

# IDA's Insights from their Digital Transformation Journey towards CORENET X

Ar. Lin Hongshui, Director IDA



- IDA's early digital transformation story
- Involvement in Corenet X Sandbox Pilot
- The road ahead for IDA and for you



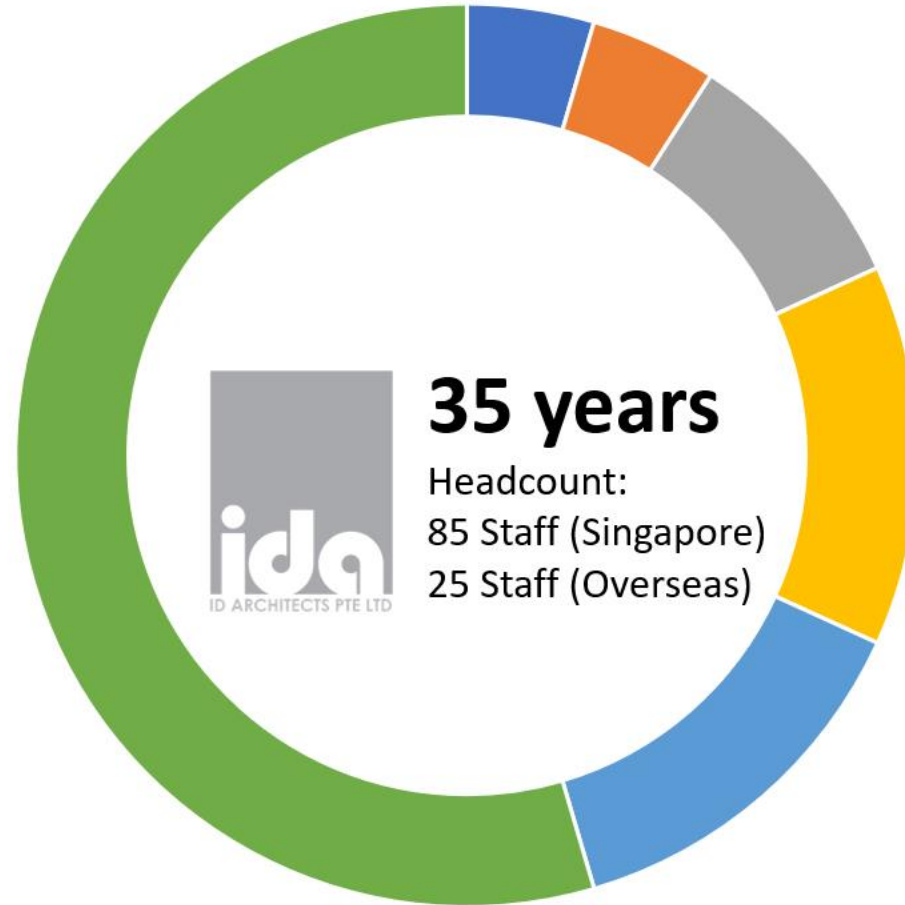
## ID Architects

has established key strategic positions across the South East Asian region. Its professional experience in each country maximizes not only geographical but cultural, administrative and economic proximity. This is part of a grander vision for IDA in becoming a major player in the global stage.

- MASTERPLANNING
- ENVIRONMENTAL SUSTAINABILITY
- MOTORSPORTS/ENTERTAINMENT
- SEMICONDUCTORS
- DATA CENTRES
- CHEMICAL/ENERGY
- PHARMACEUTICAL/NUTRITION
- LOGISTICS/WAREHOUSING
- FURNITURE / TIMBER ENGINEERING
- INFRASTRUCTURE
- MODULAR CONSTRUCTION
- TRANSPORTATION
- AGRITECH
- FOOD TECHNOLOGY, PROCESSING AND STORAGE
- LIFESTYLE
- HOSPITALITY
- RESIDENTIAL
- MULTI-USER
- COMMERCIAL
- DEFENCE
- INSTITUTION
- INTERIORS



- Logistic
- Chemical
- Semi-Conductor
- Engineering
- Bio-Pharmaceutical
- Aerospace
- Food/ Agri-tech
- Lifestyle
- Ecommerce
- Data Centres
- Off-shore Marine
- Port
- Aviation
- Infrastructure



**Industrial / Business Park**  
**Institutional / Education**  
**Infrastructure/ Sport Facility**  
**Commercial / Residential**  
 Healthcare/Medical  
**Master planning**  
 International





5-STOREY DATA CENTRE DEVELOPMENT AT LOYANG - TIER 3+  
 DATA CENTRE DEVELOPMENT AT 9 TAI SENG DRIVE - TIER 3+  
 6-STOREY ADMIN BUILDING WITH A DEDICATED DATA CENTRE FLOOR  
 DATA CENTRE DEVELOPMENT IN MANILA PHILIPPINES - TIER 3+  
 NUS TESTBED FACILITY  
 FEASIBILITY STUDY FOR DATA CENTRE AT COMMONWEALTH LN  
 FEASIBILITY STUDY FOR DATA CENTRE AT 5TS - TIER 3+  
 FEASIBILITY STUDY FOR DATA CENTRE AT 9TS - TIER 3+  
 FEASIBILITY STUDY FOR DATA CENTRE AT DEPOT ROAD - TIER 3+  
 FEASIBILITY STUDY FOR DATA CENTRE AT TAMPINES ST92 - TIER 3+  
 FEASIBILITY STUDY FOR DATA CENTRE AT SELETAR - TIER 3+  
 FEASIBILITY STUDY FOR DATA CENTRE AT TAMPINES - TIER 3+  
 DATA CENTRE TRAINING FACILITY AT SUNVIEW  
 TEST FIT STUDY FOR DATA CENTRE AT NORTH INDUSTRIAL ROAD  
 TEST FIT STUDY FOR DATA CENTRE AT NONGSA, BATAM, INDONESIA  
 TEST FIT STUDY FOR DATA CENTRE AT CYBERJAYA, MALAYSIA

LAM RESEARCH PENANG  
 SILTRONIC WAFER FAB FACTORY (IN COLLABORATION W/ EXYTE)  
 MICRON INTEGRATED SEMICONDUCTOR PLANT (PHASE 1, 2 and 3) (IN  
 COLLABORATION W/ EXYTE)  
 APPLIED MATERIALS @ UPPER CHANGI ROAD NORTH  
 JTC SEMICON SPACE @ TAMPINES INDUSTRIAL CRESCENT  
 JTC NANOSPACE  
 NORSUN CORPORATION  
 QIOPTIQ OPTICAL FAB PLATE  
 SSMC



SEMICONDUCTORS / DATA CENTRES





TEE HAI @ TLP  
 TEE HAI @ T15  
 LTH CHEMICAL HUB @ BANYAN DRIVE  
 3M PRODUCTION FACILITY

YANGON PHARMA MASTERPLAN  
 PFIZER API EXPANSION @ TUAS SOUTH AVE 6  
 (IN COLLABORATION W/ EXYTE)  
 WYETH  
 MEAD JOHNSON

SUPPLY CHAIN CITY @ BULIM  
 LOGOS TUAS LOGISTICS HUB (REC)  
 LOGOS PENJURU LOGISTICS CENTRE (2TPC)  
 TAMPINES LOGISTICS PARK  
 TLP CLUSTER - PROPOSAL  
 DHL @ TLP  
 KEPPEL TAMPINES LOGISTICS HUB  
 DEXION @ MALAYSIA  
 JTC SPACE @ GUL  
 I.BIZ CENTRE @ OLD TOH TUCK ROAD  
 TIONG WOON @ 15 PANDAN CRESCENT  
 TECH-LINK @ 2 LOYANG WAY 1

JTC TRENDSPACE @ SUNGEI KADUT ST 2  
 STAR FURNITURE @ SUNGEI KADUT ST 2  
 LUXASIA @ 12 TAI SENG STREET  
 JTC TIMMAC @ KRANJI



CHEMICAL/ENERGY - PHARMACEUTICAL/NUTRITION - LOGISTICS/  
 WAREHOUSING - FURNITURE/TIMBER ENGINEERING





TRANSPORTATION / INFRASTRUCTURE / MODULAR CONSTRUCTION / WASTEWATER TREATMENT







FISHERIES  
 FOOD TECH  
 FOOD SUPPLY CHAIN / COLD CHAIN  
 HSF @ 267 PANDAN LOOP  
 STORBEST @ 12 FISHERY PORT

FOOD PROCESSING  
 SINGAPORE HALAL FOOD HUB  
 NEO GARDEN @ QUALITY ROAD  
 JUMBO @ LORONG HALUS  
 SATS FOOD HUB @ BULIM GREEN  
 KEE SONG FOOD CORPORATION @ SENOKO WAY  
 HANWELL @ JALAN BOON LAY  
 CANDY FACTORY @ CHIN BEE DRIVE  
 YIG AGRI WHOLESALE CENTRE  
 EATJUST

SKYGREENS SUSTAINABLE VERTICAL FARM AND COMMUNITY TOWNSHIP MASTER PLAN  
 SKYGREENS PROPOSAL (ISKANDAR, JOHOR, MALAYSIA)  
 SKYGREENS PROPOSAL (GUANGZHOU, CHINA)  
 SKYGREENS PROPOSAL (BATAM, INDONESIA)  
 SKYGREENS CORPORATE R&D AND CORPORATE FACILITY (LIM CHU KANG)  
 HAYDAIRIES GOAT FARM @ NEO TIEW CRESCENT  
 NUS AGRI-AQUA-FOOD TECHNOLOGY (A2FT)

**AGRITECH / FOOD TECHNOLOGY, PROCESSING AND STORAGE**







POLARIS @ WOODLANDS  
 ISPRING @ NEW INDUSTRIAL ROAD  
 CORPORATION DRIVE  
 ONEKA @ KAMPONG AMPAT  
 WINTHROP VIETNAM  
 JTC SPACE @ GUL  
 E9 PREMIUM

