



"Embracing Transformation: ADDP's Journey with CORENET X"

Ar. Markus Cheng Thuan Hann

Synopsis:

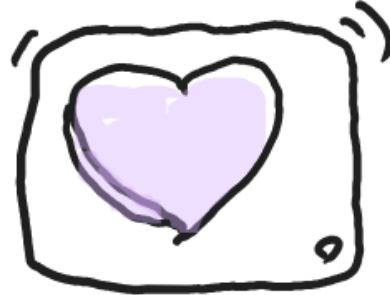
The adoption of the CORENET X platform by ADDP Architects represents a significant milestone in the evolution of regulatory submissions and BIM in IFC-SG format. The seminar highlighting this transition is not just a reflection of the technological shift but also a testament to the **collaborative efforts** and **transformative** approach undertaken by ADDP. It underscores the experiential learning and progressive journey that the firm has embarked upon, emphasising the importance of **embracing change** and the valuable insights gained through this process.



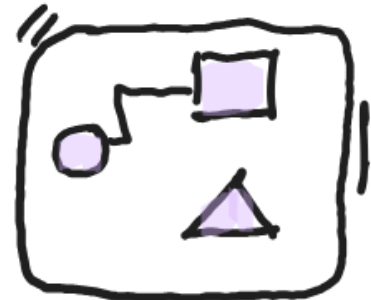
Embracing Change: How we do it ?



1 EMPOWER
EMPLOYEES



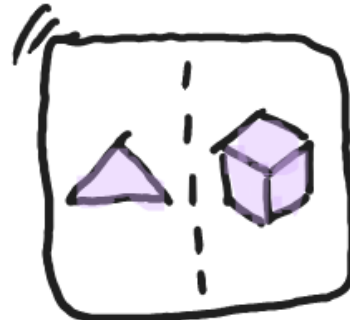
2 ENGAGE
STAKEHOLDER



3 CHANGE THE
WAY YOU WORK



4 OPTIMISE
OPERATIONS

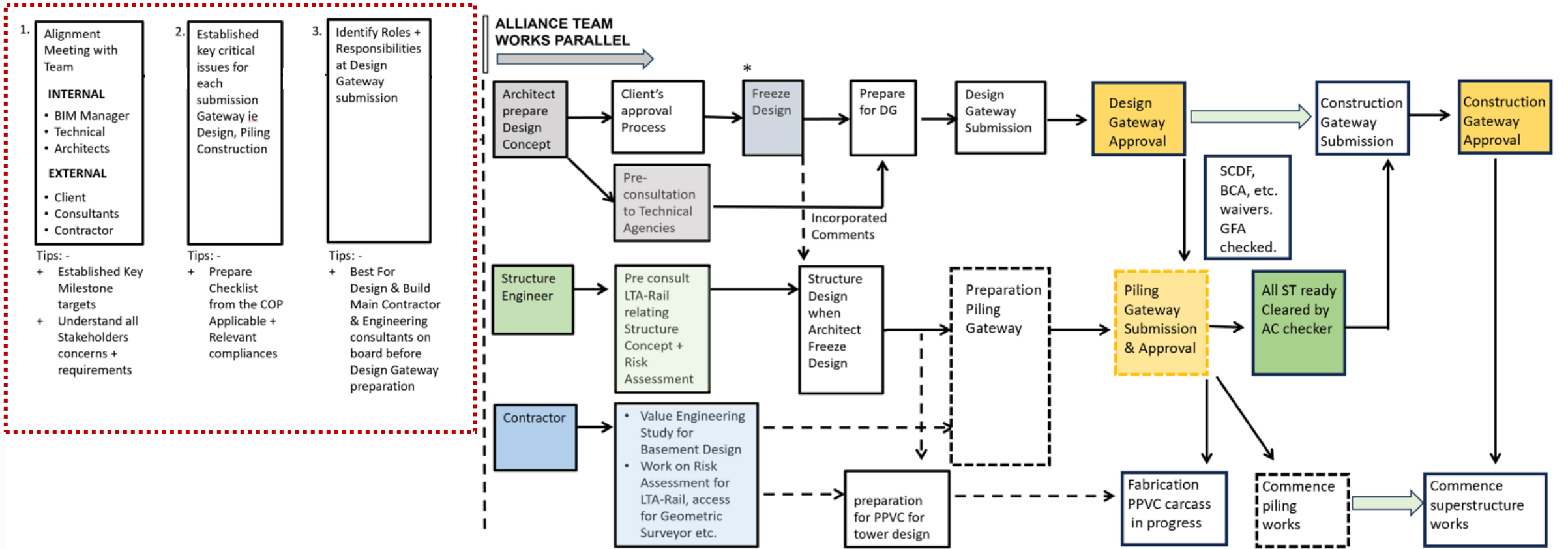


5 TRANSFORM
BUSINESS MODELS



6 CREATE
NEW OPPORTUNITIES

Corenet X – Workflow



Corenet X – Workflow

1. Alignment Meeting with Team
- INTERNAL**
- BIM Manager
 - Technical
 - Architects
- EXTERNAL**
- Client
 - Consultants
 - Contractor

