



# Getting Ready for CORENET X





# AGENDA

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**CORENET X Essentials:**  
A recap on important details

2

**Continual Improvement:**  
Responding to industry needs

3

**Taking Action:**  
Getting prepared for CORENET X

4

**CORENET X Portal:**  
A brief overview





# CORENET X Essentials:

A recap on *important* details

# Co-creation with Industry to Redesign the Regulatory Process

## SERVICE JOURNEY 1.0

**Phase 0: DISCOVERY Phase**  
Service Journey Blueprint  
(mid Oct 2018)

## SERVICE JOURNEY 2.0

**PHASE 1 & 2:**  
Visioning & Design  
(mid Jul 2019)

**PHASE 3:**  
Implementation Planning  
(mid Dec 2019)

## SANDBOX (2021-23)

**PROCESS SANDBOX:**  
Trial, Review, Revise  
(2021 - 1H 2023)

## PRODUCT DELIVERY (2023-24)

**IMPLEMENTATION & REFINEMENT:**  
Soft Launch of CORENET X for live submission of pilot projects.  
(2H 2023 - Present)



Interviews



Workshops

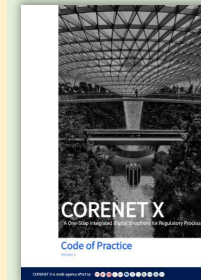


Hands-On Sessions



CODE OF PRACTICE

(Sept 2023)



SOFT-LAUNCH OF CORENET X

(18 Dec 2023)



LIVE SUBMISSION

(Present)

Engaged **6** TACs



Engaged **92** firms

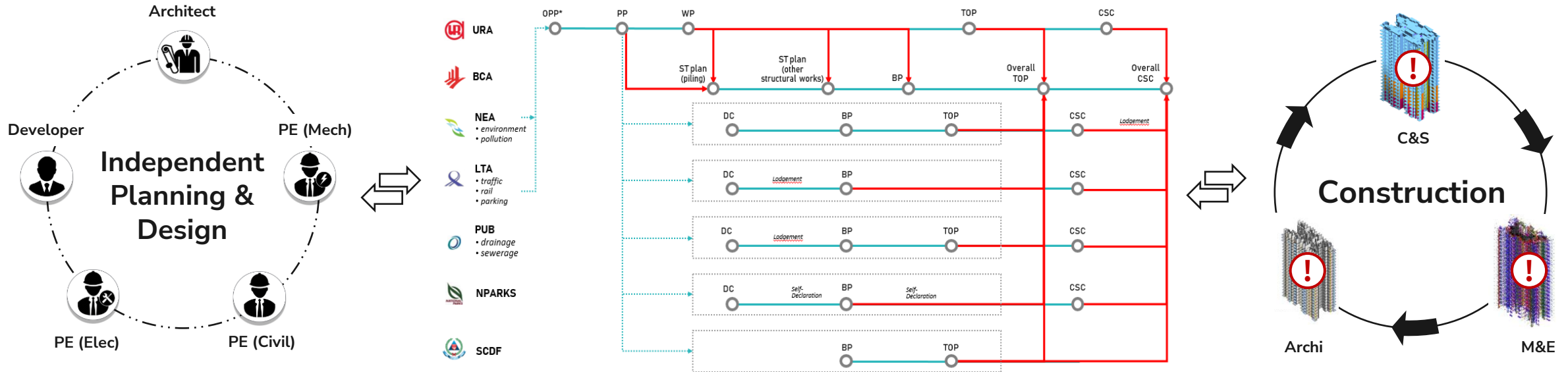
• Comprising Developers, Consultants (architectural, C&S and M&E), and Builders



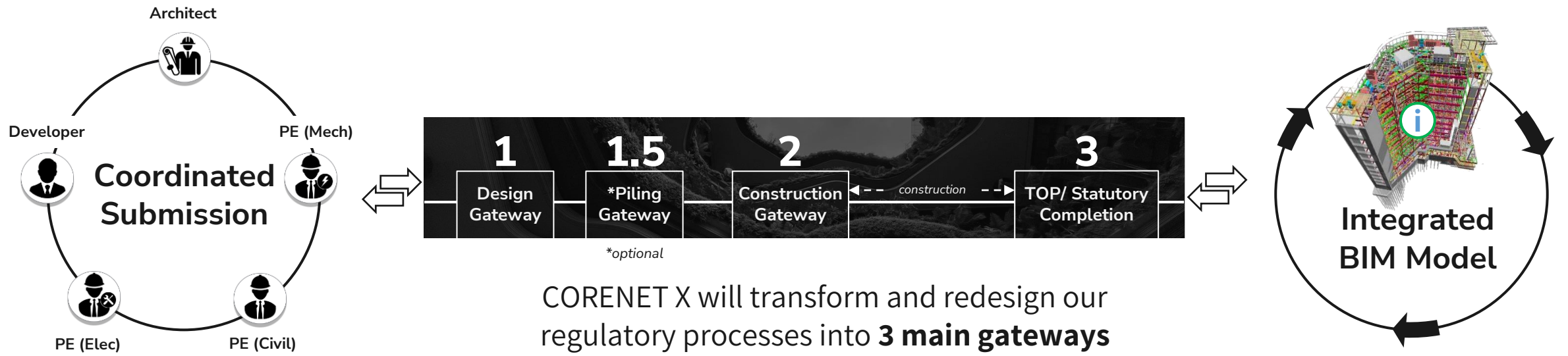
Involving:  
**250** industry reps  
**12** agencies

