



CIC BIM Talks on “Integration of Safety and BIM – DSD’s Upgrading of San Wai Sewage Treatment Works Project”



First Part by Ir. Albert WONG, Senior Engineer, Drainage Services Department

Second Part by Ir. C. Y. HUNG, Chief Resident Engineer, AECOM

Employer:



Supervising Officer:



Contractor:





Previous CIC BIM Talks held on 6 December 2018

i DRAINAGE SERVICES

Upgrade service in existing footprint



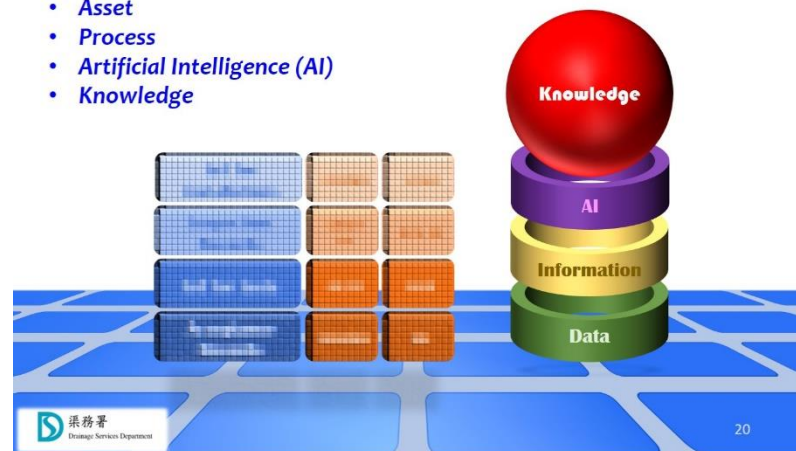
Sha Tau Kok Sewage Treatment



DSD goes Digital – a Living Twin

BIM as an information hub of the

- Asset
- Process
- Artificial Intelligence (AI)
- Knowledge



CIC BIM Talks on

"i DRAINAGE SERVICES" – BIM and DSD Goes Digital



8th IWA-ASPIRE
Conference and Exhibition

**Smart Solutions for
Water Resilience**

31 OCTOBER - 2 NOVEMBER 2019
HONG KONG



Bernard Wong
Senior Engineer/BIM
Drainage Services Department
Government of the HKSAR
6 December 2018



Zero "0" 意外
ACCIDENT

地盤零意外 關懷建未來
Zero Accident, we Build, we Care



Images for Bim Safety



nbs



o prevent injuries on the job ...
ic-tools-prevent-injuries-job-s...
rner are among the firms to incorporate

Building Information Modeling (BIM) and Safety: Automatic Safety ...

BIM FOR CONSTRUCTION HEALTH AND SAFETY

STEFAN M.
AND ROLA



Published by nbs

BIM - Construction Safety Design





"Integration of Safety and BIM - DSD's Upgrading of San Wai Sewage Treatment Works Project"



Upgrading of San Wai Sewage Treatment Works

Design, Build and Operate Contract (Construction Period from May 2016 to end 2020 plus 15 years of operation period)

- Contract sum of \$3,142million.
- Chemically Enhanced Primary Treatment plus UV disinfection with total treatment capacity of 200,000 m³/day (ADWF)
- Site coverage area of over 23,000 m²