Tips: -

- + Established Key Milestone targets
- + Understand all Stakeholders concerns + requirements

2. Established key critical issues for each submission Gateway ie Design, Piling Construction

Tips: -

- + Prepare Checklist from the COP Applicable + Relevant compliances

3. Identify Roles + Responsibilities at Design Gateway submission

Tips: -

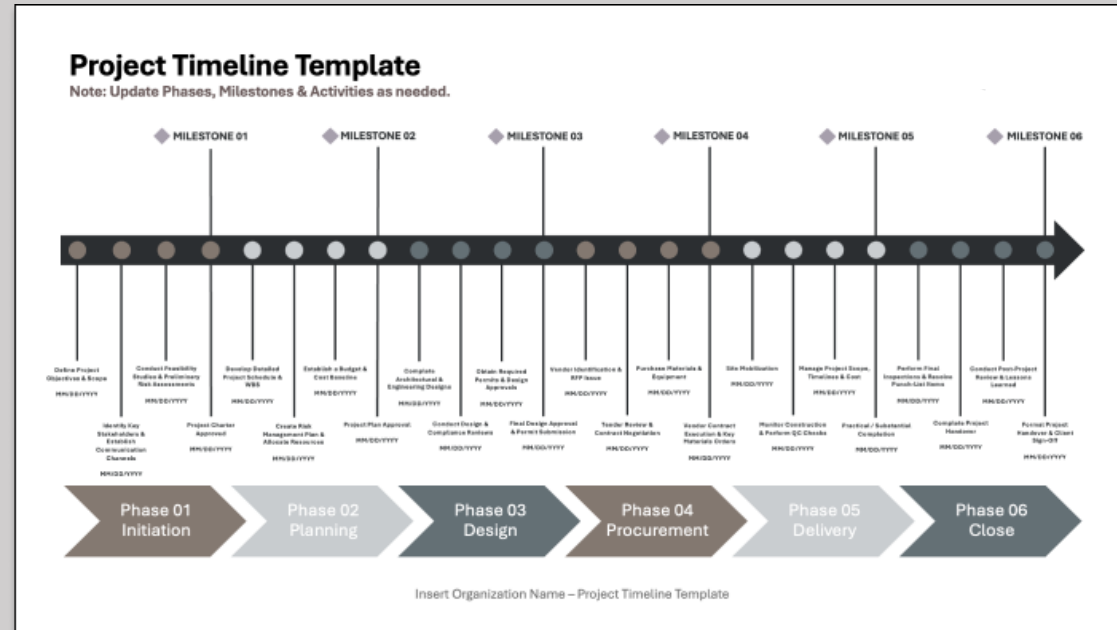
- + Best For Design & Build Main Contractor & Engineering consultants on board before Design Gateway preparation



Corenet X – Workflow

1.0 Prepared a roadmap for the internal and external team :

- Align with all stakeholders on what, when, and how to approach the Corenet X. Established milestone dates with all parties.
- All consultants to identify potential risks and critical issues that require pre-consultation with Agencies.
- To avoid drastic changes and minimise abortive work. Compared to the current PP submission process, the design needs to be developed at DG stages ie an **Integrated Design Approach**



Corenet X – Workflow

2.0 Established Code of Practice Checklist

Code of Practice –Corenet X- Filter by Regulatory Example Pg. 41

Section 3: Specific Requirements by Regulatory Agencies
Land Transport Authority (LTA)

INTRODUCTION TO CX | GENERAL REQUIREMENTS | **REGULATORY AGENCIES** | KEY GATEWAYS | OTHER BUILDING WORKS | BIM DATA REPRESENTATION

Land Transport Authority (LTA)

