



NovA!

Real Estate Sustainable Financing Workshop

MAS | BCA | URA | PwC

16 August 2023

Speakers today



Xuchun Li
Head of AI
Development Office



Karan Dhanwani
Director



Louis Chong
Senior Manager



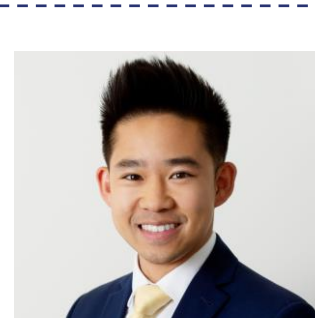
Cheryl Lee
Executive Planner



Danielle Jiang
Deputy Director



Jay Shen
Manager



Moderator



David Tran
Senior Manager

Objectives for today



01

NovA! X SLEB collaboration

Understand the NovA! platform and how the new NovA! X SLEB collaboration can benefit banks, building owners and developers

02

Connecting the ecosystem

Bring together key players across the ecosystem and gather feedback on how to collectively accelerate Net Zero transition

03

Singapore Fintech Festival '23

Set out next steps and opportunity to showcase at the upcoming SFF 2023



1. Opening Address by Xuchun Li

Head of AI Development Office
(FinTech & Innovation Group)

Agenda



#	Timings	Agenda item	Presenter(s)
0	08:00 – 08:45	Breakfast & Networking	-
1	08:45 – 10:30	Objectives, Agenda & Opening Remarks	PwC, MAS <ul style="list-style-type: none"> • David Tran • Xuchun Li
2		Introduction to NovA!	PwC <ul style="list-style-type: none"> • David Tran • Karan Dhanwani
3		Real Estate Sustainable Finance: NovA! X SLEB collaboration	PwC
4		Consultation on potential industry-wide initiatives	BCA <ul style="list-style-type: none"> • Louis Chong
5	10:30 – 10:45	Break & Networking	-
6	10:45 – 11:30	URA: Jurong Lake District development opportunity	URA <ul style="list-style-type: none"> • Cheryl Lee
7		Closing Remarks & showcase opportunity at Singapore Fintech Festival '23	MAS <ul style="list-style-type: none"> • Danielle Jiang



2.

Introduction to Nova!

There is an urgent need to address key global challenges in data, monitoring and insight generation to meet global Net Zero targets



Key global challenges in meeting Net Zero targets

There is global commitment to transition to Net Zero...

140

countries have announced net zero targets, covering almost 90% of global emissions¹

8,307

companies have joined the race to net zero campaign to halve global emissions by 2030²

...with increasing risks on the horizon and a significant financing gap...



Greenwashing

58% of the top executives surveyed agreed that their organisation is guilty of greenwashing³



Climate risk

18% global GDP reduction by 2050 from climate change if no action is taken, with the most significant reduction in the ASEAN economy at 37%⁴



Sustainable financing

\$5 trillion p.a. of global investment gap required to transition to Net Zero⁵

...however, addressing 3 key challenges can help accelerate the transition

1



Inconsistent data availability & quality

40% of surveyed investors across 19 countries identified lack of robust ESG data as the greatest barrier to ESG adoption⁶

2



Lack of robust monitoring & reporting

84% of the surveyed investors recognised getting consistent ESG reporting as a challenge⁷

3



Absence of insights and benchmarking

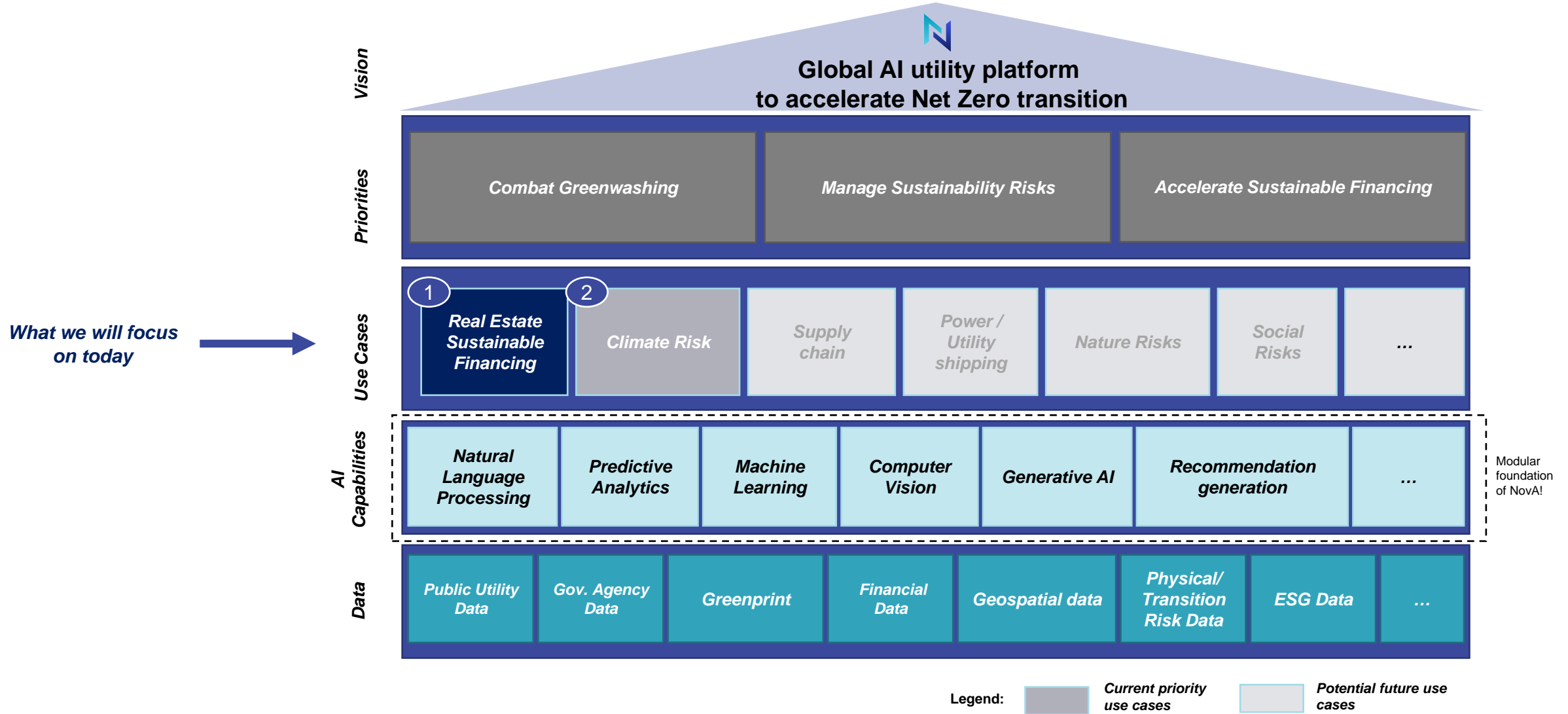
0.54 average correlation among different ESG score providers which shows inconsistent methodologies and measurements used⁸