Consulted  
**56** BIM Managers

# Today's Separate & Concurrent Approval Process



# New Regulatory Approval Process for Building Works (RABW)

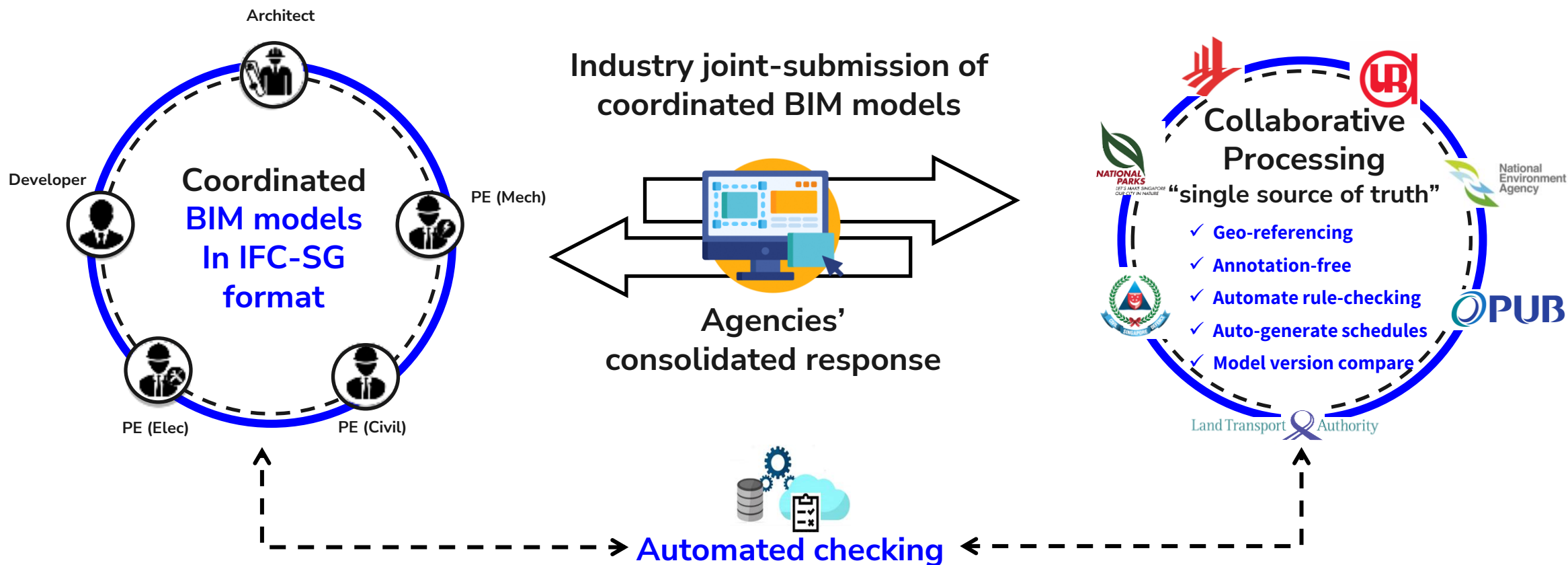


CORENET X will transform and redesign our regulatory processes into **3 main gateways**