Legend: ■ Architecture ■ C&S ■ M&E IFC COMPONENT Action/applicable

Pre-Submission, Planning and Other Consultations <i>(continued from previous page)</i>	
Key Words	Requirement Category
Site Layout, Vehicular Parking <i>(continued from previous page)</i>	<ul style="list-style-type: none"> The type of mechanised parking system and all relevant requirements/ dimensions of the parking system such as platform size, maximum load, headroom clearance, allowable car dimensions, safety features, etc. shall be clearly indicated and endorsed on plan. Ensure that the dimensions and information endorsed on plan correspond with the mechanised parking system specification. The cross-sectional details of the parking platform showing the inner clear width of the platform, clear platform length and clear movement space between the structural supports. To ensure that the dimension for headroom clearance of minimum 2.2m and platform size of minimum 2.4m x 5.4m are cleared of obstructions e.g. structural supports, structural cage, wire rope/hoisting cable, motorised equipment, sliding gears, etc. <p>Car Lifts</p> <ul style="list-style-type: none"> To submit the type of car lift system and all relevant requirements/ dimensions of the car lift system such as internal cage size, width of the entrance and exit door, maximum load, headroom clearance, allowable car dimensions, minimum speed, minimum discharge capacity, queuing spaces, safety features, etc. shall be clearly indicated and endorsed on plan, information on how to operate the car lifts (e.g. call-button or loop detector), sequence on how cars enter/exit the car lift, provision of safety devices, etc. should be clearly illustrated. The proposed car lift system shall comply with the guidelines for provision of car lifts in car parking places.
G1 Design Gateway	
Key Words	Requirement Category
Impact Studies, Site Layout, Rail Protection	<p>Development Proposal within Railway Protection Zone / Railway Corridor</p> <ul style="list-style-type: none"> To show the proposed plan for development works To provide an engineering evaluation report* accompanied by a plan for engineering works To furnish the relevant Certified Survey Plans (for critical development within first reserve of underground RTS) <p>*If the QP deems the impact from the development to be negligible, an engineering assessment outlining the method of analysis, assumptions and projected impact to the RTS will suffice at this stage. This is subject to LTA's acceptance.</p> <p><small>Note: Refer to LTA's Code of Practice for Railway Protection / Guidebook for Carrying Out Modification Work to Rapid Transit System (RTS) Stations or Railway by Private Developer for more requirements / detailed description</small></p>
Site Layout, Street Works <div style="display: flex; justify-content: space-around; font-size: 0.7em;"> ROAD CULVERT SPACE RAMP </div>	<p>Development Proposal</p> <ul style="list-style-type: none"> To check if project falls within LTA's exemption list and is not required to obtain a clearance from LTA DBC, i.e. LTA in-house project. To confirm if the development falls within a road structure safety zone (RSSZ). <p>Connections and interfaces at development boundary</p> <ul style="list-style-type: none"> To indicate the road level, entrance culvert level, and the proposed development platform level. For new roads proposed in conjunction with development(s), to develop the development platform level and proposed levels of the development access points based on the vertical alignment of the proposed carriageway (before QP confirms on the development platform level for the design of the foundation / structural works). To show the gradient of entrance approach. To indicate the configuration of the proposed access. To indicate the width and turning radius of the proposed access. To indicate the provision of tactile tiles. To indicate any proposed relocation of existing road elements, such as trees, lamp post, signs etc, which may be affected by proposed access.

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Code of Practice –Corenet X- Filter by Gateway Example Pg. 96

Section 3: Specific Requirements by Key Gateways
Design Gateway

INTRODUCTION TO CX | GENERAL REQUIREMENTS | REGULATORY AGENCIES | **KEY GATEWAYS** | OTHER BUILDING WORKS | BIM DATA REPRESENTATION