HPC HQ  
 CORPORATE OFFICE @ DEPOT ROAD  
 VALLE VERDE  
 GERMAN CENTRE  
 BEDOK 101 PROPOSAL  
 SAMBO



MULTI-USER / COMMERCIAL





I N S T I T U T I O N



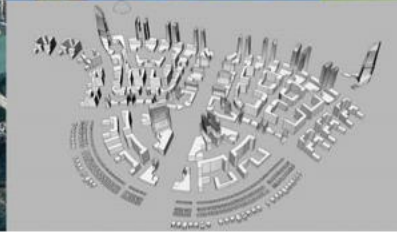




INTERIOR / LIFESTYLE / HOSPITALITY / RESIDENTIAL





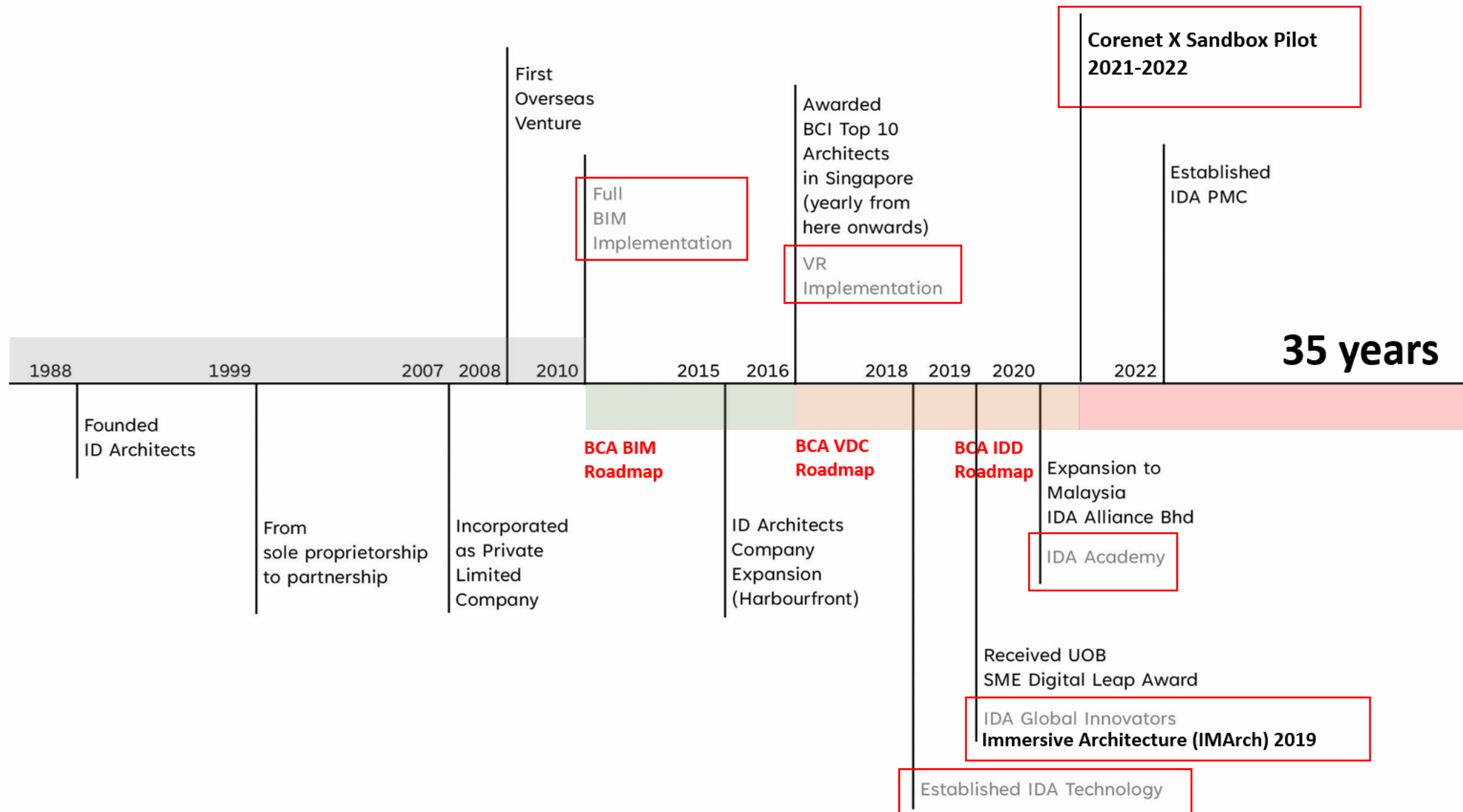


TANJONG EMBANG MASTERPLAN  
 CHANGI MOTORSPORTS HUB  
 DAGON SEIKKAN TOWNSHIP  
 LANGMANGSHAN LUXURY ECO TOWNSHIP  
 YANGON PHARMA/CHEM MASTERPLAN  
 ZHANG JIA JIE MASTERPLAN  
 GERBANG NUSAJAYA  
 TAMPINES LOGISTICS PARK  
 LOGISTICS HUB CLUSTER-TLP  
 PIONEER  
 WINTHROP VIETNAM

ECO TOURISM  
 CLEAN TECHNOLOGY /  
 DECARBONISATION  
 CLEANTECH 3 PROPOSAL  
 RENEWABLE ENERGY  
 RENEWABLE ENERGY CORPORATION  
 BLUE AND GREEN  
 CECIL STREET PROPOSAL



MASTERPLANNING / ENVIRONMENTAL SUSTAINABILITY / MOTORSPORTS

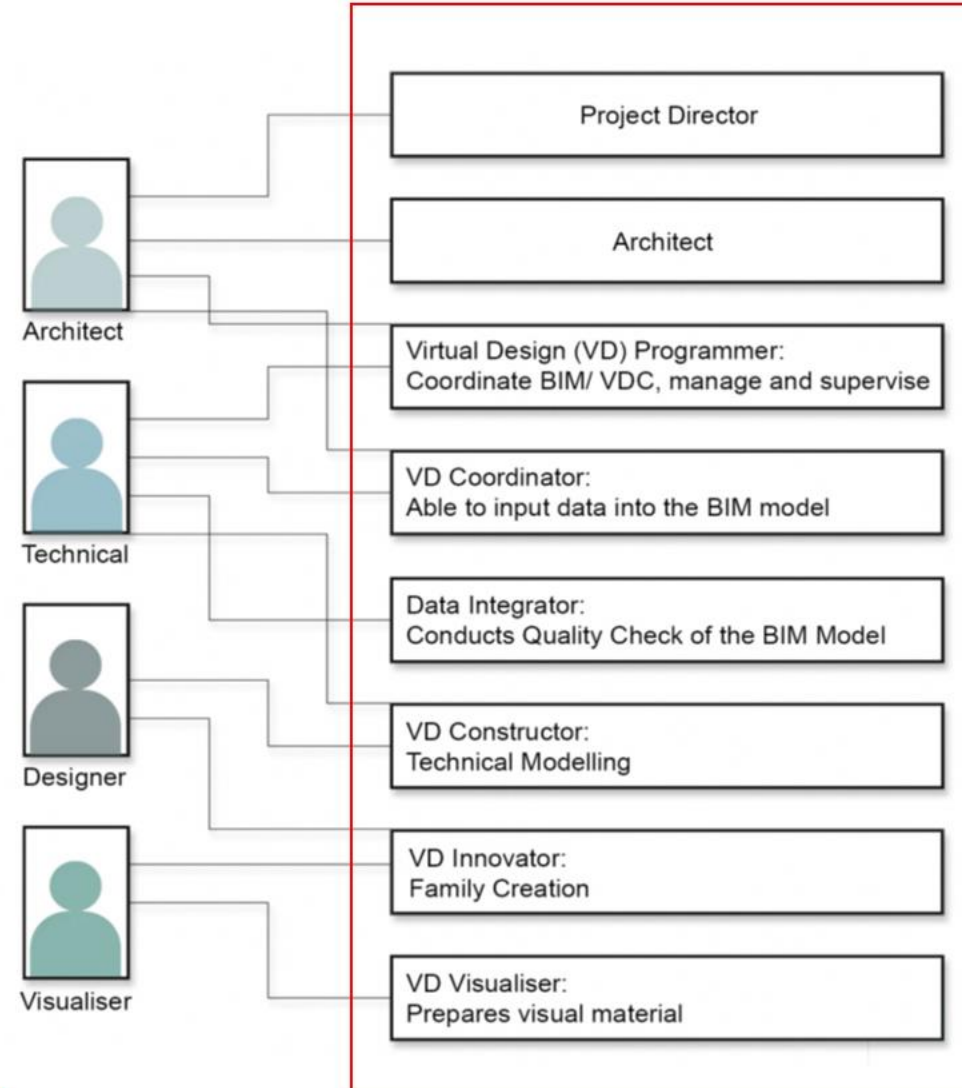
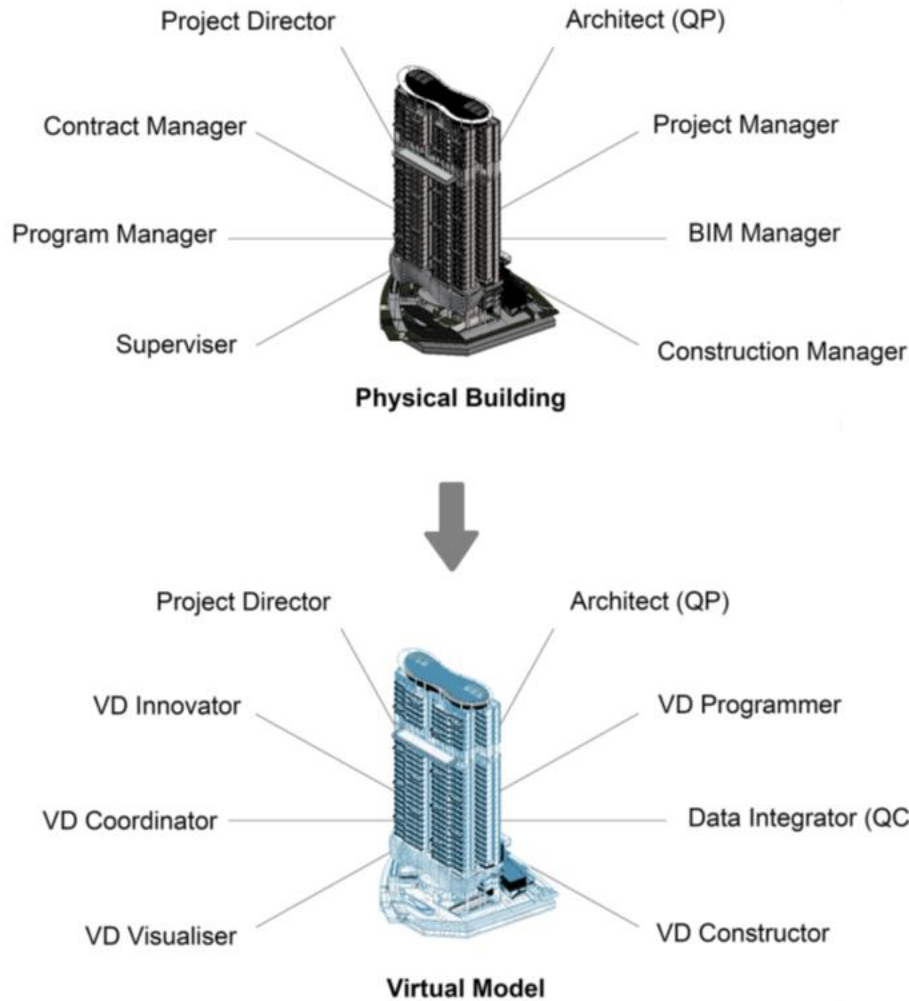


## Early Digital Transformation Journey



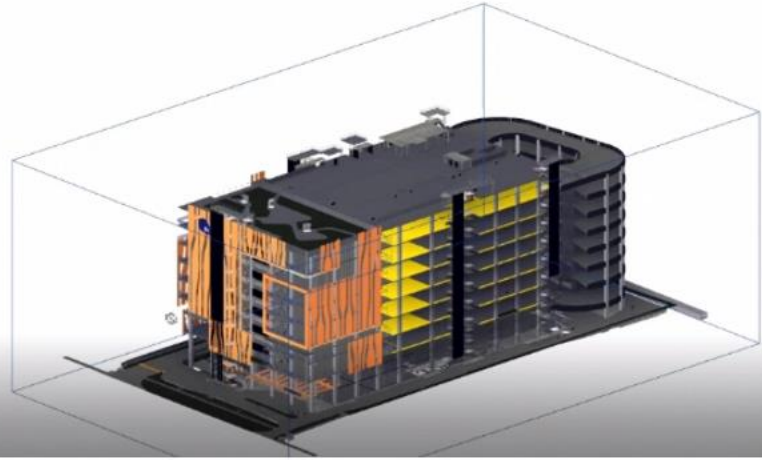
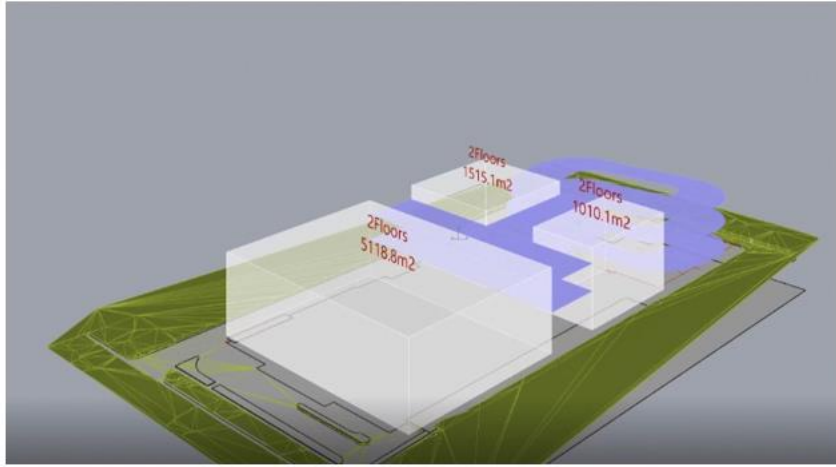