# Key changes to the submission approval process

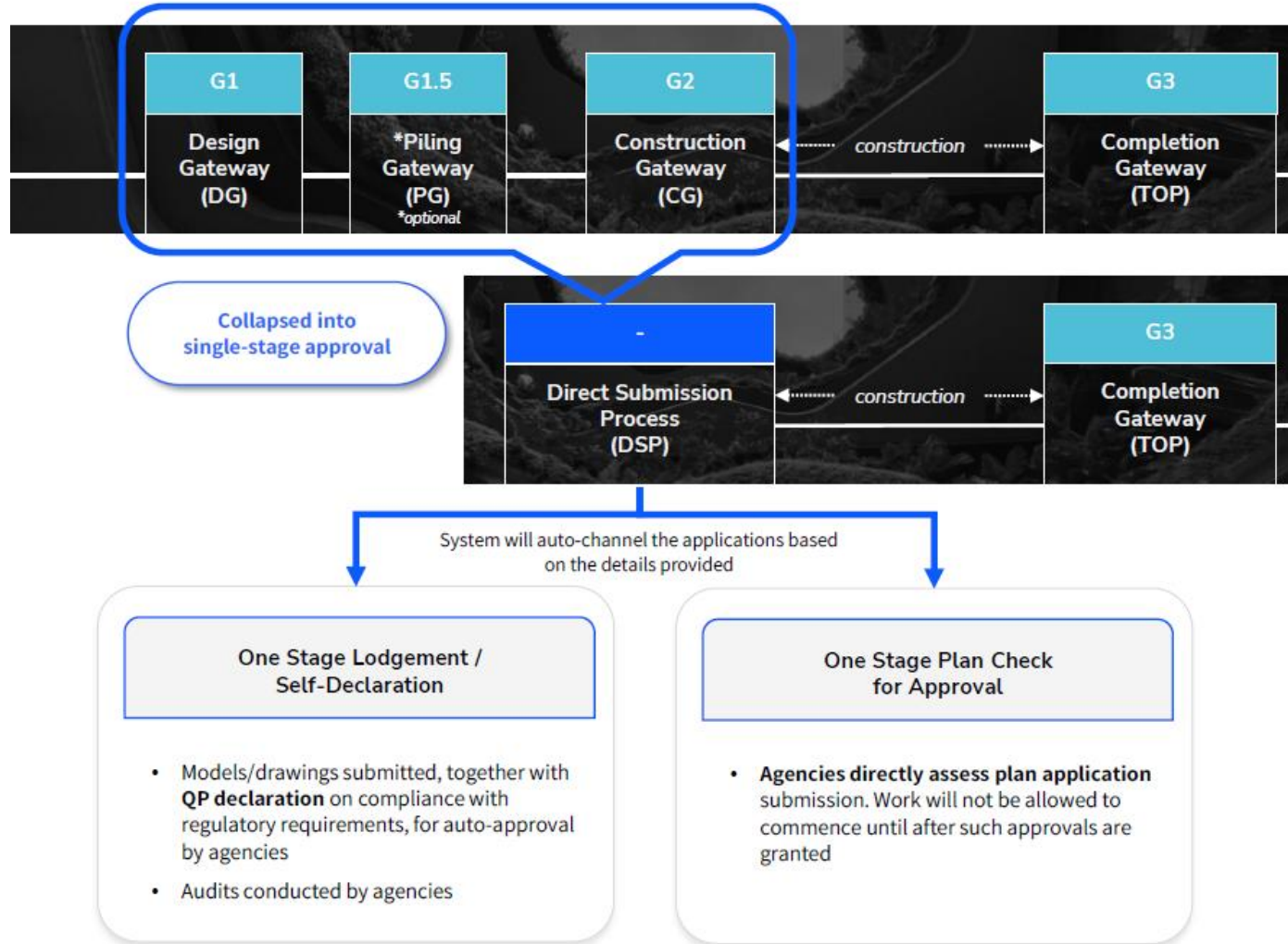
## Approval process adopting BIM-enabled technologies

Greater upfront planning and coordination among consultants needed in CORENET X



# Direct Submission Process

Differentiated approach for simple building works that need not be subjected to the typical RABW 3-Gateway process (e.g. single-unit residential landed development, standalone pavilion/ linkway)



## Direct Submission Process

- Only eligible projects will be put under DSP
- Through a guided submission process, QP will answer a set of eligibility questions to determine whether project will be auto-channeled to either:
  - Lodgment/self-declaration/simplified submission scheme OR**
  - One-stage plan check**for the respective agencies
- Independent submission for agency-specific requirements is still available and supported under DSP



# Recap on Key Changes under CORENET X

## QP's Statutory Responsibilities

## BIM Submission Requirements

## Regulatory Submissions

### REMAINS UNCHANGED

Statutory responsibilities of QPs of each discipline appointed under the respective legislations.

Only projects with GFA > 5000sqm will require submission in BIM.

QPs can still prepare submissions to agencies directly for detailed plans that do not have inter-agency dependencies.

### KEY CHANGES UNDER CORENET X

The appointed QPs will need to **coordinate their designs for a joint-submission to agencies at the respective gateways.**

Agencies will review the building information submitted **concurrently and provide a consolidated response.**

QPs will need to export their native BIM files into **open BIM format (IFC-SG)** for submissions.

Under the 3 Gateway process, project teams will need to **seek approval from agencies involved in each gateway sequentially.**

**Note:** Project teams can tap on the optional piling gateway to allow piling works to commence on-site.

# Supporting Mechanisms for the New RABW

## PRE-SUBMISSION CONSULTATION

Industry can seek guidance from Agencies prior to and at any point in the Gateway submissions



## WAIVERS

Industry may apply for deviations from compliance for Agencies' assessment and decision prior to Gateway submissions

## ESCALATION MECHANISM

Industry can seek upfront resolution on inter-agency regulatory conflicts at the **Inter-agency Coordinating Committee (IACC)**



# Service Level Agreements agreed across Regulatory Agencies

1

## Coordinated & consolidated response

- Agencies review, deconflict & respond collectively. Comments can be location-tagged on BIM model
- Industry no longer be required to produce comments/clearances from another Agency

2

## Iterations through Written Directions

- With collective review and collaboration across Agencies, good quality and largely compliant submissions should not iterate with more than 2 Written Directions at each gateway