G1

Design Gateway

Agency	Summary of Design Gateway Requirements	Common Gateway Key Words
BCA	NIL Note: If building design involves complex buildings, consultation with BCA to be held before Piling Gateway (G1.5).	-
LTA	Compliance to traffic operations and safety requirements. Key Evaluation Areas include: <ul style="list-style-type: none"> Location and provision of access points, pick-up/drop-off and loading/unloading area Parking provision and layout Extent of frontage improvement Improvement needed to existing traffic scheme Adequacy of connection to commuter facilities Vesting of road reserve plot, if any <p>For proposed new street, horizontal and vertical alignment, road typology and connection to existing road shall be established to determine the Road Reserve Line required.</p> <p>For proposed/relocation of commuter facilities, architectural layout to be evaluated to establish alignment, headroom and column positions, along with declaration to non-compliance with LTA's standards and requirements (if any).</p> <p>Railway protection details should be provided to facilitate the review of the QP's assessment of the overall impact of the development with respect to the RTS, including:</p> <ul style="list-style-type: none"> Plan for development works Engineering evaluation report Certified survey plans etc. 	<ul style="list-style-type: none"> External Works Impact Studies Infra & Utilities (External) Rail Protection Site Layout Street Works Vehicular Parking
NEA	Compliance with pollution control and environmental health requirements, including: <ul style="list-style-type: none"> Refuse and recyclables collection, storage and removal Analysis of how surrounding developments/amenities affect subject site Proposed orientation and location of emission (noise, air and odour) sources and ventilation/discharge systems within and around subject site Location for storage for materials such as chemical, oil, fuel, etc. Industrial processes or production activities or changes to existing activities Building Height Constraint (BHC) and Minimum Chimney Height (MCH) requirements as stated in SSS93 Energy Efficiency Opportunities Assessment (EEOA) declaration for industrial development <p>Reports for Pollution Control Study/Air Dispersion Model Study, Quantitative Risk Assessment, Noise Impact Assessment, Environmental Site Assessment etc. may be submitted separately</p>	<ul style="list-style-type: none"> Building Massing Impact Studies Noise Control Pollution Control Public Health Servicing (Internal Accesses) Site Layout Use & Intensity

See also:
[Latest CORENET X Circulars](#)

