BIM DAY 2019

The Importance of Standardization in BIM Implementation | 200319

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Conclusion





Standardization

 Process of developing, promoting and possibly mandating standards- based and compatible technologies and processes within a given industry.

> Source from https://whatis.techtarget.com/definition/standardization

• BIM

• Use of a shared digital representation of a built asset to facilitate design, construction and operation processes to form a reliable basis for decisions.

Source from ISO 19650-1:2018, 3.3 Terms related to information management, 3.3.14 building information modelling BIM pg. 5



Standardization

 Process of developing, promoting and possibly mandating standards- based and compatible technologies and processes within a given industry.

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Introduction | Decoding The Topic



- Standardization
- Process of developing, promoting and possibly compatible technologies and processes within

Item, thing or entity that has potential or actual value to an organization

- based and

standardization

- BIM
- Use of a **shared digital representation** of a **built asset** to facilitate design, construction and operation processes to form a reliable basis for decisions.



Source from ISO 19650-1:2018, 3.3 Terms related to information management, 3.3.14 building information modelling BIM pg. 5

Introduction | Decoding the Topic





duct, services and method Product are appropriate for the compati intended use

Products and systems are compatible and interoperable

Understand variance in our processes and make appropriate corrections







Introduction | ISO 19650 Information Management Maturity Stages



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Case Study 1 | Wakaf Bharu Flyover / PBH Sarawak BIMASIA

Client

Damakmur Sdn Bhd



Description

Design and Construction of an upgrading existing works (1.4 km) from 2 lane two way to 4 lane two way road based in the JKR U5 standard. This project shall be the benchmark of BIM Implementation for Infrastructure (BIM Level 2) for JKR

Scopes & Innovations

BIM Execution Plan Level of Development Specification for Infrastructure Lead BIM Coordinator (Design to As-built) LOD 100 to LOD 500 BIMASIA Codeset for Civil3D BIM Family and Subassemblies As built model based on SKATA Extensive use of 4D simulation to reduce construction duration and cost BIM model used for Contour, Slope, Elevation Study; Traffic, Flood, Street lighting Analysis; and Cadastral Lot Impact Study Utility Relocation & Temporary Works

Status Design Stage **Client** UTSB for Lebuhraya Borneo Utara Sdn Bhd



Description

Development and upgrading of Pan Borneo Highway Sarawak (Phase 1), approximately 800km utilizing BIM, GIS and UAV systems to manage and monitor all the WPC road packages, to mitigate risk, track the progress of work and to build up a centralised data system for Operation & Maintenance purposes.

Scopes & Innovations

BIM Execution Plan

Lead BIM Coordinator (pre-construction, construction & asbuilt) LOD 300/400/500 BIM Management and Modelling Civil & Structure / Utilities / Architecture 1st BIM Highway project utilizing GIS & UAV in the World Benchmark BIM highway project for KKR)

Status Completion of base modelling in April 2018. Overall Completion 2021

Case Study 1 | Wakaf Bharu Flyover / PBH Sarawak BIMASIA

Primary Software Package	Software Name	Version	Input Format	Output Format	Remarks		No.	Process Analysis receive drawing/Data		a ellers HIM Coo	UTS8 erdinators (LBU)	UTSB BIM Specialist	C&S/M&E Consultants	
Kementerian Kerja Raya (KKR) Independent Checker	AutoCAD Primavera P6 Naviswork Manage AutoCAD PDF file	2016	.dwg, .rvt, .nwd, .pdf .pdf,.dwg		ho cre	eat ifv	:e	Jeentry the libraries (PK1/.vc) re.rta)		YES	NO	→		
Engineer Project Delivery Partner- LBU	AutoCAD Primavera P6 ArcGIS Bentley Project Wise	2016	.dwg, .rvt, .nwd, .pdf, .tif, .gdb	6	approv	/e [*]	?	r if have any aise every descrepancies during modelling ork						
Operation and Maintenance - LBU	Bentley Asset Wise		.dwg, .rvt, .nwd, .pdf, .tif, .gdb	i.dgn / iModel	Upon project completion		7	. Naming the file based on Naming onvetion . Combination of Model (Based on Colour ode) ubmit.nwd model for review and ommend						
WPC Contractor	Autodesk Civil 3D Autodesk Naviswork Manage Primavera P6	2016	.pdf,.dwg	.nwd	Exchange request to be approved by PDP		9	iave and Upload in NAS Server Start End	Action Process	<				
Civil & Structural Engineers	AutoCAD PDF file	2016 2010	.pdf,.dwg	.nwd	Exchange request to be		No.	Process	ialist	UTSB HIM Modellers	нім соо	UTSB rdinators (LBU)	LBU Digital Information & Technology	C&S/M&E Consultants
M&E Engineers	AutoCAD PDF file	2016 2010	.pdf,.dwg	chec	no cre :k, ver	ify	:e /	and ^{offcopy v}	ia email am)					
Quantity Surveyor	AutoCAD PDF file	2016 2010	.pdf,.dwg		request to be approved by PDP	/e`	5	ties to discu be used to o Receive RFI Reply & Analyse RFI Repl Email all the information base on RFI	iss on close the ly I respond		NO	YES		
Land Surveyor	AutoCAD PDF file	2016 2010	.pdf,.dwg	.nwd	Exchange request to be approved by PDP		7	Receive information via email & Con the agreed item complete.	cur all		NO	YES		
GIS	Bentley Microstation Esri ArcMap	Ver. 8 Ver. 10.3	.las, .las	.las .3mx	Exchange request to be		9	Proceed with Modelling Works for th pertaining RFI	ne	•				
	Global Mapper	Ver. 16	.tif	.ecw	approved by PDP			Start End	5	Action Info	Pro-	cess		