BIM Strategy

DESIGN

BIM Coordination Meeting

Clash Analysis

3D Visualizations for Stakeholders

VR – Design Collaboration /
Appreciation of the Quality of Space

Design for Safety

CCTV Design

Tree and Landscape Plan

BUILD

Site Utilization

3D Visualizations for All Site Staff

Construction Sequence

Proposed Changes

IoT - Site Safety

Point Cloud - Verification

OPERATE

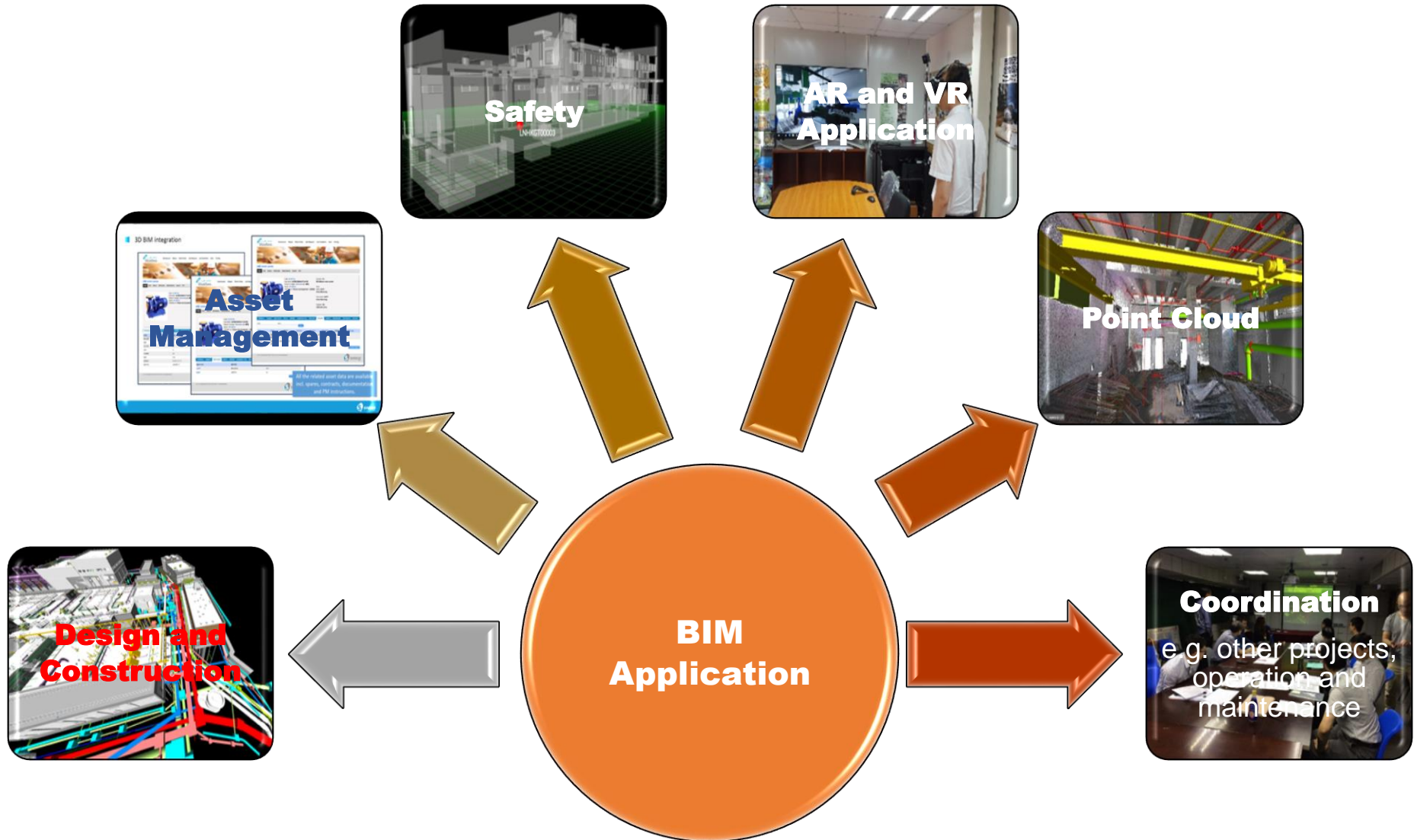
Assets / Facilities Management – BIM

AR – Visualization on Future
Modification / For Visitors

VR – Operation and Safety Training

IoT - Staff and Visitors Safety

BIM - San Wai Sewage Treatment Works Project



San Wai Sewage Treatment Works



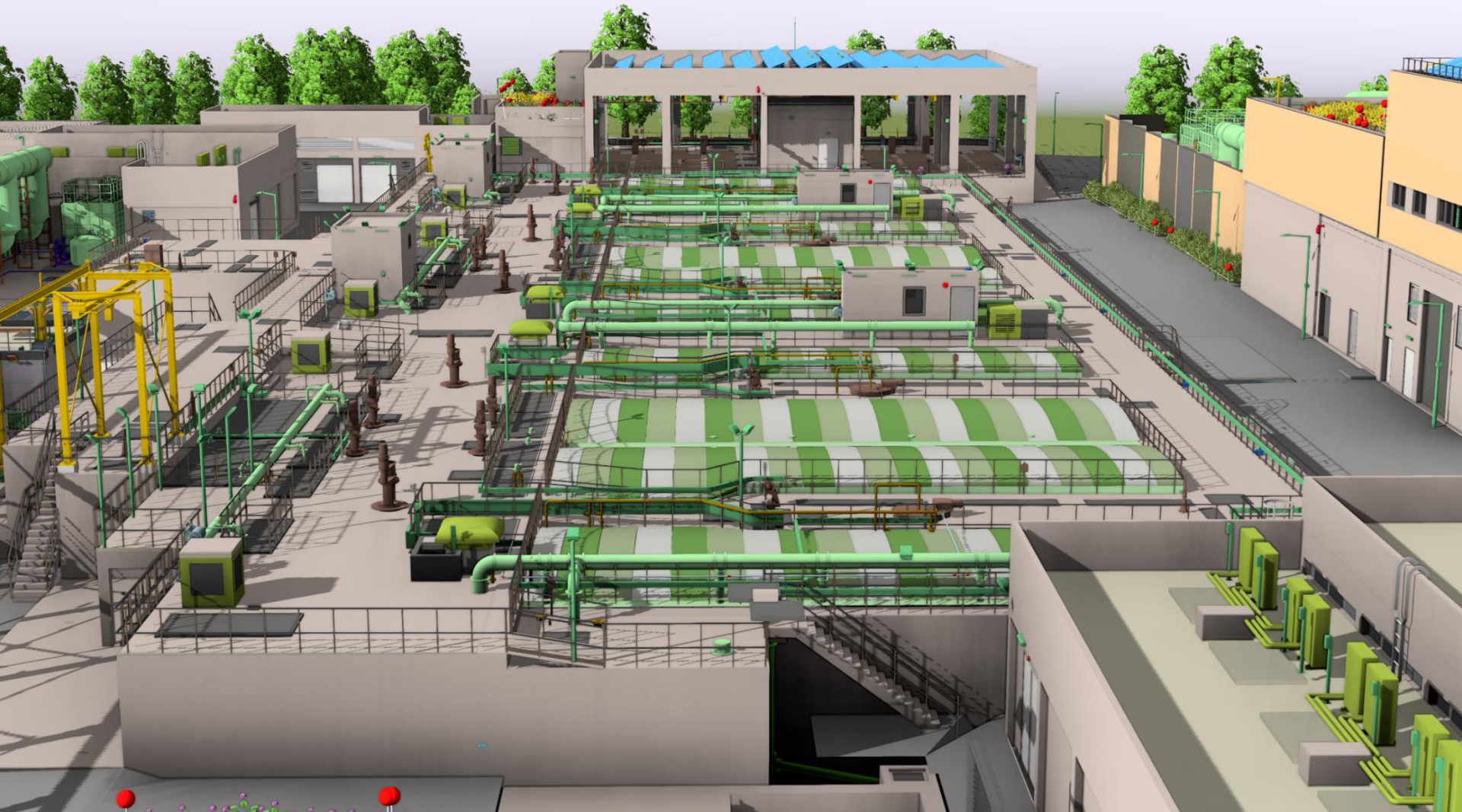
San Wai Sewage Treatment Works