3

## Gateways RABW serve as building block process

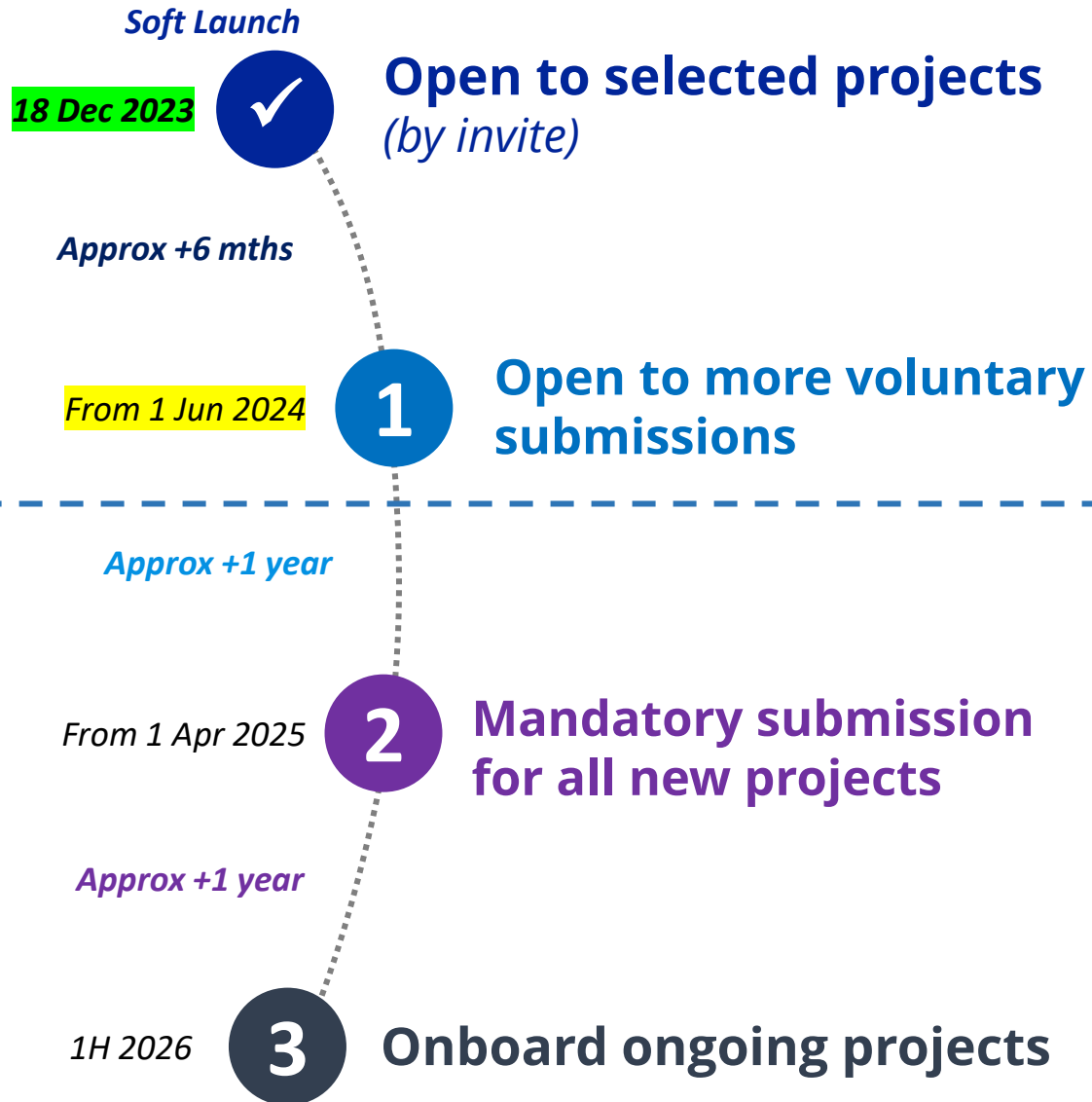
- The gateway process facilitates the sequential layering of information in BIM models
- Design Gateway clears macro-level design before details get cleared at Construction Gateway, reflecting a building block process

20

## Working days response time by Agencies

- BIM submissions go through Agencies' inter and intra-agency level reviews
- Agencies will collaborate to respond to industry collectively within 20 working days

# Phased Implementation Timeline to Onboard Industry



## 1-Year Transitional Period

- Industry to familiarize themselves with the new system and processes before mandatory submission kicks in.
- Industry participants who are interested to make submissions via CORENET X during this period may indicate your interest at <https://go.gov.sg/cxenquiry>.

## Year 2: Mandatory submission for new projects

- From 1 Apr 2025 onwards, submission via CORENET X will be made mandatory for new projects

## Year 3: Mandatory transition for on-going projects

- From 1H 2026 onwards, ongoing projects will be onboarded onto CX.