# MASTERBUILDERS IN THE DIGITAL AGE

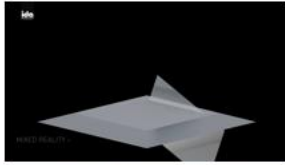


Conventional roles in project organization in the digital workflow led and consolidated in the 'Architect', as was once in the Masterbuilder

Early Digital Transformation Journey



- Same typology can be fit into different site conditions
- Ability to evaluate designs based on determined criteria
- Fast iteration of potential designs
- Layout of blocks based on design parameters
- Parameters can be manipulated to generate different layouts following the same guidelines
- Generated designs can be evaluated to determine optimal configuration



### Non-Local Communication & Coordination

A maximum number of 8 users can be connected to the same project, regardless of geographical location



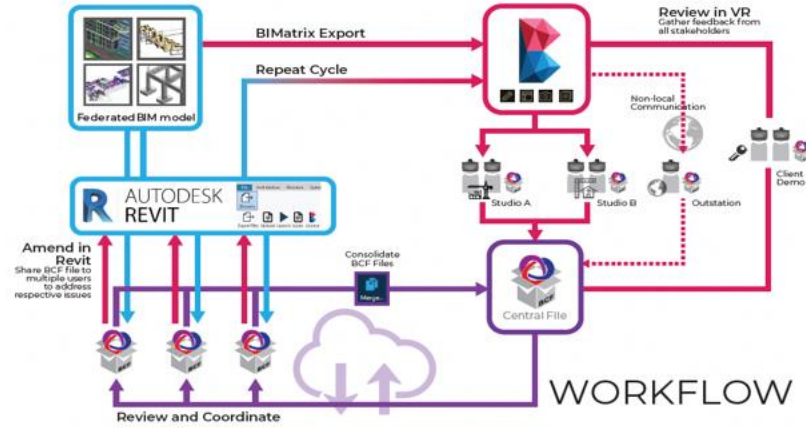
### Multiple Viewing Modes

Provides either a VR or PC mode that lets you control the way how the project is being shown. This allows a balance between quick and easy access based on preferences and purposes



### Issues Management

Issues picked up inside VR will be captured and stored in the list of projects on the cloud with BIMatrix BCFier Plugin



- Design optimization
- Design analyses and simulations
- Generative design
- Integrated design modelling
- Design collaboration
- ICE coordination
- Digital virtual mock-up
- Advanced visualization
- Design model quality checking
- Cost planning and estimates
- Tender documentation

## Computational Design & VR

### Interest and Exposure in Technology







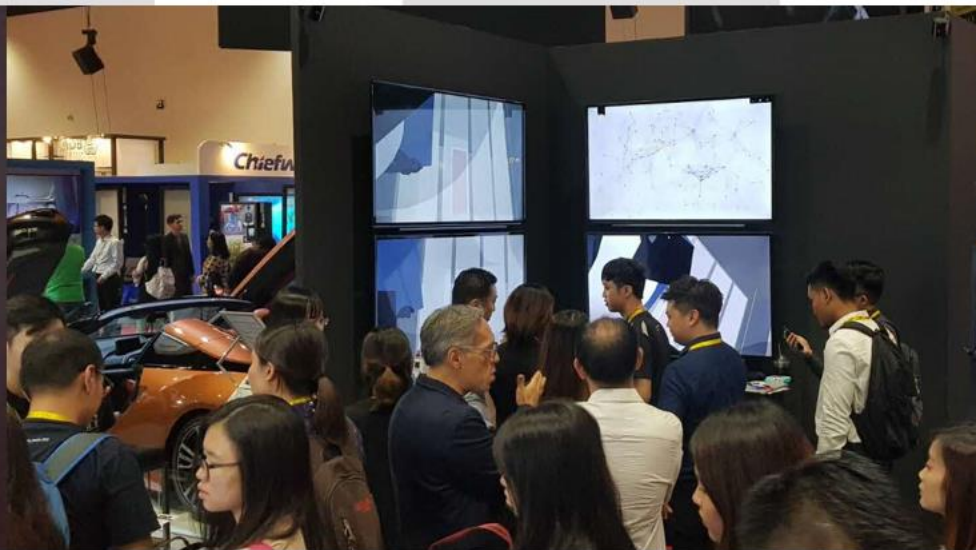
Minister Janil Puthucheary's Visit | Singapore



IMArch Asia 2019 | Singapore



SCDF | Singapore



Archidex 2019 | Kuala Lumpur

Interest and Exposure in Technology







Safti City | Singapore



Smart Nation China 2019 | Chongqing

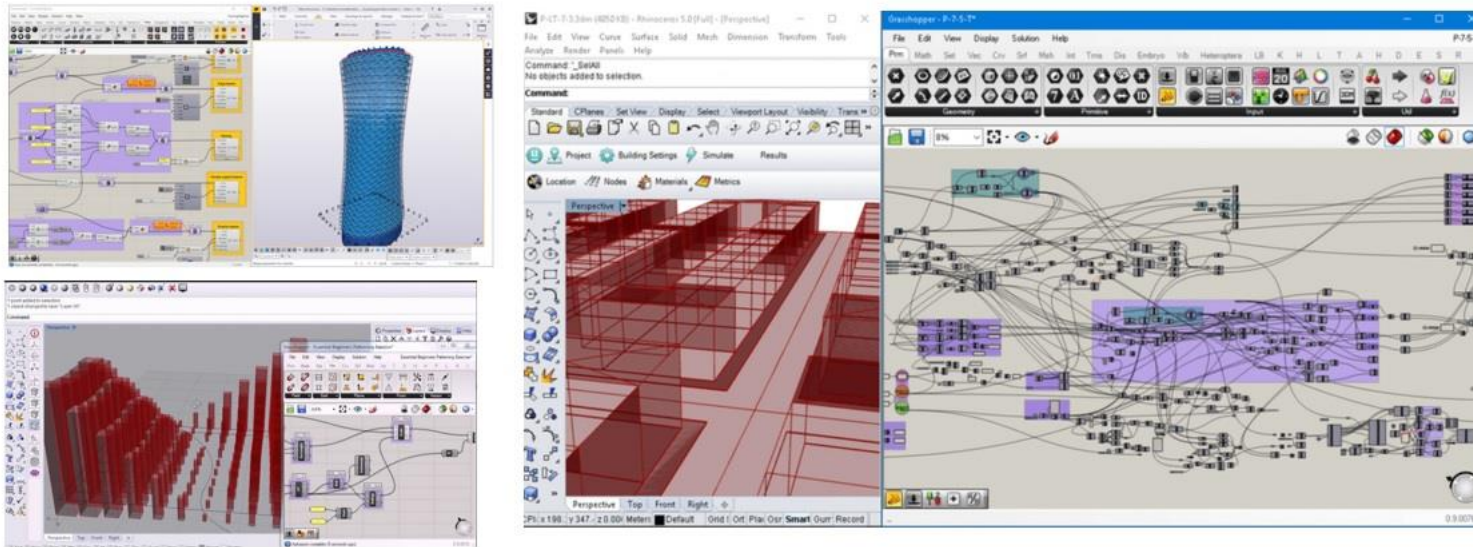
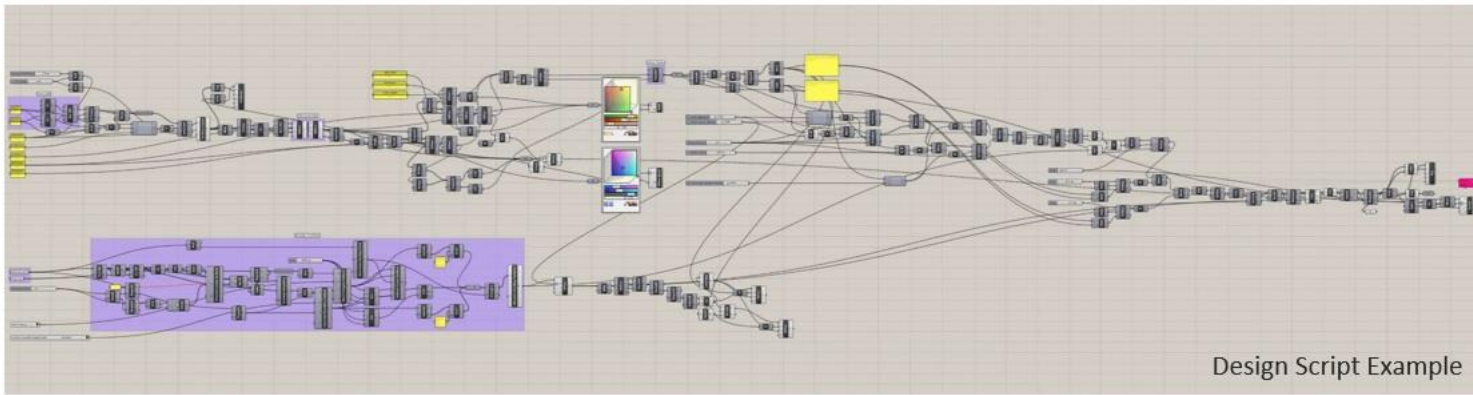


IBEW 2019 | Singapore

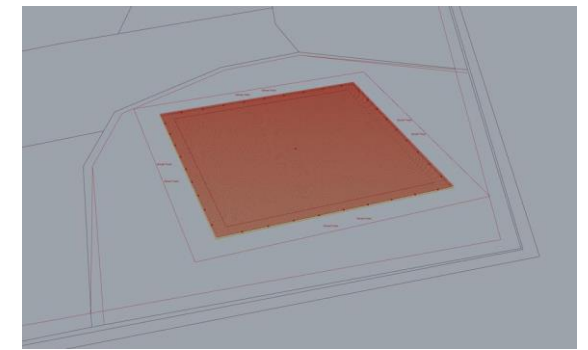
Interest and Exposure in Technology



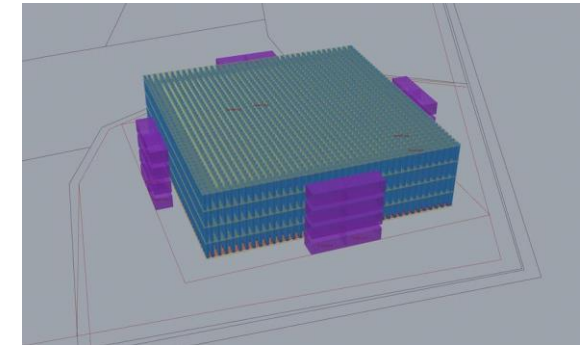




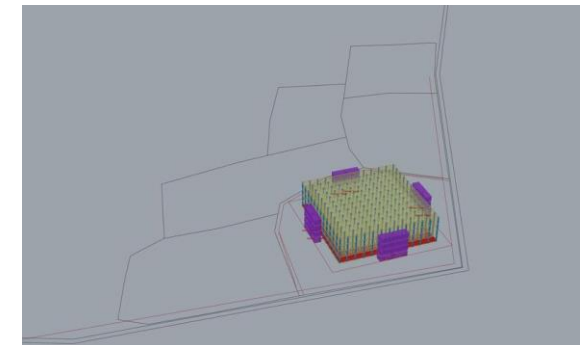
Computational design is a design method that uses a combination of algorithms and parameters to solve design problems with advanced computer processing. Every step of a designer's process is translated into coded computer language. The software program uses this information alongside project-specific parameters to create algorithms that generate design models or complete design analyses. Once the initial programming is completed, design becomes a dynamic and repeatable process.