Chemically Enhanced Primary Treatment Building



Chemically Enhanced Primary Treatment Building



Sludge Dewatering Building



Sludge Dewatering Building



Additional Centrifuge Installation



Exisiting Site Conditions



Safety Achievements

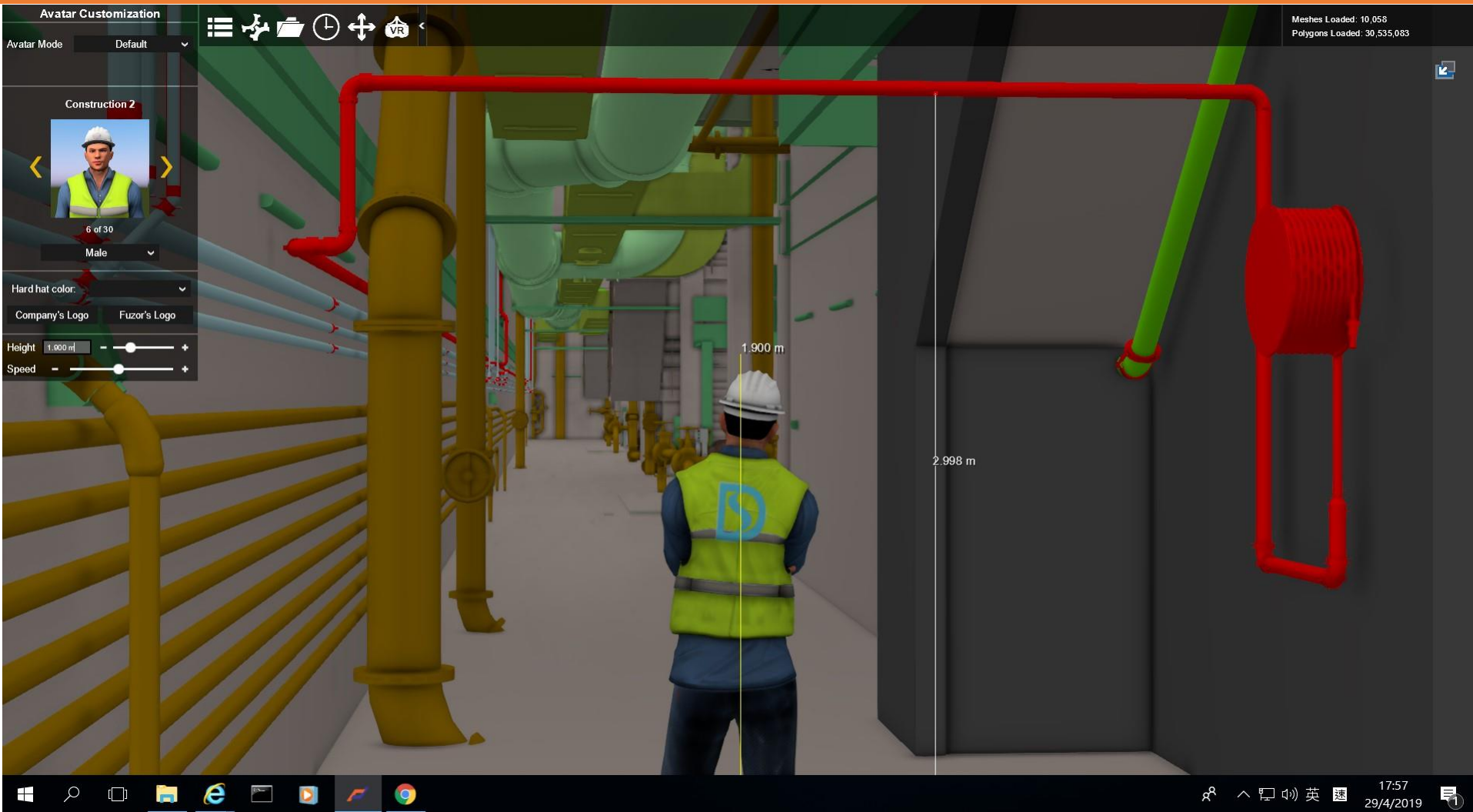


24th Considerate Contractors Site Award Scheme

Construction Sites Safety and Housekeeping Award Scheme (2018)