Note: Agencies' approval and relevant permits issued under CN2 will remain valid. Project Teams will only need to apply for outstanding approvals under the respective gateways



# Continual Improvement:

Responding to industry needs

# Addressing industry concern on timeline and payment milestones

*Addressing concern that projects may be delayed because the industry is unfamiliar with the new requirements.*



- ✓ A **temporary 6-month extension** will be granted to qualifying projects submitted fully on CORENET X during the transition phase **between 18 Dec 2023 - 31 Dec 2025** to:
  - **Additional Buyer's Stamp Duty (ABSD)** remission timeline
  - **Project Completion Period (PCP) timeline**

*Addressing impact of CORENET X on payment milestones for consultancy services.*



- ✓ **Payment milestones** under Annex C of the Standard Consultancy Agreement for **public sector consultancy services** have been reviewed to **align with the new submission gateways** under CORENET X
- ✓ The TACs agreed to **take reference from public sector and make the necessary adjustment for private projects**

# Review of RABW and COP to address industry feedback

**Impractical to complete the full structural details of the entire development in one go**

**BCA will allow **Part ST Submissions** for qualifying large projects:**

- Full coordinated structural BIM carcass model at 1<sup>st</sup> CG submission
- Detailed structural submissions (incl detailed calculations, AC/ACO report, etc) can be submitted in parts – 1<sup>st</sup> part in CG and remaining parts after CG as independent submission

**External work clearance may delay the main development**

**LTA, NParks and PUB have reviewed and aligned the process:**

- **Only interfacing details** between the external works and the main development need **to be cleared at CG**
- Remaining details can be submitted separately after CG

**Difficult to provide operational details at DG/CG without builders onboard**

**Agencies are reviewing the submission requirements in the COP**

- **Calibrate level of details required at DG and CG** to an appropriate level, in alignment of the intent of the gateways and taking into consideration general industry practices

# Supporting industry in preparing submissions in IFC-SG format

## Unfamiliar with the new modelling requirements in IFC-SG

- Unsure how to model and export to IFC-SG using the native BIM software



Worked with BIM Software Developers to develop IFC-SG resource kits and tools & conduct sharing



## Extensive manual checks required to ensure correct IFC-SG indicated in submission

- Missing data due to human errors
- Incomplete data cannot be processed / reviewed by agencies



Developed IFC-SG Validator Tool



- FOC tool to automate IFC-SG data validation in models



# Supporting SMEs in BIM Adoption



## Funding Support for Local SMEs

- ✓ A new package under **the Productivity Solutions Grant (PSG)** for local SMEs in the Built Environment, which consists of:
  - BIM authoring solution supporting IFC-SG
  - CORENET X industry training
- ✓ **Co-fund up to 50% of the qualifying costs of pre-approved digital solutions**
- ✓ Application details can be found at: <https://www1.bca.gov.sg/buildsg/buildsg-transformation-fund/productivity-solutions-grant>



## Registry of Shared Services

- ✓ STAS has set up a **registry of consultancy firms providing BIM shared services** that industry can tap on to help scale up BIM/IDD capability
- ✓ SMEs may access the BIM shared services registry at <https://stas.org.sg/idd/shared-services-programme/>



# Taking Action:

Getting prepared for  
CORENET X



# Leadership support & attention will be crucial to success

## What we are NOT?

- CORENET X is **NOT** just a new system to replace the current one
- CORENET X is **NOT** merely about BIM requirements or adoption of new technology
- CORENET X is **NOT** about changes affecting only individual stakeholders or firms

## What we ARE?

- CORENET X is a **total redesign** of the processes for collaborative work
- CORENET X **changes the way you work**
- CORENET X **promotes innovation** and **incentivizes project teams that can plan & collaborate well**

Therefore, it is **crucial** that the Built Environment leadership understands the significance of CORENET X and **capitalize on the processes in CORENET X**

NEW MINDSET



NEW RESULTS

# Is your organisation ready for CORENET X?

## People

- ✓ **Set up a core team** –  
Nominate & equip subject matter experts as “go-to” persons
- ✓ **Set up an internal change management & training plan**  
– Set & track KPIs

## Process

- ✓ **Understand the RABW process & Agencies’ requirements** –
  - Attend RABW training
  - Study the Code of Practice
  - Map the new RABW into internal workflows & conduct impact assessment

## Technology

- ✓ **Ensure BIM and IFC-SG readiness** –
  - Attend IFC-SG training and get familiar with various IFC-SG tools
  - Create and map internal templates to meet IFC-SG requirements

# How to Prepare for CORENET X

## 1. Attend CX training courses

- 1-day RABW training on the new regulatory approval process under CX
- 1-day IFC-SG training on creating an IFC-SG submission



## 2. Review CX Code of Practice

- All CX submissions will need to be prepared in accordance with requirements and processes stated in CX COP



## 3. Deepen knowledge through self-help resources

- CX website contains latest CX related information, learning materials and self-help resources (e.g. IFC-SG resource toolkit)



## 4. Take part in Voluntary Submission

- Participate in a voluntary submission to test out and familiarise new requirements under CORENET X.