Height control and implication to the building



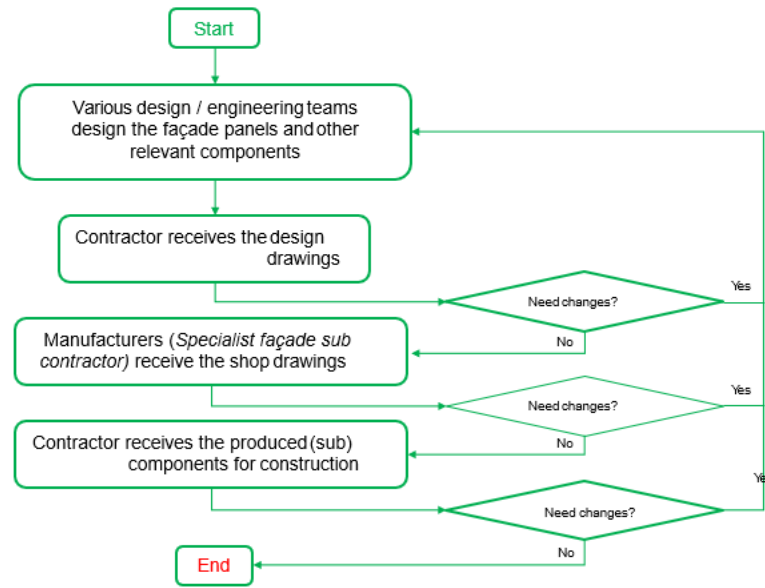
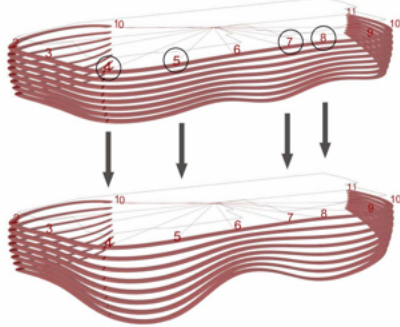
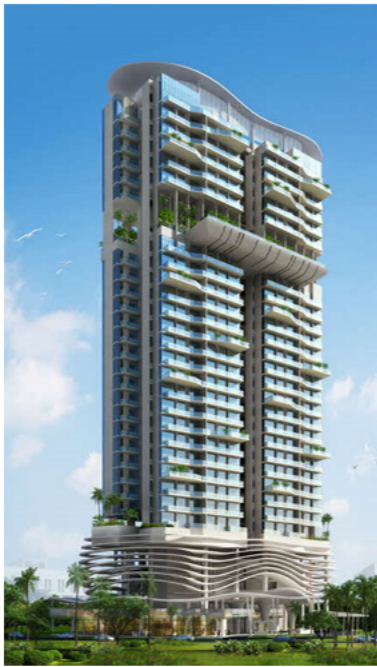
Study for the Server Rack quantity against different column grid arrangement



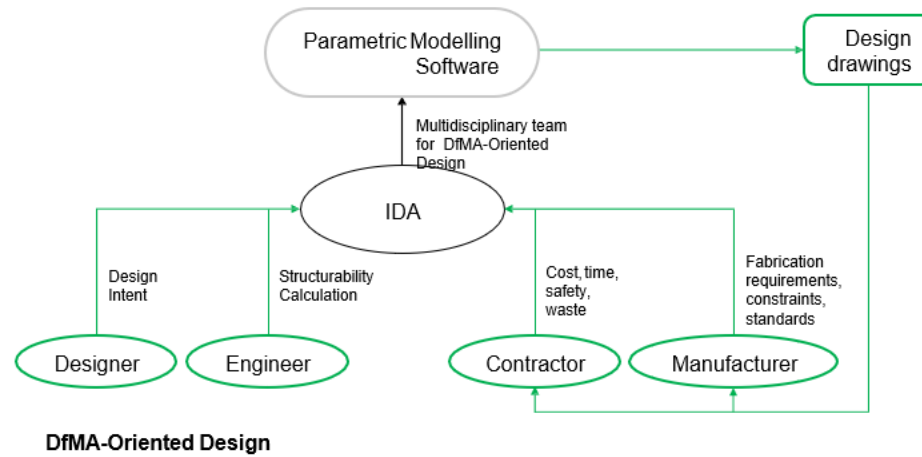
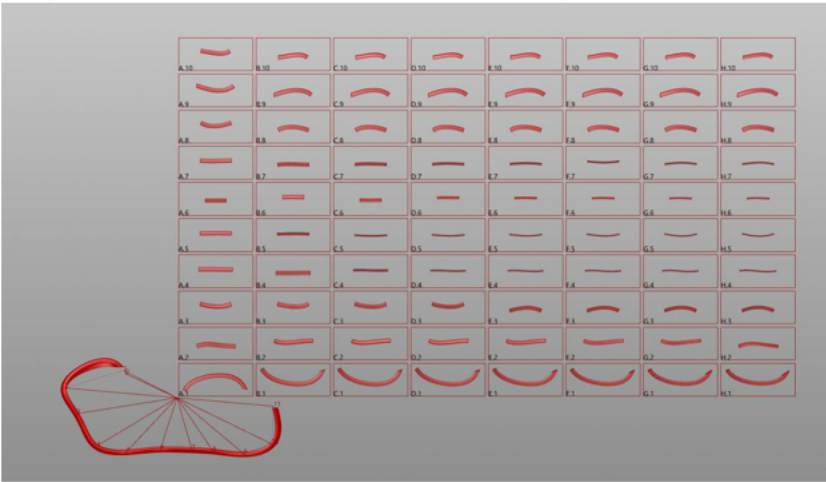
Multi Site Testing to determine optimisation of the building

# Computational Design

## Interest and Exposure in Technology



Conventional Design Process



DfMA-Oriented Design



- Fabrication detailing**
- Detailed fabrication coordination**
- BIM-based fabrication drawings**
- Fabrication drawing submissions & approval
- Quantity Takeoff
- Digital procurement
- Production planning and scheduling
- Production management
- QA/QC Inspections
- BIM for off-site production automation**
- Logistics tracking and monitoring**

# Computational Design: Fabrication

## Interest and Exposure in Technology

## Our Mission and Vision

IDA Tech's vision is to empower stakeholders in Built Environment by continuous innovation in best practices enabled by latest technologies

**“ For Architects, by Architects”**

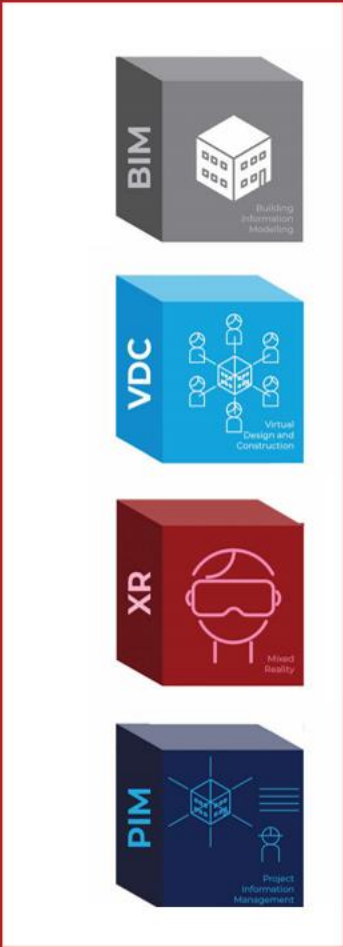
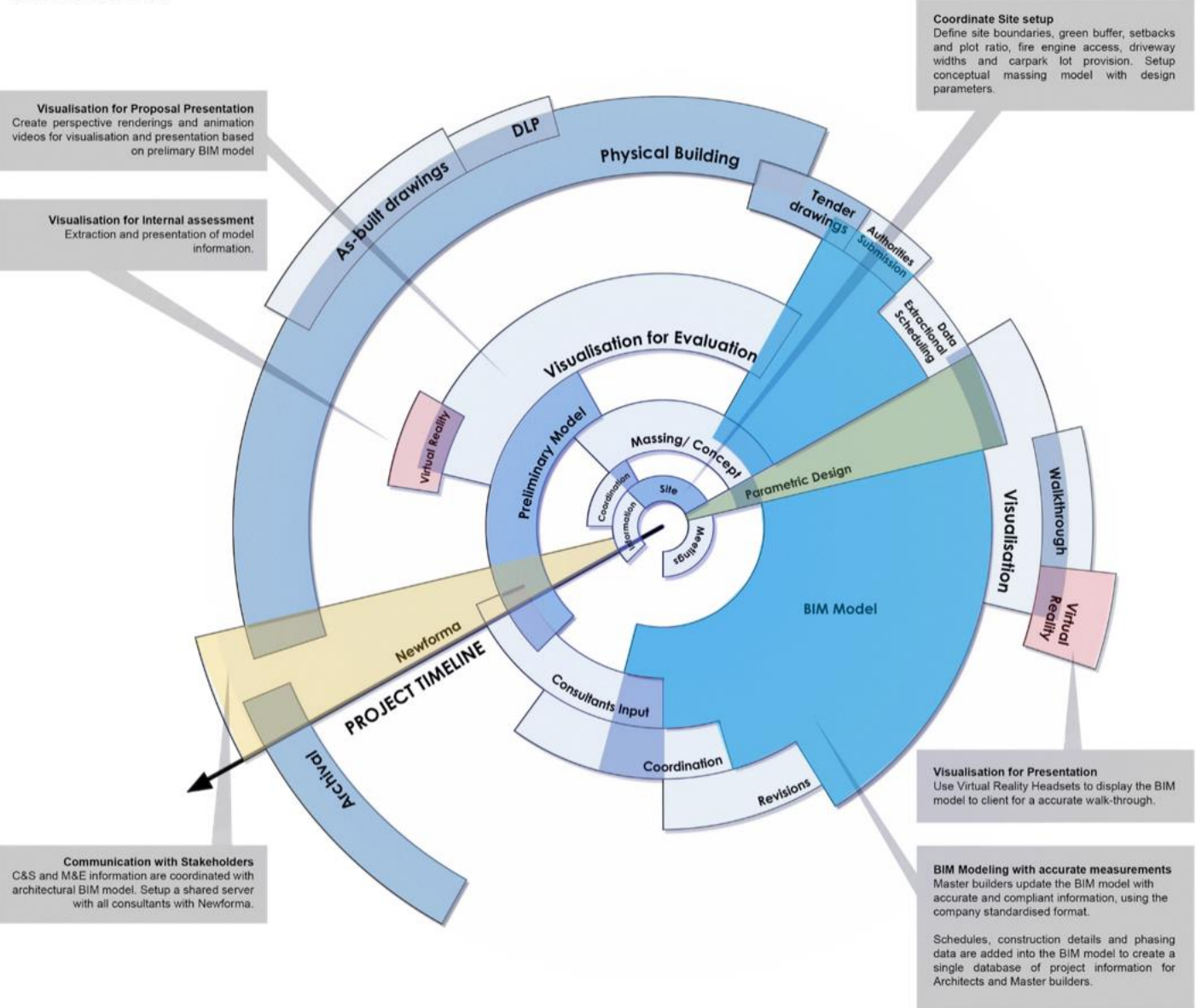
IDA Tech is an extension from the continuous journey of innovation of new design practices by ID Architects. For Architects, by Architects is our motto and also mission. Architects stands for Built Environment industry as architects are the professional master builders who designed and constructed buildings in the ancient times; and also Architects and designers in Built Environment Sector, and a new generation of architects who are specialists in designing and building software and hardware infocomm and media technologies to address industry problems.