Case Study 1 | BIM Execution Plan (BEP)





Case Study 1 | BIM Workflow





WPC02 - MasterCheck List of Progress

Nos.	IM Modelle	Model Category	Element 👻	Item Name	Zone	No. Fold 🖵	Date Approved (Site) -	Date Received (To HIN 🔻	Date Finishe 🖕	Status	Remarks 🔻	Drawing No.	TSRS No.	Feedback/ Response
210	Angela	Shop Drawing	Bridge	Sg Moyan	B6	15	19/10/2018	14/01/2019	15/02/2019	Completed	- bearing setting out (Bridge A&B)	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0222/S2 (REV.01)	0202 sd c_s tsrs104 rev1 - code1	
211	Angela	Shop Drawing	Bridge	Sg Moyan	B6	15	08/12/2018	14/01/2019	15/02/2019	Completed	- As built drawing for Bridge A-Pier 2	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0222/A1 (REV.00)	0202 sd c_s tsrs177 rev0 - code1	2
212	Angela	Shop Drawing	Bridge	SgMoyan	B6	15	12/10/2018	14/01/2019	15/02/2019	Completed	- shop drawing Bridge A&B, cross section for pier 1	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0222/002 (REV.01)	0202 sd c_s tsrs102 rev1 - code1	
213	Angela	Shop Drawing	Bridge	SgMoyan	B6	15	08/12/2018	14/01/2019	15/02/2019	Completed	As-Built drawing for Bridge A-Abutment B	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0222/A2 (REV.00)	0202 sd c_s tsrs178 rev0 - code1	
214	Angela	Shop Drawing	Bridge	SgMoyan	B6	15	12/10/2018	14/01/2019	15/02/2019	Completed	- pile cap setting out (Bridge A&B)	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0222/001 (REV.01)	0202 sd c_s tsrs103 rev1 - code1	
215	Angela	Shop Drawing	Bridge	Sg Moyan	B6	15	27/07/2018	14/01/2019	15/02/2019	Completed	-Bridge A&B-cross section for abutment A&B	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0222/003 (REV.00)	0202 sd c_s tsrs101 rev0 - code1	r ====================================
216	Angela	Shop Drawing	Bridge	Sg Moyan	B6	15	19/10/2018	14/01/2019	15/02/2019	Completed	-Bridge A&B-pile cap setting out	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0222/S1(REV.01)	0202 sd c_s tsrs100 rev1 - code1	
217	Angela	Shop Drawing	Bridge	Sg Mutud	B2	15	16/11/2018	14/01/2019	15/02/2019	Completed	- cross section for Pier 2 (Bridge A&B)	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0217/001 (REV.00)	0202 sd c_s tsrs171 rev0 - code1	
218	Angela	Shop Drawing	Bridge	Sg Mutud	B2	15	16/11/2018	14/01/2019	15/02/2019	Completed	- cross section for Pier 1 (Bridge A&B)	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0217/002 (REV.00)	0202 sd c_s tsrs172 rev0 - code1	
219	Angela	Shop Drawing	Bridge	Sg Mutud	B2	15	16/11/2018	14/01/2019	15/02/2019	Completed	- cross section for abutment A&B	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0217/003(REV.0 0)	0202 sd c_s tsrs173 rev0 - code1	21
220	Angela	Shop Drawing	Bridge	Sg Mutud	B2	15	08/12/2018	14/01/2019	15/02/2019	Completed	- bearing setting out bridge A&B	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0217/S1(REV.00)	0202 sd c_s tsrs174 rev0 - code1	
221	Angela	Shop Drawing	Bridge	Sg Mutud	B2	15	16/11/2018	14/01/2019	15/02/2019	Completed	- bearing setting out bridge A&B	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0217/S2 (REV.00)	0202 sd c_s tsrs153 rev0 - code1	
222	Angela	Shop Drawing	Bridge	SgNowang	В3	15	16/11/2018	14/01/2019	22/02/2019	Completed	- cross section abutment A&B	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0218/001 (REV.00)	0202 sd c_s tsrs160 rev0 - code1	
223	Angela	Shop Drawing	Bridge	SgNowang	B3	15	16/11/2018	14/01/2019	22/02/2019	Completed	- cross section Pier 1	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0218/002 (REV.00)	0202 sd c_s tsrs161 rev0 - code1	27
224	Angela	Shop Drawing	Bridge	SgNowang	B3	15	13/11/2018	14/01/2019	22/02/2019	Completed	- bearing setting out (Bridge A&B)	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0218/S2(REV.00)	0202 sd c_s tsrs162 rev0- code1	
225	Angela	Shop Drawing	Bridge	SgNowang	В3	15	13/11/2018	14/01/2019	22/02/2019	Completed	- pile cap setting out(bridge A&B)	PDP/PBHS/SSM/2017/WPC- 02/SRSB/BR0218/S1(REV.00)	0202 sd c_s tsrs163 rev0- code1	
	š		8 0	8	8 %			}		81		PDP/PBHS/SSM/2017/WPC-		1