You may scan the QR code below to join our CORENET X mailing list:



# 1. Training Courses for Industry Practitioners

1

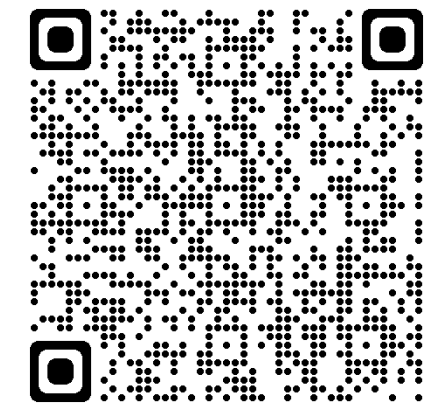
	Mode of Lessons	Trainers
<b>CORENET X Regulatory Approval for Building Works (RABW) Course</b>  <i>Understanding the new RABW Processes</i>	Physical	BCA Academy
		The Architect's Academy by Singapore Institute of Architects (SIA)
		BIMAGE
		AcePLP(AIA)
	Self-paced Online Learning	Bluskai

> **1300** professionals from  
 > **450** Industry firms  
 have attended the courses

2

	Software	Trainers
<b>1 Day IFC-SG Training</b>  <i>Preparing OpenBIM submissions using IFC-SG</i>	Revit	AcePLP Pte Ltd, BIMAGE, SP Pace Academy, Innocom
	Tekla	AcePLP Pte Ltd, BIMAGE, Trimble
	Archicad	Graphisoft
	Bentley	Bentley, AcePLP(AIA)

You may scan the QR code below to register for CORENET X training:



# Code of Practice

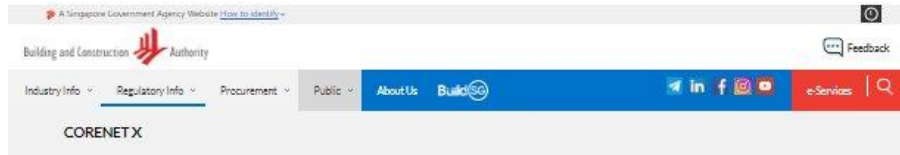


- **“When/What/How” to provide info for CORENET X submissions**
- **The Code of Practice provides the following:**
  - Overview of submission process
  - How to prepare and configure a model for IFC-SG submission
  - Information on submission requirements
- **Information on submission requirements categorised by:**
  - Agency’s requirements
  - Gateways
  - Building aspects (e.g. structural design, materials etc.)
  - Components (e.g. staircase, road, tree etc.)
- This Code of Practice **does not** substitute Handbooks, Circulars or other regulatory publications of our regulatory agencies.
- **Complements other resources on the CORENET X website,** including the IFC-SG Resource Toolkit

Scan code to access the first version of the COP released in Sept 2023



# CORENET X Website & Self-Help Resources



Home > Regulatory Info > Building Control > CORENET X



CORENET X is a co-creation effort led by BCA and URA in close collaboration with regulatory agencies, leading built environment professionals, firms and Trade Associations and Chambers (TACs).

CORENET X transforms the current regulatory landscape and practices through adoption of BIM technologies and collaborative workflows. The integrated process under CORENET X will enhance regulatory governance, promote synergy among agencies, and offer a streamlined One-Stop Integrated Digital Shopfront experience.

CORENET X will bring about 3 key changes to the submission process:

1. New regulatory approval process for building works (RABW)
2. BIM submissions in IFC-5G format
3. CORENET X submission portal

For a full introduction to CORENET X, download these infographics in a ZIP folder (5 MB) or in PDF (21 MB).

Watch this 2-minute clip for a quick overview of CORENET X!



CORENET X Implementation Timeline



View the Circular on CORENET X Implementation Plan for full details!

## Getting Ready for CORENET X



## Highlights and Announcements



## Navigation

- CORENET X
  - CORENET X
    - Events and Webinars
    - Industry Training
    - Circulars
  - CORENET X FAQ
    - General Information
    - New Regulatory Approval Process
    - New Data Requirements and Technology
    - Getting Ready
    - Agency-Specific Queries and Others
  - Self-Help Resources
    - Redesigned Process
    - Code of Practice
    - IFC
    - IFC-5G Resource Toolkit
    - Geo-Referencing of BIM Model
  - More Information
    - Industry-Agency Co-Creation
    - Technological Enablers

You may scan the QR code below to access CORENET X website:





# Take Part in the Voluntary Submission Phase

## Why participate in voluntary submission?

- **Test out and familiarise** the new processes and system early, with collaboration between industry and agencies
- The lessons learned from these projects support the **continual refinement of the processes and system.**
- As these are live submissions, project teams need to be **cognizant of the new process & its potential implications**



# Quick glance into the pilot projects so far

## 6 ongoing pilot projects

And **>10** upcoming projects of various typologies

Performance indicators achieved:

**1**

Coordinated & consolidated response

**2**

Iterations through Written Directions

**20**

Working days response time by Agencies

### 3 Gateway Process live submission projects

Project	Typology	Approval Issued	On-going
1	Residential non-landed	(G1) Design Gateway	(G1.5) Piling Gateway
2	Residential non-landed	(G1) Design Gateway	(G1.5) Piling Gateway
3	Residential non-landed	(G1) Design Gateway (G1.5) Piling Gateway	(G2) Construction Gateway
4	Industrial	-	(G1) Design Gateway

### Direct Submission Process (DSP) live submission projects

Project	Typology	Current Status	
5	Residential landed	Direct Submission Process (DSP) Approval Issued	Applying for Permit to Commence works
6	Residential landed	Direct Submission Process (DSP) Approval Issued	Obtained Permit to Commence Works



# CORENET X Submission Portal:

A brief overview



# A New Look and Feel



Login with Singpass

## One-stop integrated digital shopfront for approval of building works

This portal allows project teams of development projects to seek approval from regulatory agencies from the planning to completion stage. It is currently available to only selected project types as a beta version.