# REVIEW OF OUR CREATIVE WORKFLOW

## IDA BIM Workflow



4 critical Competencies

Early Digital Transformation Journey

digit·alpha™

Partnered with **IMDA**, (endorsed by **BCA**) to help digital adoption in the market with digitalisation solution for construction, focusing on building the 4 core competencies

**Digit-Alpha will accelerate the digital transformation of the ecosystem in Built Environment Sector by jump starting actual transformation projects.**

The solution set will offer:

1. Assessment of digitalization and automation capability for the stakeholders
2. Formulation of digitalization roadmap for the stakeholders
3. Deployment of infocomm solutions to improve stakeholders digitalization and automation capabilities by:
  - a) Using BIM to document design and work products
  - b) Adopting VDC practices enabled by BIM
  - c) Applying VR/AR/MR using Mixed Reality Studio to facilitate work collaboration among the stakeholders including client for high quality project delivery with better experience at lower cost
  - d) Managing project lifecycle using electronic records through project information management solution.





Fundamental Infrastructure

# BIM

*Building Information Modelling*

Enabling entities to create quality data

Improve Efficiency

## Assessment

- ICT Readiness based on VDC
- Digitalisation and Automation Maturity Index

**Accelerate adoption of leading practices and digital technologies**

**Provide more transparency and legibility**

Fundamental Infrastructure

# BIM

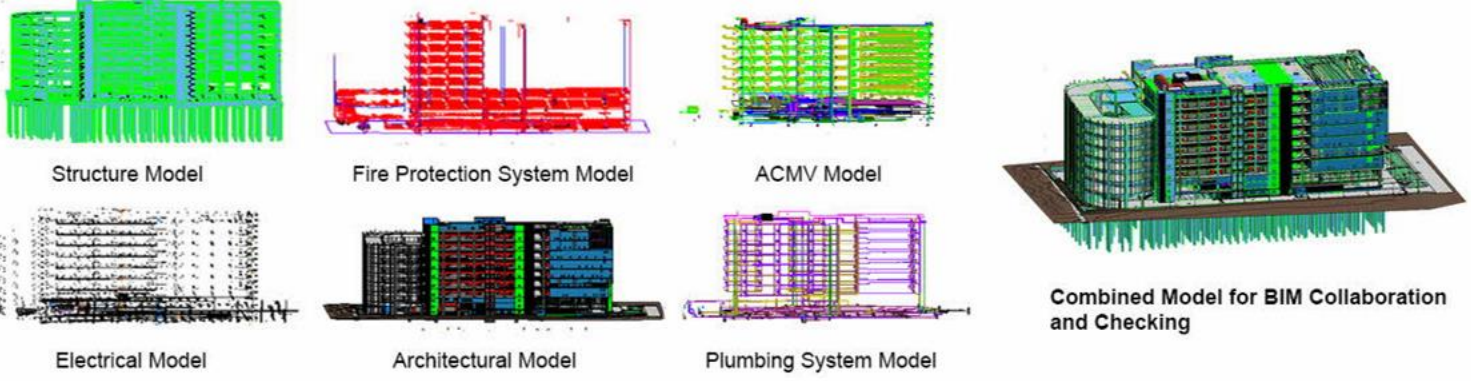
*Building Information Modelling*

**Personnel Proficiency:**  
Software Skills  
BIM Management  
Training

**Hardware:**  
Optimised workstations



### Model Integration (Furniture Hub)



### Trainings Topic

#### Keong Hong BIM Revit Programme

Module	Training Session & Topics
	Revit Fundamentals
00.A	Programme Brief <ul style="list-style-type: none"> <li>• An introduction its purpose and informed of the for software use</li> <li>• Be able to understand how each component</li> </ul>

#### Keong Hong BIM Naviswork Programme

Module	Training Session & Topics
00.A	Programme Brief <ul style="list-style-type: none"> <li>• An introduction</li> <li>• Be informed at available from</li> <li>• Understanding</li> </ul>
01	User Interface <ul style="list-style-type: none"> <li>• Trainees will...               <ul style="list-style-type: none"> <li>○ Be intr</li> </ul> </li> </ul>

#### Keong Hong BIM BIM360 Programme

Module	Training Session & Topics
00.A	Programme Brief <ul style="list-style-type: none"> <li>• An introduction to BIM 360 platform for document management.</li> <li>• Be informed about the vast features &amp; capabilities of each BIM 360 subscription services available from Autodesk</li> <li>• Understanding the operation from a Cloud-Enabled platform</li> </ul>



Typical VDC Implementation Framework

Process Optimisation

## VDC

*Virtual Design & Construction*

Streamlining coordination and revision works

Improving collaborations between partners

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### Roadmap

- Business objectives for digital transformation
- Roadmap to achieve the

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**Develop new skills**

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**Build the digital foundation for process innovation**

Process Optimisation

## VDC

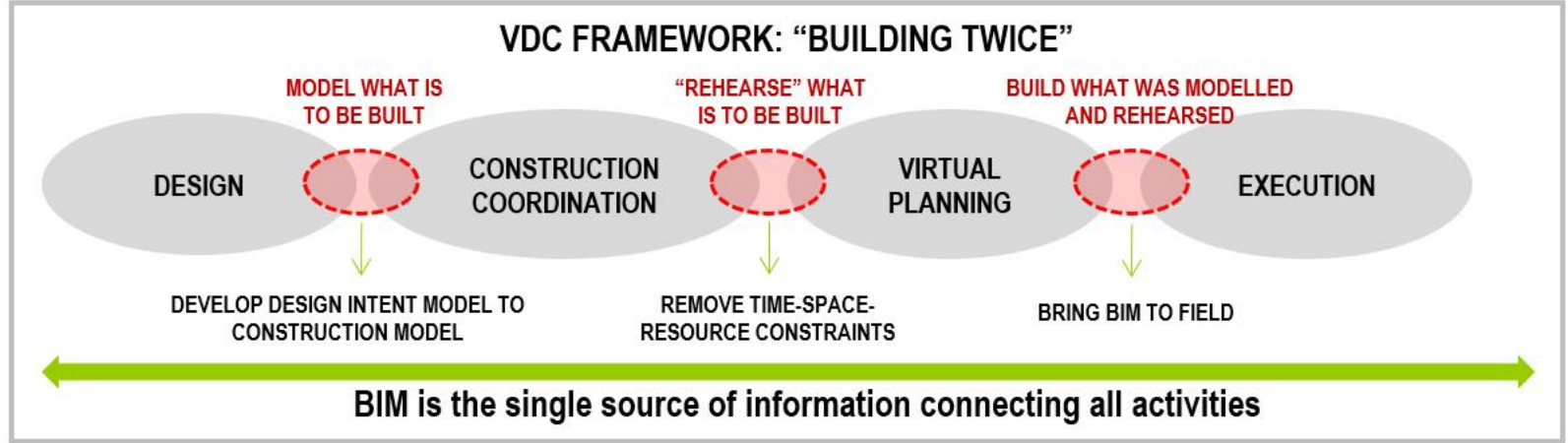
*Virtual Design & Construction*

**Discovery and Technology Value Analysis:**

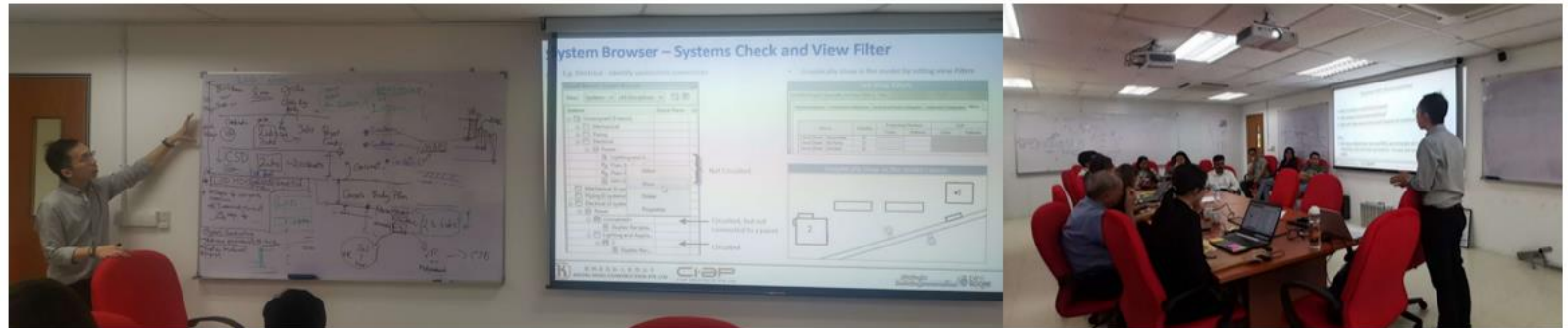
- Interviews
- Workshops

Technology Assessment and Recommendation Report

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- Virtual Reality technologies (VR) provide an improved platform of **presenting digital information**, and creates better opportunities for **sharing knowledge through discussion**.







Innovative Technology

# XR

*Virtual/Augmented/  
Mixed Reality*  
Allowing accessibility

Enhancing Communications

New paradigms in Design and Construction

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## Deployment

- Deployment of technology solutions
- End user training
- Collect data for

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**Build foundation for new job categories**

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**Better and more effective communication**

Innovative Technology

# XR

*Virtual/Augmented/  
Mixed Reality*

**Hardware:**  
VR Workstations  
VR Headsets  
Mixed Reality Studio Environment

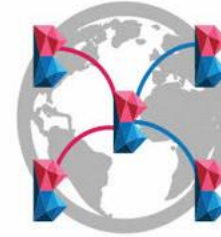
**Software:**  
VR Software

**Training:**  
VR Application



## Non-Local Communication & Coordination

A maximum number of 8 users can be connected to the same project, regardless of geographical location



## Multiple Viewing Modes

Provides either a VR or PC mode that lets you control the way how the project is being shown. This allows a balance between quick and easy access based on preferences and purposes