Case Study 1 | MasterCheck List of Progress





Case Study 1 | File Coordination + Standardization BIMASIA

LEVEL OF DEVELOPMENT (LOD) SPECIFICATION FOR INFRASTRUCTURE

LOD 300

DESCRIPTION

PARAMETER

Dimension (exact.

Solid Name

Material

Volume

Туре

3D pier / column detailed

model with exact size,

shape, and location. This

with previous structure.

object should be modeled

LOD 350

DESCRIPTION

PARAMETER

Type Solid Name

Material

Volume Rebar

Quantity

Dimension (accurate

3D pier / column detail

Rebar model only just

approx. quantification.

model with accurate size,

shape, rebar and location.

PIER / COLUMN

LOD 200

DESCRIPTION

3D pier / column model

should be modeled with

location. This object

previous structure.

Dimension (approx.)

PARAMETER

Component

Туре

BIMASIA - Level of Development Specification for Infrastructure | Pier / Column

with basic size, shape, and

LOD 100

DESCRIPTION

PARAMETER

Dimension (2D)

Type Layer Name

Line Type

2D pier / column plan in

vector format. Located in

accurate location, include

the X Y coordinates.

LEVEL OF DEVEOLOPMENT (LOD) SPECIFICATION FOR INFRASTRUCTURE

No Classification		No	Item Name	Abbreviation		LC	D Ava	Reference			
		140	item ivanie	Abbreviation	100	200	300	350	400	500	Nererence
1	Civil & Structure	1	Surface		\checkmark	1	\checkmark	\checkmark	\checkmark		BIMASIA LOD V1.2
		2	Slope Treatment		\checkmark	1	\checkmark	\checkmark	\checkmark		BIMASIA LOD V1.2
		3	Pavement		\checkmark	1	\checkmark	\checkmark	\checkmark		BIMASIA LOD V1.2
		4	Lane Marking		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		BIMASIA LOD V1.2
		5	Road Furniture*								
		6	Guardrail		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		BIMASIA LOD V1.2
		7	Box Culvert	BC	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		BIMASIA LOD V1.2
		8	Reinforced Concrete Pipe	RCP	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		BIMASIA LOD V1.2
		9	Drainage		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		BIMASIA LOD V1.2
		10	Retaining Wall	BP	\checkmark	\checkmark	\checkmark	\checkmark	<		BIMASIA LOD V1.2
		11	Bore Pile		\checkmark	1	\checkmark	\checkmark	<		BIMASIA LOD V1.2
		12	Pile Cap		\checkmark	1	\checkmark	\checkmark	<		BIMASIA LOD V1.2
		13	Pier / Column		\checkmark	\checkmark	\checkmark	\checkmark	<		BIMASIA LOD V1.2
		14	Headstock / Pier Head		\checkmark	1	\checkmark	\checkmark	<		BIMASIA LOD V1.2
		15	Girder		\checkmark	1	\checkmark	\checkmark	<		BIMASIA LOD V1.2
		16	Barrier / Parapet		\checkmark	1	\checkmark	\checkmark	<		BIMASIA LOD V1.2
		17	Soil Nailing		\checkmark	1	\checkmark	\checkmark	<		BIMASIA LOD V1.2
		18	Sump*								
		19	Shotcrete		\checkmark	1	\checkmark	\checkmark	<		BIMASIA LOD V1.2
2	Electrical	20	Telecomunication Cable*	TEL	~	~	\checkmark	~	<		BIMFORUM 2017
		21	High Voltage Cable*	нт	>	>	\checkmark	>	~		BIMFORUM 2017
		22	Low Voltage Cable*	LT	>	>	\checkmark	>	~		BIMFORUM 2017
		23	Street Lighting*		<	1	1	1	<		BIMFORUM 2017
		24	Feeder Pilar*		<	1	1	1	<		BIMFORUM 2017
		25	Electrical Cabinet*		1	1	1	1	1		BIMFORUM 2017
3	Mechanical	26	Waterpipe*		1	1	1	1	1		BIMFORUM 2017
		27	Gas Pine*		1	1	1	1	1		BIMEORUM 2017