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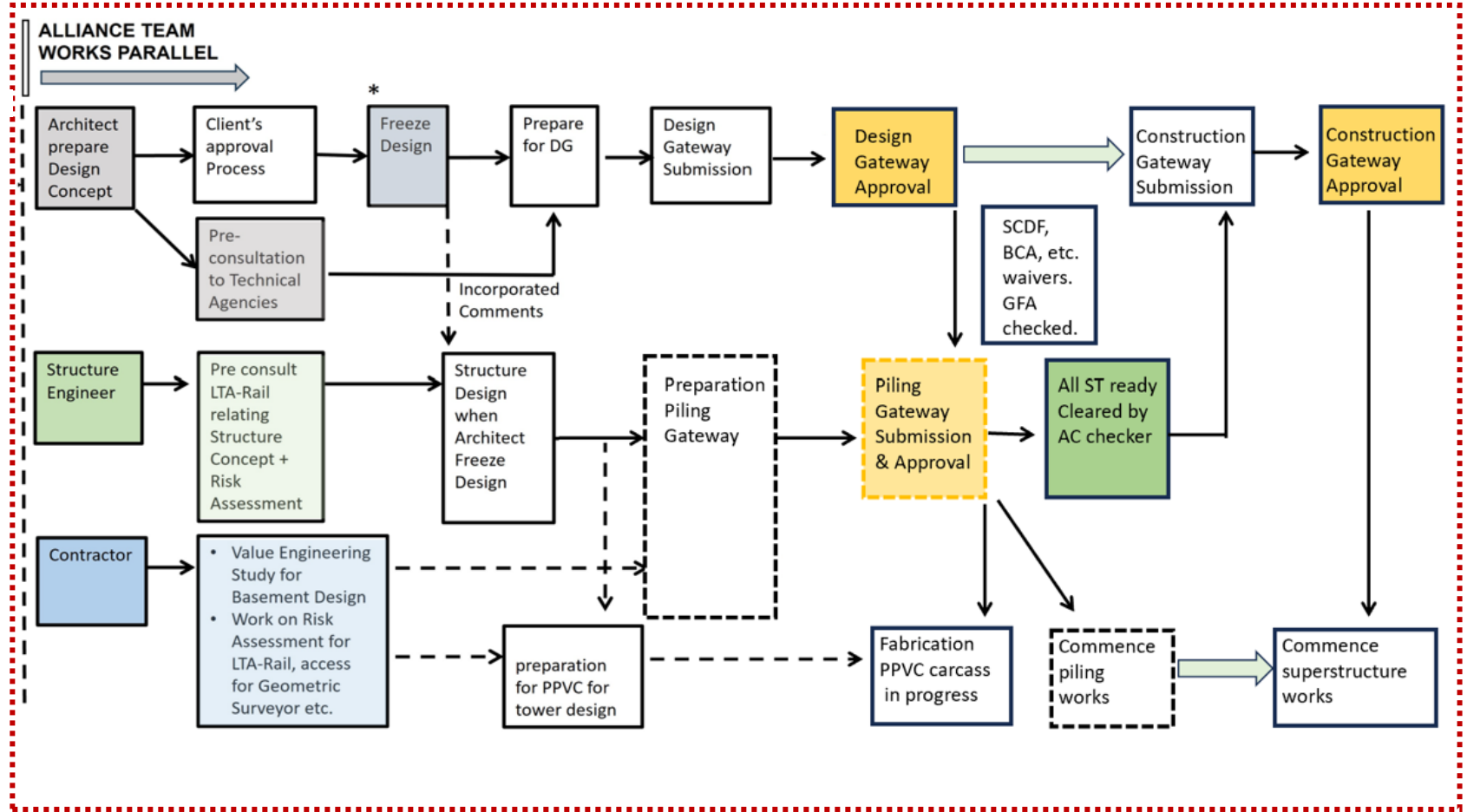
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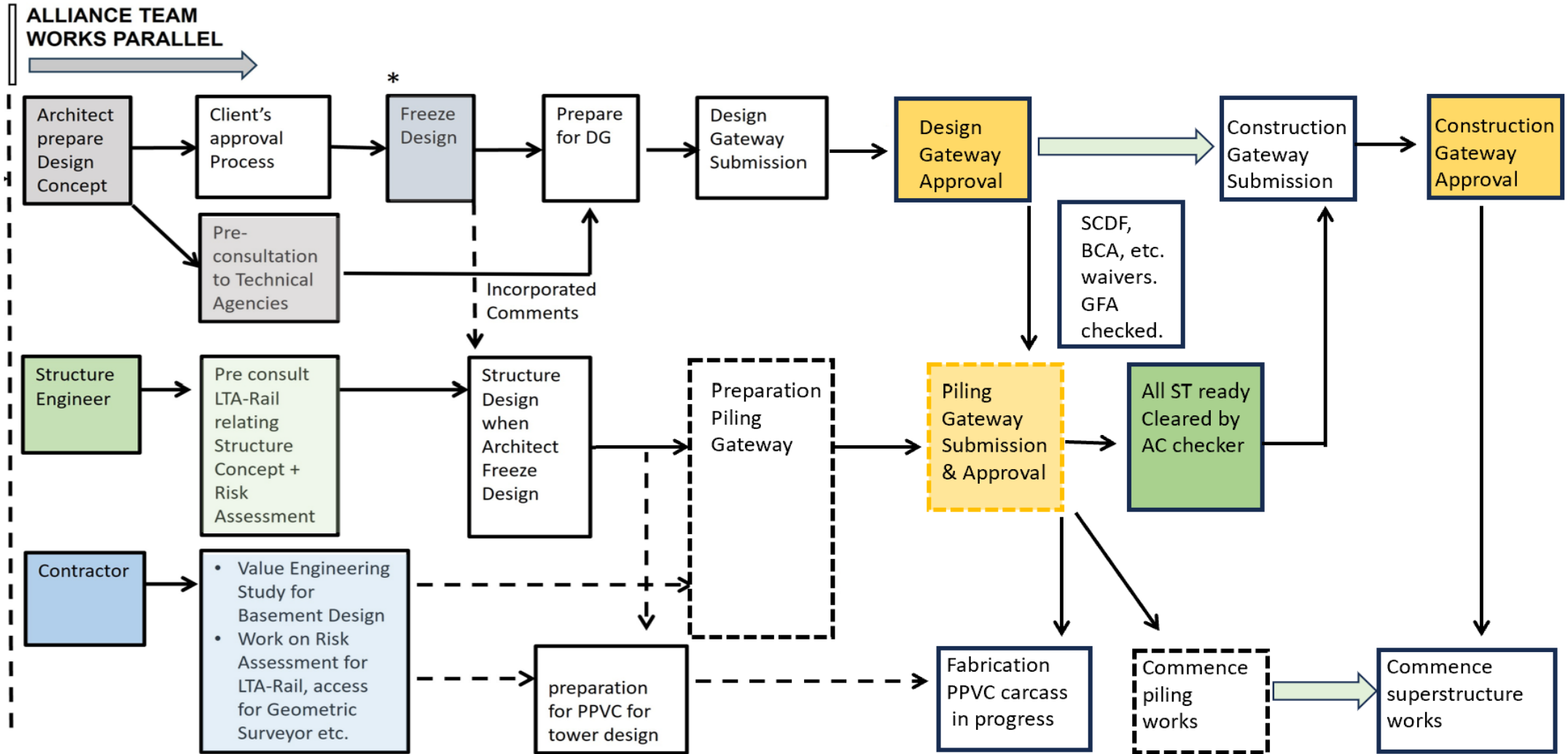
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Corenet X – Workflow