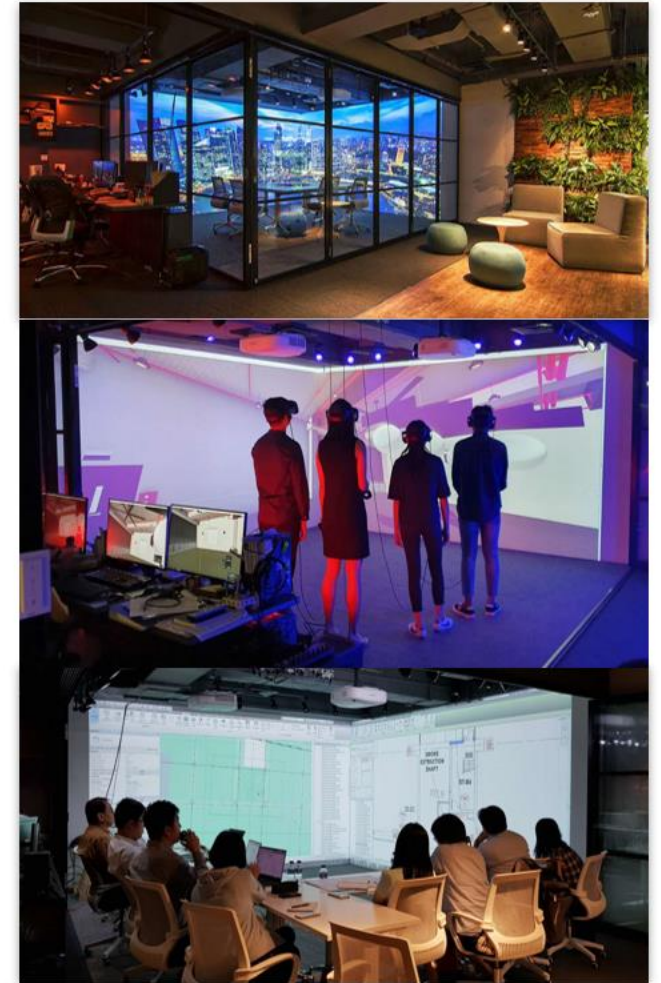
## Issues Management

Issues picked up inside VR will be captured and stored in the list of projects on the cloud with BIMatrix BCFier Plugin



## Mixed Reality & Portability

A studio which combines the real and virtual world or a portable plug-and-play system provides a much simpler interface without the need to source for individual components and installations





Operations Management

## PIM

*Project Information Management*

Improve project efficiency  
Optimising workflow  
Information management

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## Evaluation

- Evaluate KPIs
- Identify achievements and gap
- Prepare for the next phase

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*Allow for increased/more effective collaborations*

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*Advancement into computational design and construction*

Operations Management

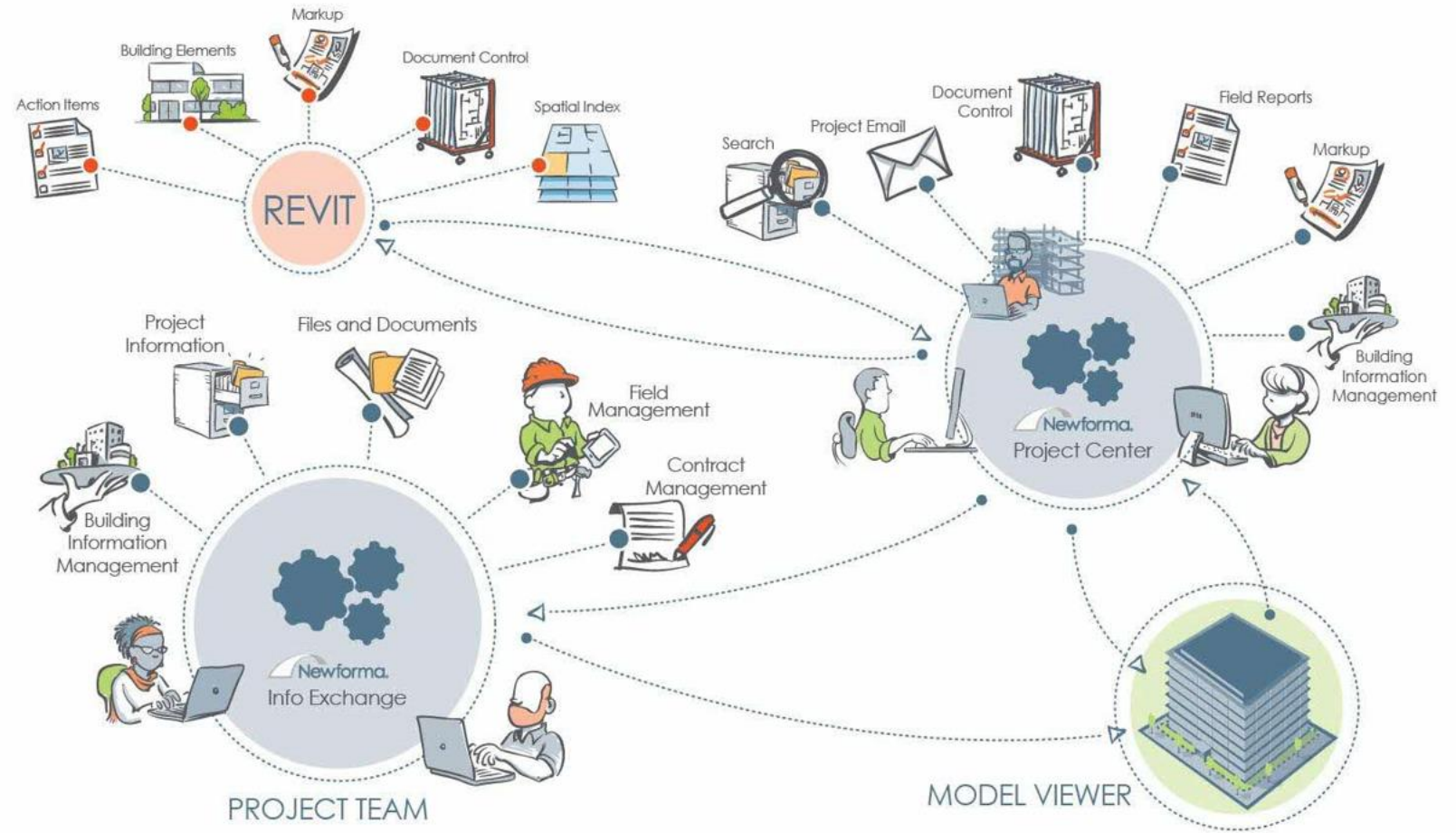
## PIM

*Project Information Management*

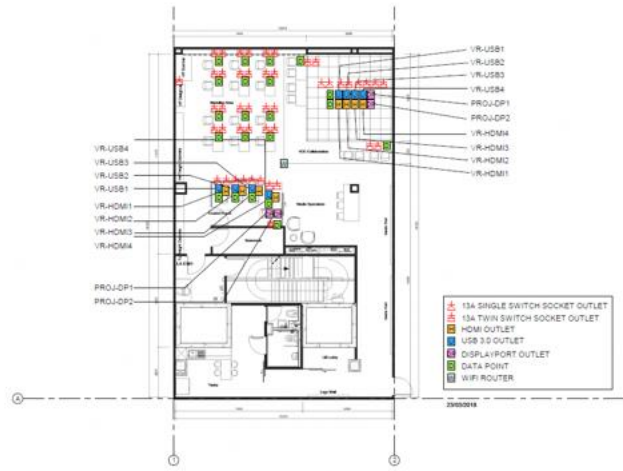
**Software:**  
PIM Software

**Hardware:**  
Locally based Server

**Training**







强枫建筑私人有限公司  
KEONG HONG CONSTRUCTION PTE LTD

CIAP ARCHITECTS PTE LTD

聯明集團有限公司  
LIAN BENG GROUP LTD

digit $\alpha$ lpha™

ida architects pte ltd    ida alliance technology    ida global innovators pte ltd

# IDA's Involvement in Corenet X Sandbox Pilot





JTC Trendspace

- **IDA & ARUP** participate with BCA ,URA and other Agencies as firms experienced in industrial projects to collaborate with other technical agencies to facilitate the development of technology enablers, BIM model checking tools (CORENET X Sandbox).
- A recently completed JTC building project was used as a Sandbox Pilot testbed.



## Experience in Involvement of Corenet X Sandbox Pilot





JTC Trendspace BIM Model

**Preparation of Test Models derived from the JTC Trendspace Project to facilitate validation of the pilot model checker and development of the full checker.**

- Prepared, modified and developed both Native Revit as well as IFC models from relevant disciplines of the project (Architectural, MEP and C&S aspects)
- Modified models used to run and test checker
- Participated in discussions with Agency representatives and vendors to provide relevant feedback and perspective from angle of industry practitioner



Experience in Involvement of Corenet X Sandbox Pilot



## IFC MAPPING

### Excel Reference File

Identified Component	Identified parameters	Revit Representation	Domain	IFC4 Entities	IFC4 Types	IFC4 (PREDEFINED) Object Type
Planting Area	Space Classification	Rooms	ARC	IfcSpace	IfcSpaceType	USERDEFINED
Soil	N.A	Floors	ARC	IfcGeographicElement	IfcGeographicElementType	USERDEFINED
Underground Services	N.A	Pipes	PLU	IfcPipeSegment	IfcPipeSegmentType	N.A
Underground Services	Name	Piping Systems	PLU	IfcSystem	IfcSystemType	N.A

## Modelling for IFC mapping

- Green Verge may used to be 2D hatching
- modelling parameters Planting Area, Soil, Underground Services
- items needing to be represented and defined
- So that a particular rule can perform checks (encroachment)

## Encroachment Within Green Verge

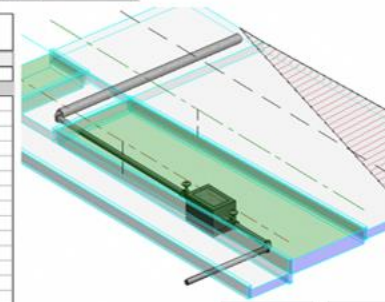
REVIT MAPPING TO IFC PROPERTIES  
Information/Schedules Extracted from Revit > Example of IFC Representation

The screenshot shows a 3D architectural model of a green verge area. A properties panel on the right displays the IFC mapping for a 'Planting Area' element. The panel includes sections for 'Element Specific' properties (like GUID, IFC entity, name, object type, and profile) and 'IFC4 Properties' (like IFC4 entity and type). Below the model, a table shows the IFC4 properties for the 'Planting Area' element.

A	B	C	D	E	F	G
AreaName	SoftscapeType	ClassificationCode	IfcExportAs	IfcObjectType	MasterlineT	DevelopmentUse
SC203 04 28D_Landscape and Open Space - Industry and Warehouse	Groundcover	[IFC-SC203 04 28D_Landscape and Open Space - Industry and Warehouse	IfcSpace	USERDEFINED	AREA_LANDSCAPE	Business 2 - Wh [IFC-SC203 04 28D Industrial, Business 2 - Wh
PlantingAreaCover	[IFC-SC203 04 28D_Landscape and Open Space - Industry and Warehouse	IfcSpace	USERDEFINED	AREA_LANDSCAPE	Business 2 - Wh [IFC-SC203 04 28D Industrial, Business 2 - Wh	

<Pipe Schedule>		
A	B	C
Family and Type	IfcExportAs	IfcObjectType
Pipe Types: Cast Iron	IfcPipeSegmentType RIGIDSEGMENT	
Pipe Types: Copper	IfcPipeSegmentType RIGIDSEGMENT	
Pipe Types: Default	IfcPipeSegmentType RIGIDSEGMENT	
Pipe Types: DRAINOUT PIPE	IfcPipeSegmentType RIGIDSEGMENT	
Pipe Types: Ductile Iron	IfcPipeSegmentType RIGIDSEGMENT	
Pipe Types: Hubless	IfcPipeSegmentType RIGIDSEGMENT	
Pipe Types: uPVC	IfcPipeSegmentType RIGIDSEGMENT	

<Piping System Schedule>	
A	B
System Name	Type
Chemical	Chemical
GAS PIPE	Gas
NWP	HW - NWP - NEWater Pipe
NWP	Newater
NWDP	Newater_Direct
NWPP	Newater_Pump
NWTP	Newater_Transfer
OI	Oil
PCWP	Portable Cold Water
PCWTP	Portable Cold Water_BALANCING
PWGP	Portable Cold Water_Gravity
PCWFF	Portable Cold Water_pump feed
PCWTP	Portable Cold Water_Transfer
PDP	Pump Discharge Pipe





## Site Planning & External Fighting Provision

### REVIT MAPPING TO IFC PROPERTIES

Information/Schedules Extracted from Revit > Example of IFC Representation

The image displays three examples of Revit IFC property mapping for fire engine accessway elements. Each example consists of a 3D model view and a corresponding properties table.