Sign up as a beta user

Login with Singpass | Make payment as guest



## Collaborative project workspace to better manage submissions

Project workspace allows all members to easily access information and status of the submissions under the project, providing more clarity and transparency to all project stakeholders.



## From Agency-centric to Project-centric user journey

Guided journey to assist project members to obtain relevant clearances at each milestone. Submissions of key milestones can be jointly submitted to the agencies instead of making multiple siloed submissions to the different agencies.



## Make payments easily to different agencies under one centralised portal

Make payments seamlessly to different agencies under one portal. Better visibility of all payments made for the project. Users can also make use of a new function to send the payment links to others to make payment.



My projects > Project overview (A2546-A0009-2023)

## Project overview

Created by Seet Hee Ling Christina on 06 September 2023

PROJECT REFERENCE NO.

A2546-A0009-2023

Direct Submission Process

Submission workspace  
Prepare project submissions

Make payment  
Add and pay for multiple payments

## Submission milestone dashboard

Keep track of the progress of your joint submissions. For all other applications, please view them in the submission workspace.

SUBMISSIONS	SUBMISSION STAGE	WD OUTSTANDING
Plan application Direct submission process	New Submission -	-
	Draft	
Completion TOP/CSC clearance	Not started	-

Project information | Project address | Project members

Project details	Edit
Development type	Residential (Landed)
Building works	New erection (including reconstruction)
Project title	[Christina's DSP For Demo on Create Submission] Proposed new erection of ....

## My projects

Search by keyword

Project reference, title or address

A2546-A0009-2023



For Demo on Create Submission] Proposed new erection of ...

52 JURONG GATEWAY ROAD, S608550,

06 Sep 2023



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Developed by Government Digital Services, a division of Government Technology Agency Singapore

# Addressing industry's current pain-points during submission

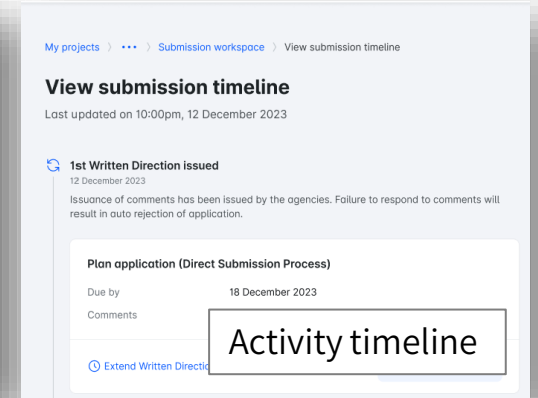
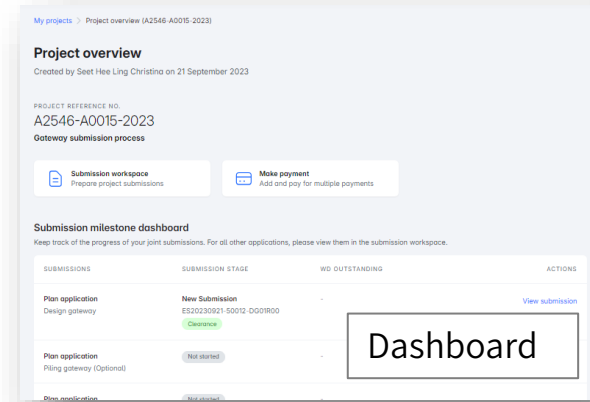
(feedback gathered from Service Journey in 2018 and other engagements)

## Increased transparency & ease of access



*Difficult to check status of submissions*  
*Lack of transparency*

- ✓ Improved user experience
- ✓ Access is given to all members
- ✓ Providing 360 view for projects

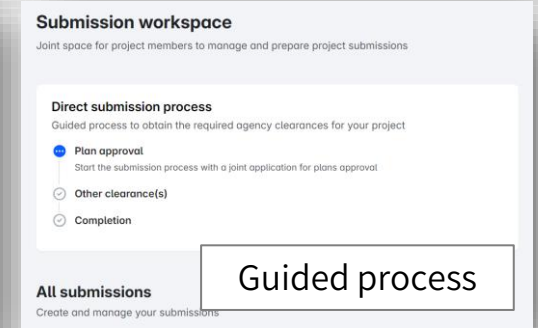
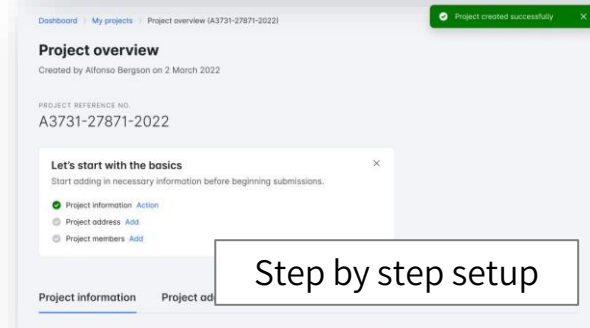