International Design for Safety Awards

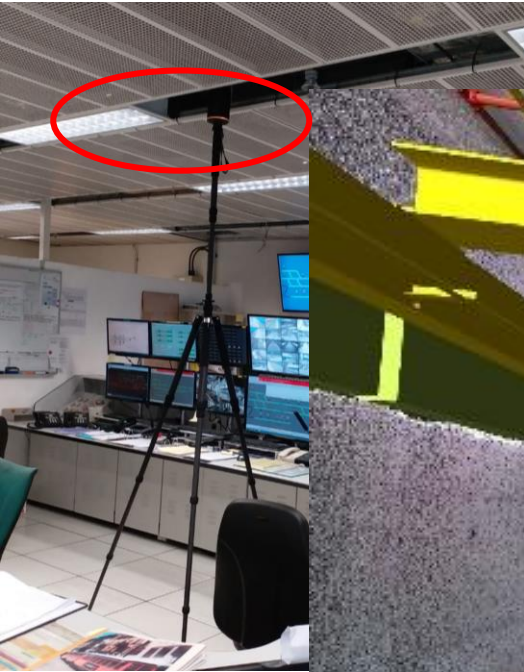
Clearance Check



Point Cloud to BIM



Verification of Field Conditions against BIM



Inaccessible
limited space
survey



Quick capture with data ready in around 3 mins



Light weight and easy
to use

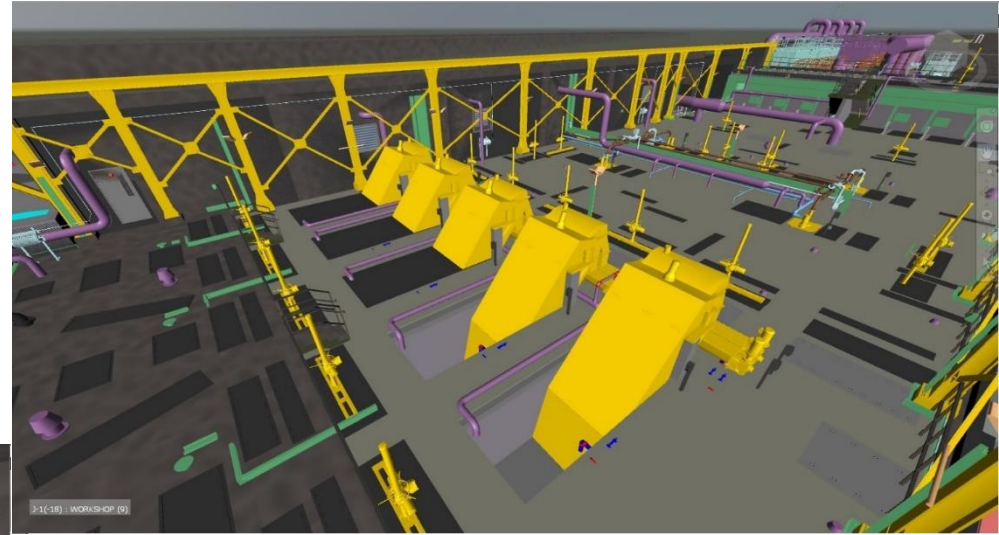
THANK YOU



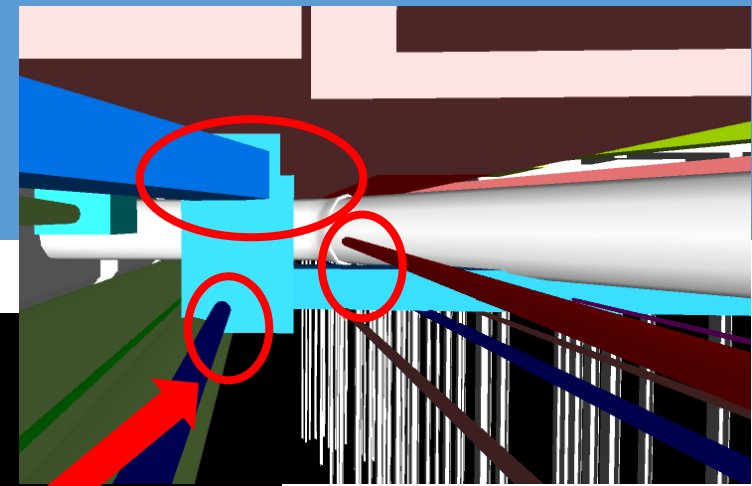
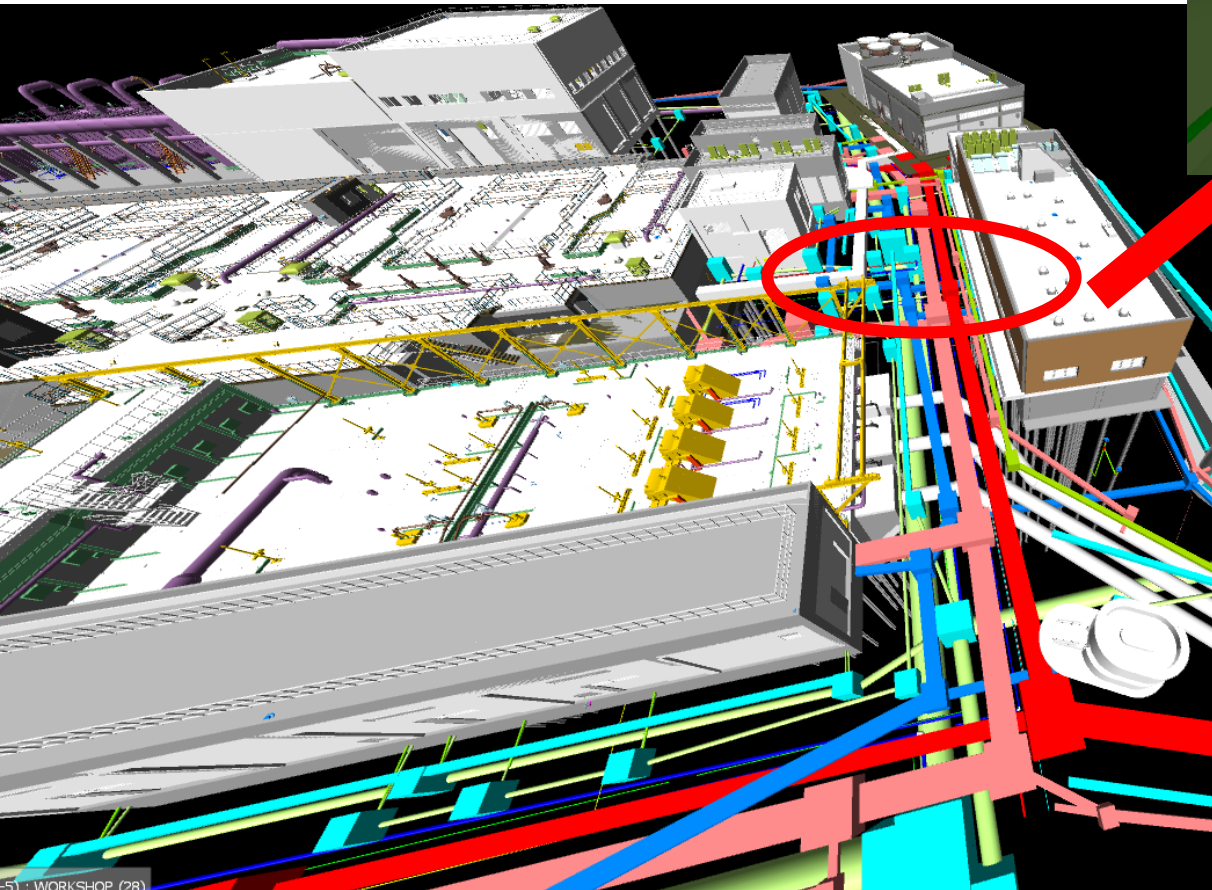
Design Options

Quick incorporation of newly proposed equipment to the BIM Model

- Inclined UV System
- Step Screens
- Additional PV Panels



Clash Analysis



Autodesk
Navisworks®

Clash Report

Site UU Updated sewer	Tolerance	Clashes	New	Active	Reviewed	Approved	Resolved	Type	Status
	0.001m	20	0	20	0	0	0	Hard	OK

Image	Clash Name	Status	Distance	Clash Point	Item 1	Item 2
					Layer	Layer
	Clash27	Active	-0.856	x:816261.633, y:834305.451, z:19.800	C-PIPENETWORK- STRC_CHAMBER_SURFACE	Pipe_Trench
	Clash28	Active	-0.264	x:816266.016, y:834359.255, z:19.062	OAP920__	Pipe_Trench
	Clash29	Active	-0.225	x:816221.480, y:834346.824, z:18.718	OAP920__	C- PIPENETWORK_HV_
	Clash30	Active	-0.209	x:816131.961, y:834306.741, z:19.902	OAP920__	C- PIPENETWORK_HV_
	Clash31	Active	-0.203	x:816271.451, y:834301.697, z:19.637	OAP920__	C- PIPENETWORK_HV_
	Clash32	Active	-0.132	x:816261.683, y:834305.451, z:20.850	C-PIPENETWORK- STRC_CHAMBER_SURFACE	GX_DRAW_XREF
	Clash33	Active	-0.103	x:816262.980, y:834305.451, z:20.950	C-PIPENETWORK- STRC_CHAMBER_SURFACE	GX_DRAW_XREF