**Example 1 (Top Left):** Shows a fire engine accessway element. The properties table includes:

Name	Value
Element Specific	
Guid	1L5z2D3An7ux4Ae
IfcEntity	IfcCivilElement
Name	Floor:Fire Engine D
ObjectType	DRIVEWAY
Tag	11085658
Pset_CivilElementCommon	
Reference	Fire Engine Driveway
Pset_EnvironmentalImpactIndicators	
Reference	Fire Engine Driveway
SGPset_CivilElement	
FireEngineAccessRoad	Yes
FireEngineAccessway	No
LoadingCapacity	30

**Example 2 (Top Right):** Shows a fire engine accessway element. The properties table includes:

Name	Value
Element Specific	
Guid	33JhmFzT24BrA4DiyPK2p
IfcEntity	IfcSlab
Name	Floor:Fire Engine Accessway:1...
ObjectType	DRIVEWAY
PredefinedType	FLOOR
Tag	10867598
Profile	
ProfileName	
Pset_EnvironmentalImpactIndicators	
Reference	Fire Engine Accessway
Pset_ReinforcementBarPitchOfSlab	
Reference	Fire Engine Accessway
Pset_SlabCommon	
Combustible	No
IsExternal	Yes
IsExternal	No
LoadBearing	No
PitchAngle	0.006197
Reference	Fire Engine Accessway
Qto_SlabBaseQuantities	
SGPset_Slab	
FireEngineAccessRoad	No
FireEngineAccessway	Yes
SGPset_SlabDimension	
Thickness	5

**Example 3 (Bottom Left):** Shows a fire engine accessway element with a 'KEEP CLEAR' sign. The properties table includes:

Name	Value
Element Specific	
Guid	1eW0T1H3D3x8r28tpQvR
IfcEntity	IfcBuildingElementProxy
Name	IDA - Fire Engine Accesswa...
ObjectType	SIGNPOST_DRIVEWAY
PredefinedType	USERDEFINED
Tag	12147058
Profile	
ProfileName	START
Pset_BuildingElementProxyCommon	
IsExternal	No
Reference	START
Pset_EnvironmentalImpactIndicators	
Reference	START
SGPset_BuildingElementProxy	
Reference	START

### Modelling of additional objects in objects to facilitate IFC mapping

- More examples that the future work is more than conventional object modelling
- requires detailed resolution and precision upfront
- Requires more attention to model right, right from beginning
- Need to know the Authority Regulatory Code well

Additional modelling of Fire Engine Accessway (FEA) and FEA paint markings

## Planting Provision for Open Air Parking at Street Level

**IFC MAPPING**  
Excel Reference File (By GOVTECH)

Modified Component	Identified parameters	Revit Representation	Domain	IFC Entities	IFC Types	IFC (PREDEFINED) Object Type	IFC (USERDEFINED) Object Type	IFC (PREDEFINED) Property Set	IFC (USERDEFINED) Property Name	IFC (PREDEFINED) IFC-SS ProjectSet	IFC (USERDEFINED) IFC-SS ProjectName	IFC-SS Property Type
Car Parking Lot	Area	Generic Models	ARC	BuildingElementProxy	BuildingElementProxyType	USERDEFINED	CARLOT	N/A	N/A	N/A	N/A	N/A
Planting Area	Space	Rooms	ARC	Room	RoomType	USERDEFINED	AREA_LANDSCAP	N/A	N/A	N/A	N/A	N/A
Planting Area	Space	Classification	ARC	Room	RoomType	USERDEFINED	E	N/A	N/A	N/A	N/A	N/A
Soil	N/A	Floors	ARC	Room	RoomType	USERDEFINED	LANDSCAPE_SOIL	N/A	N/A	N/A	N/A	N/A
Voice Planning	Space	Rooms	ARC	Room	RoomType	USERDEFINED	LANDSCAPE_SOIL	N/A	N/A	N/A	N/A	N/A

Query:  
All car parking in the project are assigned under "CARPARKING"  
Space: please clarify the values to input for the following parameter:  
IfcObjectType

Resolved, it was concluded to use "CARLOT"

Query from BCA:  
vehicle parking place = not consider as a car park lot?? any special size to differentiate ???

We follow what is inside the level Classification Manager to identify the space requirement.

## Planting Provision for Open Air Parking at Street Level

### REVIT MAPPING TO IFC PROPERTIES

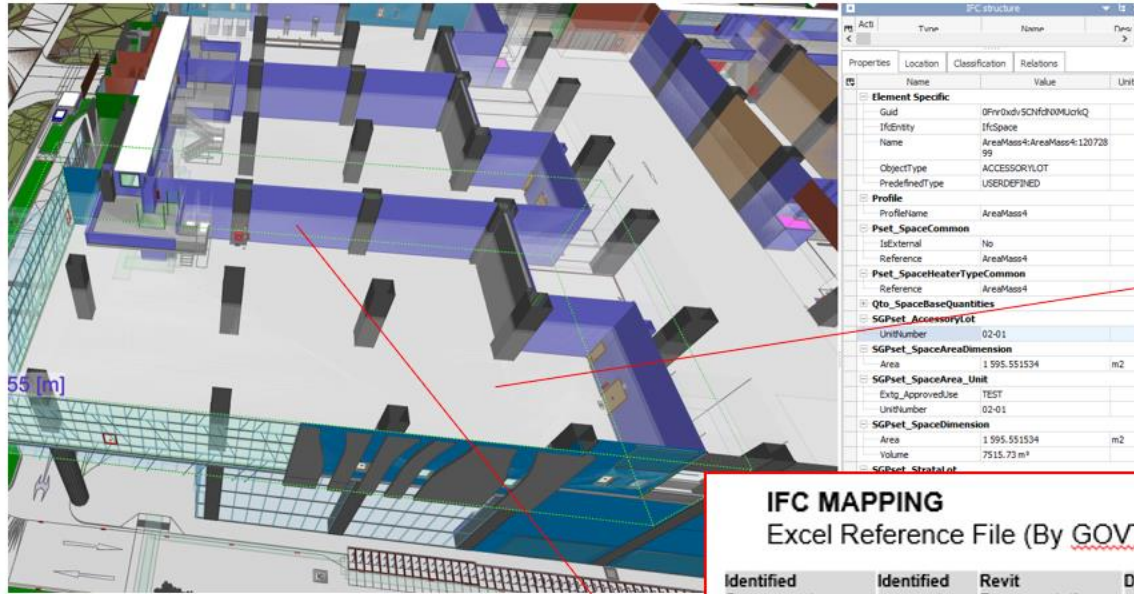
Information/Schedules Extracted from Revit > Example of IFC Representation

Properties	Location	Classification	Relations	Value
<b>Element Specific</b>				
Guid				3E2FvH4155VQ18VJ4Fy
IfcIdentity				IfcBuildingElementProxy
Name				IDA - Parking Lots:5400L X 2400W - Perforated
ObjectType				CARLOT
PredfinedType				USERDEFINED
Tag				2098584
<b>Pset_BuildingElementProxyCommon</b>				
IsExternal				No
Perforated				Yes
<b>SGPset_BuildingElementProxyDimensions</b>				
Length				5 400
Width				2 400

## Assigning in IFC mapping

- assign object to the relevant IFC mapping
- Discipline to assign while modelling
- Need to have sufficient familiarity and Regulatory Authority Code knowledge





**IFC MAPPING**  
Excel Reference File (By GOVTech)

Identified Component	Identified parameters	Revit Representation	Domain	IFC4 Entities
Wall	Fire Rating	Walls	ARC	IfcWall
Strata Unit	Unit Number	Massing	ARC	IfcSpace
Site	Site Classification	Project Information	ARC	IfcSite
Floor	Fire Rating	Floors	ARC	IfcSlab
Fire Shutter	Operation Type	Doors	ARC	IfcDoor
Fire Shutter	Fire Rating	Doors	ARC	IfcDoor
Fire Shutter	Material	Doors	ARC	IfcDoor
Door	Fire Rating	Doors	ARC	IfcDoor
Building	Building Classification	Project Information	ARC	IfcBuilding

Name	Value	Unit
<b>Element Specific</b>		
CompositionType	ELEMENT	
Guid	2sqvJCV9z2\$85uowLnnZ5o	
IfcEntity	IfcSpace	
LongName	FACTORY UNIT 02-01 TYPE A1	
Name	236	
PredefinedType	SPACE	
<b>Profile</b>		
ProfileName		
<b>Pset_SpaceCommon</b>		
IsExternal	No	
Reference	FACTORY UNIT 02-01 TYPE A1 236	
<b>Pset_SpaceCoveringRequirements</b>		
FloorCovering	NO SCREEDING CONCRETE FLOOR	
<b>Pset_SpaceHeaterTypeCommon</b>		
Reference	FACTORY UNIT 02-01 TYPE A1 236	
<b>Qto_SpaceBaseQuantities</b>		
<b>SGPset_AccessoryLot</b>		
UnitNumber	MODULAR FACTORY UNIT	
<b>SGPset_Space</b>		
BarrierFreeAccessibility	Yes	
PurposeGroup	Factory	
SpaceName	FACTORY UNIT 02-01 TYPE A1	
SubmissionByFutureTenant	No	
<b>SGPset_SpaceAreaDimension</b>		
Area	1 012.676614	m2
<b>SGPset_SpaceArea_Unit</b>		
UnitNumber	MODULAR FACTORY UNIT	
<b>SGPset_SpaceDimension</b>		
Area	1 012.676614	m2
<b>SGPset_SpaceFireSafetyRequirements</b>		
FireExit	No	
FlammableStorage	No	
SprinklerProtectionAutomatic	Yes	
<b>SGPset_SpaceOccupancyRequirements</b>		
OccupancyType	Factory	
OccupantLoad	102	
<b>SGPset_StrataLot</b>		
UnitNumber	MODULAR FACTORY UNIT	

## Modelling with Intelligence

- Not just 2D/3D conventional drafting
- Modeller need to know what is essential data to map out (starter kit template)
- Requires good Regulatory Authority Code knowledge
- QPs need to be involved in process of modelling to check (\*\*QPs, you have to lead!\*\*)

Experience in Involvement of Corenet X Sandbox Pilot



## Modelling Support

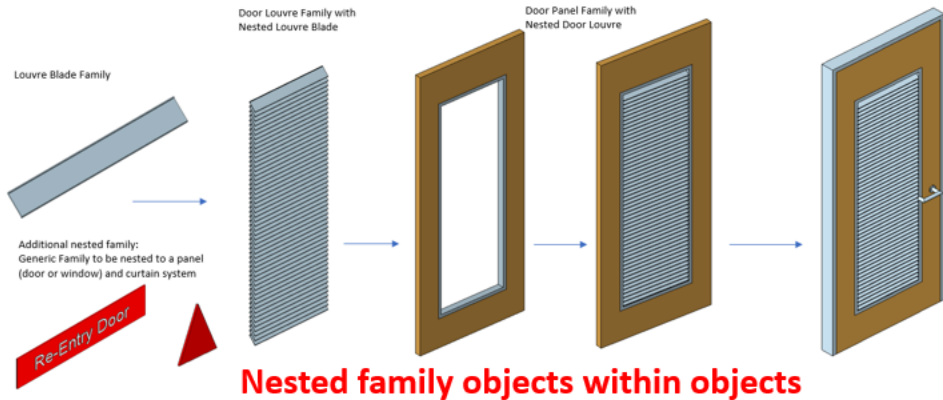
Query/Comment from BCA:  
Please show how IDA model louvers.