D

*Reference to BIM Forum 2015 Level of Development Specifications and Building Component Catalogue Level of Development Specification (LOD) / June 2015

			_	-			
Case	Study	1	_evel	of	Develop	oment	(LO

BIMASIA

LOD 400

DESCRIPTION

3D pier / column

fabrication detail model

rebar and location. This

with accurate size, shape,

object should be modeled with previous structure

include the extension and

connection of rebar.

Dimension (accurate.)

PARAMETER

Type Solid Name

Material Volume Rebar Quantity Manufacturing / Supplier

BIMASIA



Version : 1.2 to 1.3



Case Study 1 | Asset Tagging



VERSI 2.0



Case Study 1 | MS 2522





Case Study 1 | Codeset Style

BIMASIA

Generated by Subassembly Composer

L38[P_SubBase] S16[P_SubBase] 40[P_SubGrade

Coding Diagram Comin ACW List P_RosdBase 110000 HILL SEAL SHIEW ACK S7[P_RoadBase] S11[P_RoadBase S15[P_RoadBase] L20[P_SubBase S8[P_SubBase] L22[P_SubGrad

L29[P_SubBase S12[P_SubBase L21[P_SubGood

Generated by Civil 3D

24(ETW_SubB 39



Case Study 1 | Codeset Style





Case Study 1 | Codeset Style



No.	.РКТ		Quantity		Image				
	Roadworks	Pavement	6						
		Kerb	2						
1.		Landscape/ Turfing	2						
		Culvert	1						
		Barrier	3	Road Pavement	Open Drain	Retaining Wall			
		Retaining Wall	2						
		Power	5			/			
		Telco	3						
2.	Utilities	Fiberail	1						
		Lighting Cable	1	Lighting Cable	Power Cable				
Total			26						

*Reference to JKR Arahan Teknik Jalan

Case Study 1 | BIM Libraries (.rfa / .pkt / .ifc)



No.	.РКТ		Quantity		Image	
1.	Signage	Detail Signage	14	134 Pgkl. Kubor 134 Tumpat 134 Tumpat JIn. Keretapi Wakaf Bharu		AWAS
		Standard Traffic	73		Tomasan Ginaan	Standard Simon
		Temporary Signage	8	Detail Signage_ DS9	Temporary Signage	WD27c-WC17
2.	Utilities (M&E)	Streetlighting	2			
	. ,	Traffic lighting	2	Lighting Double Arm	Lighting Single Arm	Traffic Light
3.	Road Furniture	New Jersey Barrier	8	NJB with Hoarding		IJB

Case Study 1 | BIM Libraries (.rfa / .pkt / .ifc)



No.	.РКТ		Quantity	Image						
	Bridge	Pile	1							
4		Pile Cap	1							
		Abutment	6							
		Pier	1							
		Bearing Pad	1							
		Beam	4	Abutment	Column T-Beam					
		Column	1							
		Parapet	1							
		Railing	1							
Total			124	Pier	Parapet/Edge Barrier Handrail					

Case Study 1 | BIM Libraries (.rfa / .pkt / .ifc)



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Case Study 2 | 5D - KKR Affordable Housing



Client

Ministry of Works Malaysia (KKR)

Description

CSR initiative by BIMASIA in collaboration with Ministry of Works Malaysia (KKR) in association with Ministry of Housing and Local Government (KPKT) to create a BIM Framework for Affordable Housing using IBS. The targeted building cost of RM87 per sqft for a 25 storey housing block consists of 900 sqft 3-bedroom family units was achieved through the use Modular design using various IBS components such as precast concrete panels and BIM 4D simulation. BIM 5D simulation were used to optimize the construction period.

Scopes & Innovations

LOD 300 BIM Modelling (Architecture, Structure & MEP) BIM 4D and 5D Simulations Production of movie animation

Status

Completed 2018

Case Study 2 | 5D - KKR Affordable Housing





Case Study 2 | BIM Framework

BIMASIA

Standardization and reduction of no. of components used



Case Study 2 | 5D – KPKT Affordable Housing



Introduction Case Study 1 Case Study 2 Conclusion







Lean Construction



Impossible to improve any process until it is standardized



Conclusion |

Thank You BIMASIA

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