DO and DONT at Design Gateway

DO

- Read COP for corenet X , guide books on IFC-sg , other resources and Geo-Referencing. All available on BCA's website for Free
- Allow more time for the preparation of BIM modelling required more input , tagging, component modelling BIM IFC-SG for Co-ordination with consultants' BIM models. **Especially landscape architects levels, green buffer , lush computation.**
- Do planning for other team members, not BIM ready **ie topo-surveyors . Need to have trees and topographical levels in 3D .**
- Need to prepare supplementary drawings to support the submissions. Some compliance requirements still require 2D input **i.e swap path from Traffic Consultants to show turning radius of Bin Trucks accessibility.**
- Do plan for LTA's vehicular Parking at Design Gateway . If project opt for piling gateway for commencement of works. **Structure design and framing should be ready at Design Gateway and coordinated for Car Parking Design.**

DO and DONT at Design Gateway

DON'T

- **Do not register** project members last minute . Appointment of consultants require Client/ Developer to validate. Especially if client needs corpass to assess the corenet X portal. Need to plan ahead of submission timeline.
- **Do not rush** to submit Design Gateway if the key team members not appointed especially if project procurement mode involves design and build where consultants' team is with main contractor.
- **DO not assume** that the BIM model can be viewed without checking. Must use the new openBIM viewer on the CORENET X Submission Portal to check that BIM IFC models can be rendered and federated together before submission.

DO and DONT at Construction Gateway

DO

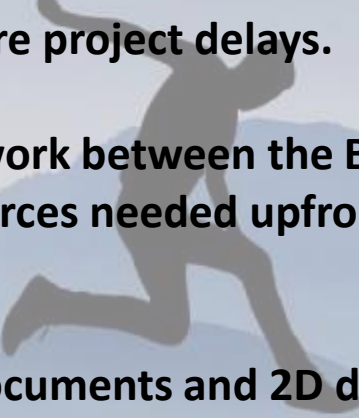
- Do allow for sufficient time for AC checker to check on the BIM model. Currently approval process , Structure Engineer submits many ST submissions staggering design and checking, but under corenet X submission workflow, all structure's Bim models need to be submitted at the CG stage. All engineering design work and AC checking will be brought forward. *(review and refinement: Part ST submission subjected to conditions)*
- Do submit and obtain approval for all waivers, especially for SCDF issues before CG approval.
- Do work out a reasonable timeline with the client for the construction gateway, preparation of Bim, Collaboration and submission approval. *(The latest COP version 2 allows parallel submission of construction Gateway while Piling Gateway is still processing and similarly before DG approval, Piling Gateway can be submitted)*
- Do consider and plan with the contractor's construction schedule relating to the Piling Gateway , Construction Gateway approval and off-site fabrication works.

Benefit Outcomes and Potential Pitfalls

- Architects and Developers have good oversight of the approval timelines and processes. Consolidated Written Directions issued by all agencies.
- The Alliance Team can address all comments holistically and not piecemeal, reducing abortive redesign and coordinating when contradicting comments from different agencies occur.
- Most co-ordinations between consultants, contractors and authority compliances are DONE; upfront within 12-15mths (depending on the complexity of the projects). The Contractor can concentrate on the construction progress and Site Safety.
- One-stop CORENET X submission portal changes how we approach our design process, contract procurement, detailed design and construction planning workflow. The developer needs to rethink the procurement and design decision process. Everyone plays a pivotal role in transformative changes.

OUTCOME

Benefit Outcomes and Potential Pitfalls

- **The developer does not understand the changes in the workflow and does not plan for a realistic timeline, which will result in more project delays.**
 - **Architects underestimated the collaborative work between the BIM team and consultants. The required workload and resources needed upfront to be gateway-ready.**
 - **Agencies require additional supplementary documents and 2D drawings which burden the Consultants' workload. It is counterproductive and does not optimise 3D BIM modelling.**
- 

Moving Forward

- Leadership and management support from all Agencies to consider the followings:
 - Key planning agencies to consider pre-planning workshops for complex development where sketch design can be discussed and agreed upon with URA, LTA (rail, road), and PUB Drainage etc. So that design parameter fundamentals can be established and agreed upon without developing till the design gateway.
 - By reducing the requirement for additional 2D drawings, agencies can consider extrapolating information from BIM models.



Thank You