Every consultant may have different approach when creating a family (door, window, curtain panel). Please refer to the attached family.

Note that if the ventilation calculation (effective opening) will be based on the geometry or how the family is created/modelled. This will have a varying result.

Nested to Nested to Nested Door Louvre Full Height Family

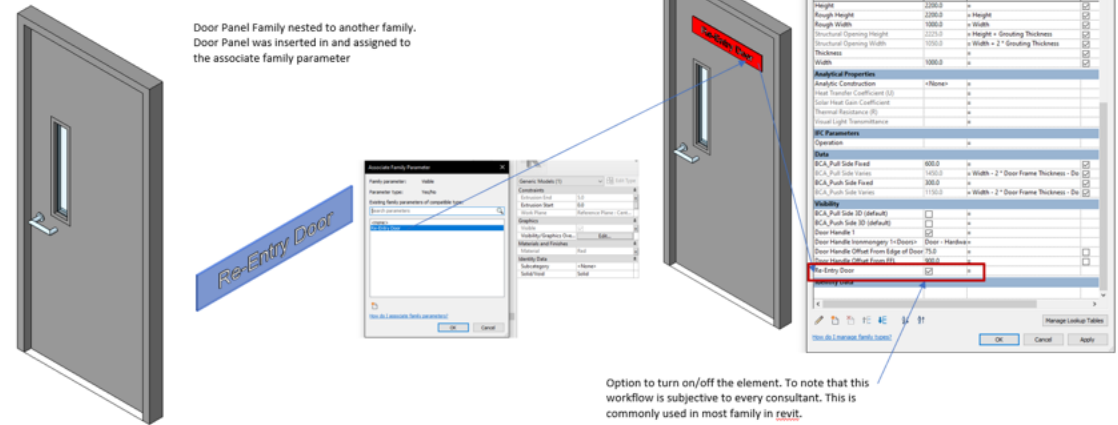
Single Swing Fl Door Family with Nested Door Panel Family



## Modelling Support

Door Family with Nested Generic Family:  
Door Panel family nested to Door Family as **Single Swing Fl Door Family**.  
Assign generic model "Visible" associate family parameter as Boolean(Y/N).  
Option to turn on/off the element to show.  
Define parameters/associate family parameters to make the family flexible.

Door Panel Family nested to another family.  
Door Panel was inserted in and assigned to the associate family parameter



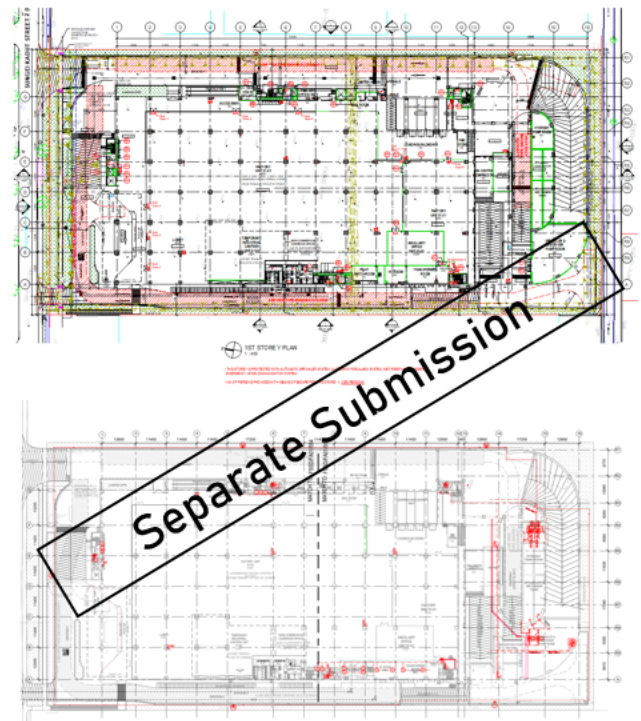
## Complex customized object Modelling for IFC Mapping purpose

- Not every native object is intelligent enough, technology and the tools will evolve
- In meantime, objects may need a fair bit of customization to generate relevant IFC mapping
- Each organization/company will need to develop your own methodology over time
- IDA has gone through this journey of customization through the sandbox

## Resources:

- Autodesk is developing Revit Warehouse online resource
- Archicad has friendlier IFC-functionality, eventually the online community will develop and share
- Or get **IDA Technology** to help you develop 😊

**CURRENT:**  
Separate and Concurrent  
Regulatory Approval Process



**Architect**

FIRE LEGEND

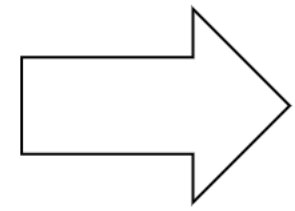
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100



**PE (Mech)**

FIRE LEGEND

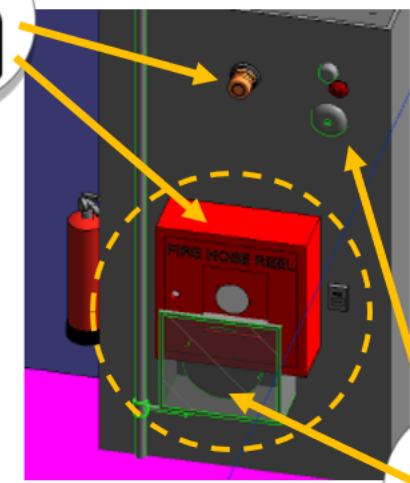
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100
1-100	1-100	1-100	1-100	1-100	1-100



**CORENET X:**  
consolidated Regulatory process  
using federated model submission



Architect



Hosereel, Strobe Light, Fire Alarm Bell, Call Point



PE (Mech)

## Coordination between Disciplines in Federated Modelling for IFC Mapping purpose

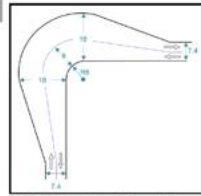
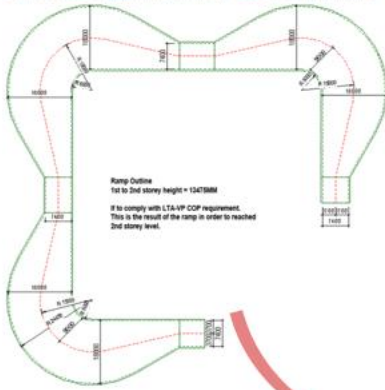
- Multi-disciplinary collaboration workflow is highly important
- Who leads in setting up (advocate that Architects should take the lead)
- Some objects needs agreement on authorship (who is liable?)
- Each organization/company need to develop your own Execution Methodology (incorporate into your BEP??)

Experience in Involvement of Corenet X Sandbox Pilot

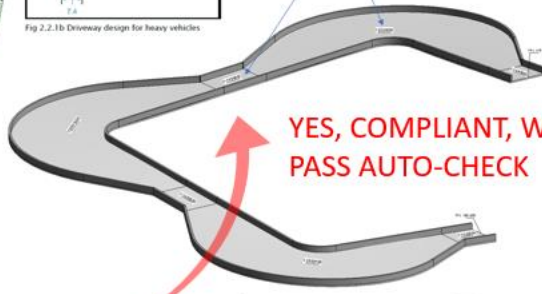


## Modelling Support

Query from BCA  
Vehicle ramp:  
Please provide modelling support on how to model an accurate curve vehicle ramp. Can the details in the diagram shown accurately in the model, example, width of 9m for inner lane.

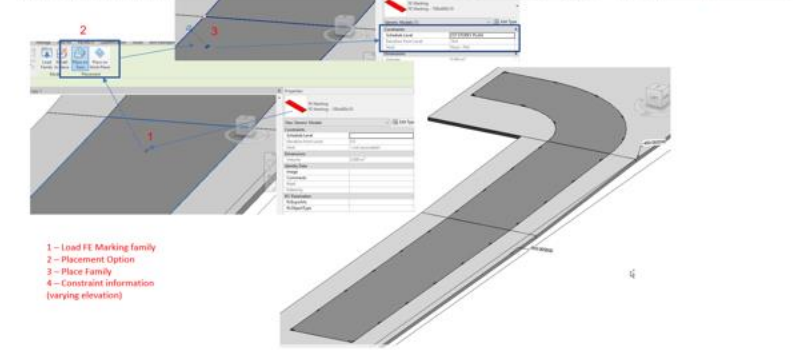


MAX. SLOPE CURVE REQ.: 1:20  
MAX. SLOPE STRAIGHT REQ.: 1:15



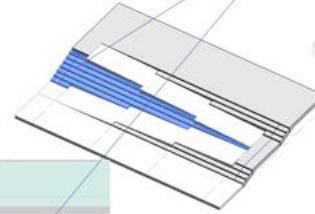
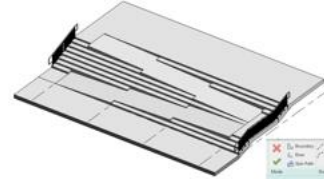
## Modelling Support

Five Engine Accessibility and Road as Floor:  
Modifying Generic Model with varying levels.



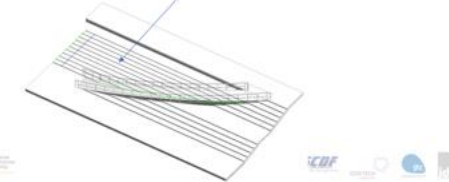
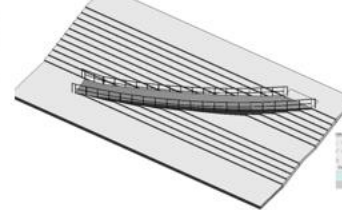
## Modelling Support

Query/Comment from BCA:  
Pending (DA input on how they model complex design staircase  
Other Stair design by Sketch



## Modelling Support

Query/Comment from BCA:  
Pending (DA input on how they model complex design staircase  
Other Stair design by Sketch



## Is architectural work going to become stifling?

- Design to fulfil code only??! NO LAH.....
- Do not underestimate our young architects (come on....☺)
- better informed and liberated, quality of thought in work
- Be prepared, we need our young generation of architects to model, QPs guide them well

Experience in Involvement of Corenet X Sandbox Pilot

# Road ahead for us



# IDA's preparation to handle corenet X

- Creating a **new office Revit/ArchiCAD Template** to suit Corenet X requirements
- Merging the **Starter Kit** shared parameter to IDA shared parameters. Adopting to IFC exporting process to avoid unnecessary errors to the model.
- Preparation for **Staff training** so that they will have a smooth transition to the new submission process and requirements
- Prepare for a **change in workflow** and QPs having a meaningful active part in the process, QPs need to be retrained
- Review and re-understanding the **implication to Submission Process and project timelines**
- Creating **in-house dynamo script** to cater for repetitive process and application

# WHY THE URGENCY ?

- You will make **more money!!** (It should be more profitable)!
- The digital world is here and is moving on regardless, **don't get left behind**
- It is not just for us, it is **for our future generation of architects, master builders**
- Ultimately, it is **better architecture, BELIEVE**
- Message to all stakeholders, fellow architects & consultants, developers, educators

Ar. Lin Hongsui  
Director,  
ID Architects



Road Ahead for IDA and you





# Thank You!

For Architects, By Architects

**Ar. Lin Hongsui**  
Director,  
ID Architects

