ability to implement reliable and efficient digital design and construction workflows and digital asset management analytics.
- Revit MEP presents challenges when attempting to align Revit terminology and practices with established industry terminology and practices. BIM-MEP[AUS] has taken its priority to be to develop a unified framework of definitions and naming conventions that are consistent across all disciplines – where conflicts arise between Industry Practice and Revit such as the meaning of "Discipline" these have been defined within this Guideline with the purpose of assuring removal of ambiguity.
- The use of client specific naming conventions can be quite problematic for project delivery stakeholders and there are significant benefits to be obtained at a project and property portfolio level in adopting a national standard.

2 SYSTEMS & SERVICES

Use of systems, services and specifications are key to modelling practices that support design analysis, fabrication and system commissioning.

2.1 Systems

Systems are groups of connected components that combine to deliver a service such as chilled water, electrical power or fire detection and typically comprise a source component, a reticulation network and terminal components.

For a chilled water system this would comprise:

- Source Component – Chiller - generates chilled water
- Reticulation Network – comprising pump, pipework (straights and fittings) and accessories such as strainers, balancing and control valves and testing points
- Terminal devices – Chilled Water Coils.

For a UPS system this would comprise:

- Source Component – UPS Unit
- Reticulation Network – comprising UPS output switchboard, cabling systems and protection devices.
- Terminal Devices – Switchboards or power outlets.

For a Fire Detection system this would comprise:

- Source Component – Fire Detection, Control, Indicating Main Panel (FDCIE Main Panel)
- Reticulation Network – Detection Cabling Network including network and distributed panels
- Terminal Devices – Fire and Smoke Detectors.

It is sometimes industry practice to break systems into sub-systems. For instance, chilled water and heating hot water distribution networks are generally divided into flow and return systems with the designation of the ends of each system being the pump whilst for air side systems these may be divided into supply and return systems with the designation point being the AHU.

The complete listing of Systems by Discipline is provided in the BIM-MEP[AUS] website for the System Table.

2.2 Services

BIM-MEP[AUS] services join a system with a quality specification that includes materials, fabrication standards and routing preferences.

For instance, for a Supply Air System, there are several possible specifications that can be used. The BIM-MEP[AUS] Template Add-in provides:

- SA_LP: a low pressure (500Pa) rigid galvanized ductwork distribution system forming part of the Supply Air System
- SA_HP: a high pressure (1000Pa) rigid galvanized ductwork distribution system forming part of the Supply Air System,

It is important that the correct service is selected for each system when modelling to assure that the system requirements are correctly understood and manufactured to the intended specification.

2.3 Service Specifications

BIM-MEP[AUS] service specifications detail the quality specification and routing preferences for a fabricated distribution system.

The specifications are based on a combination of Australian Standards and industry practice as well as relevant engineering association design guidelines.

For details in relation to the Service Specifications refer to the relevant BIM-MEP[AUS] Service Specifications.

3 PRODUCTS

3.1 Definition

Products are created to serve a specific function. For instance, all pump products have the common function to move fluids.

The BIM-MEP[AUS] Product Classification Table provides the basis for:

- Organization of product specifications and Industry Foundation Model Family (IFM) types
- Classification of products for procurement, commissioning and maintenance management
- Generation of the component ID tags.

The BIM-MEP[AUS] Product Classification Table is located on the BIM-MEP[AUS] website.

3.2 Basis of Classification

Several product classification tables were examined for use by BIM-MEP[AUS], ultimately it was determined a discipline-based structure with a higher level of product sub-classification and greater alignment with industry practice was needed.

There are some clear benefits to a classification number-based system due to its ability to be applied globally without the complexity of language translation. The BIM-MEP[AUS] Product Table uses the Virtual Building Quality System Codes (VBIS) as well as providing mapping to Uniclass and OmniClass Product classifications where these are available.

The BIM-MEP[AUS] website also provides for reference the current Uniclass and OmniClass Product Tables in a modified format that provides insights into their underlying structure and classification methodology

Once the system has been tested it is planned to add a tiered numbering system.

3.3 Product Classification

Highest level product classification is determined by the Discipline Package that the product will typically be used within. Usually, this assures that groups of products normally associated with specific disciplines are grouped together.

Discipline	VBIS Code	Discipline	VBIS Code
Architecture	AR	Landscape	LS
Building Logistic Systems	BLS	Maintenance Access Systems	MAS
Building Management and Control	BMC	Mechanical	ME
Civil	CVL	Medical & Laboratory Equipment	MLE
Commercial Refrigeration	CR	Medical & Laboratory Services	MLS
Communications	CO	Passive Fire Protection	PFP
Electrical Lighting	EL	Pre-cast	PC
Electrical Power	EP	Security	SE
Facade	FA	Structure	ST
Fire Protection	FP	Structural Steel	SS
Furniture, Fittings & Equipment	FFE	Vehicle Infrastructure	VI
Food Services	FS	Vertical Transportation	VT
Hydraulics	HY		

The product classification process then assesses the product by the specific function it serves, whilst also considering factors such as established industry procurement practices and specializations.