## Guided submission journey



*Difficult to navigate*  
*Each agency's process & forms are different*

- ✓ Application forms across agencies are harmonized based on project typologies

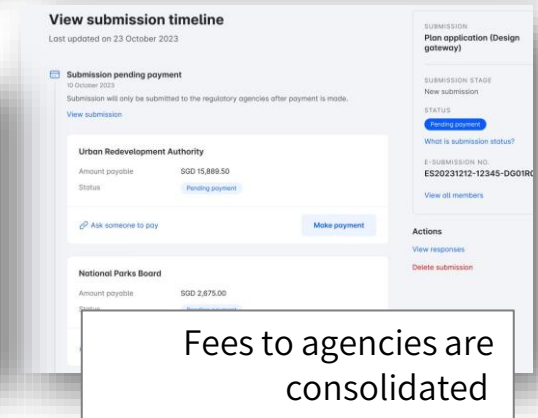
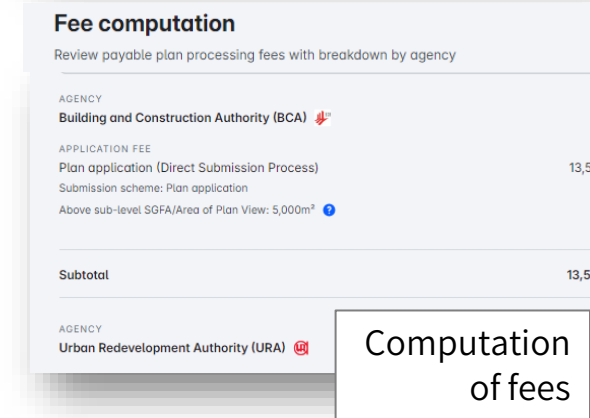


## Centralized payment portal



*Every agency has a different payment channels*

- ✓ Payments to different agencies are consolidated under 1 portal
- ✓ Ease of payment – payment link can be sent to the relevant party



# Overview of New Submission Portal

## 6 Key differences between CN2 and CX Portal

### CORENET 2.0

1

- Requires ES Pro to be downloaded. Any updates to the app requires users to upgrade the version
- Access to project info is limited to respective QPs

2

- Use of a signed appointment form/letter to authorize QPs to make regulatory submission on behalf of developer
- Process must be repeated for each submission to different agencies and departments

### CORENET X

- **Fully cloud hosted and no longer requires the use of ES Pro.** Users do not need to regularly update software.
- **Access to project info is made available to all project members** (e.g. QP, developer, AC, ACO, builder, RE, RTO)
  - Lead QP will create project and add project members
  - Users can either login using Singpass Business or Singpass Individual
- **QPs can initiate appointment by developer via CX portal**
  - Developer would be sent notification for their approval. Upon approval, QPs can proceed with regulatory submission
- Process only required to be done once in CX

# Overview of New Submission Portal

## 6 Key differences between CN2 and CX Portal

### CORENET 2.0

3

- Payments to agencies are made via multiple agency portals/platforms

4

- QPs need to identify the correct forms to be used for each agency and respective department
- Each agency form will ask for the same project information repeatedly at each submission
  - No. of form fields for a typical landed house: >300

### CORENET X

- **Centralised payment portal** for all regulatory agencies, providing an overview of all payments to be made
  - Payment can be made by any project member
- Based on the inputs provided in submission, **agency fees will be auto-computed**

- **CX portal provides a guided process for QPs** to streamline and simplify user experience (i.e. use of guiding questions to identify applicable agency form)
- Once a project is created in CX, project information is common across all agencies. **Repeated form fields across different agency forms are minimized.**
  - No. of form fields for a typical landed house is reduced to ~100

# Overview of New Submission Portal

## 6 Key differences between CN2 and CX Portal

### CORENET 2.0

5

- Agencies' letters (digitally signed) are encrypted, and decryption requires Netrust software, making it hard for non-QPs to access the information

6

- Difficulty in verifying / identifying latest Approved Plans
- Different methods adopted by different agencies to demarcate Approved Plans

### CORENET X

- Agencies' letters will not be encrypted and are digitally signed using PDF digital signature
- **Letters can be viewed directly without requiring decryption**

- **Quick verification of Approved Plan using Checksum\***
  - Agency approval letter would contain list of Approved Plans and with respective Checksum of each plan
- **Standardized approach by all agencies**

\*Checksum is a digital fingerprint solution more secure than traditional watermark. Any changes to plan would result in a new Checksum. Can be identified using Netrust and does not require internet connection.





Digitalising our built environment goes beyond having the right technologies, we must be willing to change our mindset

# THANK YOU!

If you have any feedback, suggestions and queries on CORENET X, please feel free to write to us at <https://go.gov.sg/cxenquiry>



More details on CORENET X can be found at <https://go.gov.sg/cx>