To illustrate this, comfort air conditioning units and process air conditioners are both type of air conditioners, however process air conditioners are considered a specific product type designed for applications such as computer rooms and close control manufacturing environments. They are also typically supplied by specialist manufacturers leading to process air conditioners have their own product type and sub-classification structure.

The sub-type classification structure is based on hierarchy of the product type characteristics. For instance, the product type Chillers are classified as follows:

1st Level of sub-classification: Chiller type:	2nd Level of sub-classification: Compressor type or absorption heat source type:
• Air Cooled • Water Cooled • Adiabatic Cooled • Absorption	• Reciprocating • Screw • Scroll • Centrifugal • Direct Fired • Waste Heat • Steam

With this level of classification in place together with the size range data of the chiller sufficient information is provided to support procurement workflows and analytics as well as high level life cycle asset management planning and maintenance procurement and management.

A sample classification using the BIM-MEP^{AUS} / VBIS coding system is as follows:

For an air-cooled screw chiller, the VBIS code is ME-CH-AC-SR. This code is "readable" without reference to a table.

For an air-cooled screw chiller, the highest level of classification available within Uniclass and OmniClass are:

- Uniclass: Pr_60 60 13 04 Air cooled liquid chillers, and
- OmniClass: 33 21 13 21 11 Packaged Screw Chiller.

Uniclass provides no ability to define the compressor type whilst OmniClass cannot distinguish whether the chiller is air cooled or water cooled limiting both classification systems ability to be applied as effectively as desirable to maintenance scheduling or asset management analytics.

4 TAG NAMES

The BIM-MEP[AUS] classification structure of disciplines, systems and products creates a unified framework for creating asset tag names.

4.1 Asset Tag Syntax

The asset tag convention is:

- System.Product Level-Sequential Number
- CHW.P 32-1

The Parent Product/Child Product asset tag convention is

- System.Product_ChildProduct Level-Sequential Number
- CHW.P_VSD 32-1

4.2 Asset Tag Delimiters

The use of delimiters is deliberate and designed to facilitate data base analytics. The delimiters used are selected for readability and permit a different number of characters to be used for each system or product designation.

There are four delimiters used in the syntax:

"."	Full stop
"_"	Underscore
" "	Space
"-"	Hyphen.

Full Stop

Is used to separate the system and product designation. e.g.

SystemServed:	CHW
Component:	P (Pump)

is designated: **CHW.P**

Underscore

Is used to delimit a child component. e.g.

The VSD for the above pump

is designated: **CHW.P_VSD**

Space

Used to separate the product designation from the location level information.

Located on Level 31, the above chilled water pump

is designated **CHW.P 31-1**

Hyphen

Is used to separate the sequence information.

For example, the second chilled water pump located on level 31 of a building

is designated **CHW.P 31-2**

4.3 Maintainable components

Parent/Child relationships are also important for maintainable components within an assembly such as a switchboard that need to be separately identified for commissioning, testing and maintenance scheduling purposes.

Examples of maintainable components include:

- Mechanical: Fans, air filter banks and chiller capacitors
- Electrical: Air circuit breakers, residual current devices, batteries
- Fire: FDICE batteries

Maintainable components can be considered like child components and are therefore separated with an underscore.

Where there are multiple maintainable components within a component such as switchboard these are individually numbered as a suffix to the main component ID.

System: EP = Electrical power distribution system

Component Type: SB

Component Sub-type: MSB

Location Level: GRD = GRD

is designated: **EP_MSB_ACB GRD-01.**

Maintainable components within the switchboard that need to be identified for routine inspection, testing and maintenance comprise 2 off ACBs = air circuit breakers 01 & 02

are designated: **EP.MSB_ACB GRD-01-01**

EP.MSB_ACB GRD-01-02

For an AHU it is necessary to separately identify the fans, coils and filters for a number of reasons including instrumentation and maintenance scheduling. The designation of the fan, cooling coil and filters are separately identified as follows:

Component Type: AHU

Location Level: 10

is designated: SA_AHU 10-1

The components are designated as:

- **SA.AHU_SA.F 10-1**
- **SA.AHU_SA.F_VSD 10-1**
- **SA.AHU_CC 10-1**
- **SA.AHU_HC 10-1**
- **SA.AHU_AF 10-1-01 (Prefilter)**
- **SA.AHU_AF 10-2-02 (Deep Bed)**
- **SA.AHU_RA.F 10-1**

END