¹ Climate Action Tracker, ² UNFCCC, ³ Google Cloud Survey, ⁴ Swiss RE Institute, ⁵ Bloomberg, ⁶ Capital Group, ⁷ bfinance, ⁸ SSRN

NovA! can address these challenges and accelerate the net zero transition by leveraging AI & data analytics



Overview of approach





NovA! Introductory Video



Click to
play video



3.

Real Estate Sustainable Financing

Nova! X SLEB collaboration

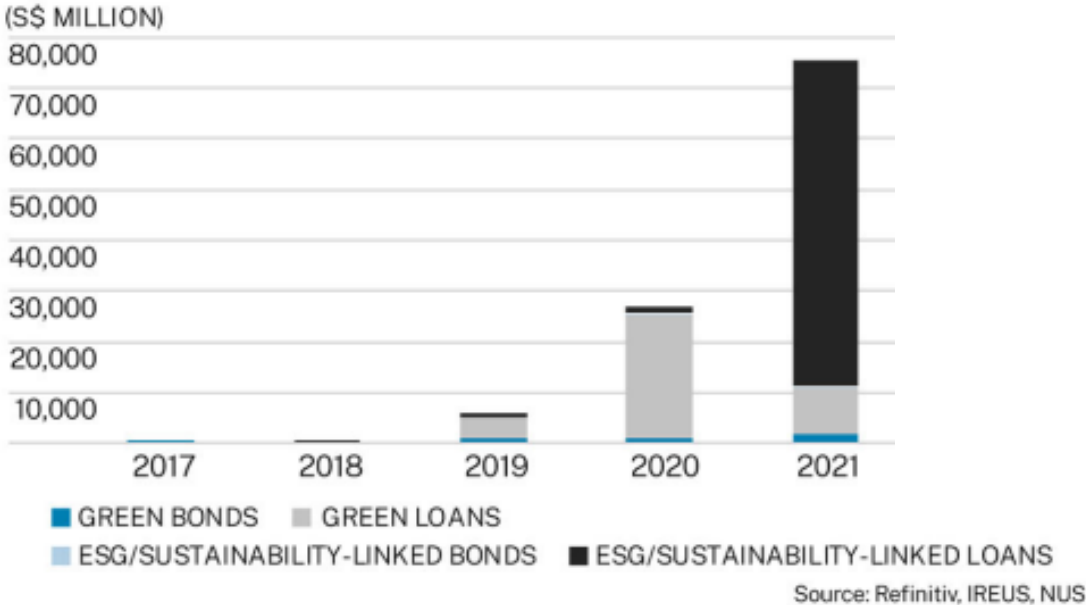


Sustainable Finance has grown rapidly in the Real Estate sector



Introduction to Green Loans and Sustainability-Linked Loans

Sustainable Finance in the Real Estate sector



Sustainable Finance in the Real Estate sector has increased sharply, driven by the rise of Sustainability-Linked Loans from \$1.3 billion to c. S\$64 billion

Overview of Sustainable Finance products

	Sustainability-linked Loans ('SLLs') ¹	Green Loans ²
Description	<i>Involves setting "Sustainability Performance Targets" for the borrower and if targets are met, the borrower is rewarded with reductions in the loan's interest rate.</i>	<i>Loans are tracked and allocated to eligible green projects with a non-exhaustive list of indicative categories</i>
Use of Proceeds	<i>Funds are committed to a mix of green and social impact projects</i>	<i>Funds are committed to environmental or climate projects, such as green retrofits for office buildings</i>

¹White & Case, ²Sustainalytics

To support growth of sustainable finance in the Real Estate sector, NovA! has secured a new collaboration with BCA's SLEB platform



NovA! x SLEB collaboration



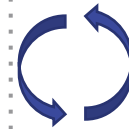
Objective

Super Low Energy Buildings (SLEB) Smart Hub aims to be an industry-leading, **central resource centre** for **energy-efficient built environment**.

NovA! aims to **unlock opportunities for green financing and combat greenwashing**, using AI and Data Analytics to support Financial Institutions (FIs) and companies on their sustainability journey.

Role

Enables self-assessment, energy efficiency benchmarks, advisory services, and technology supplier recommendations to ease Green Mark certifications and green finance applications.



Connecting real estate borrowers to FIs for green financing whilst ensuring integrity through cost-effective sustainability insights.

The new collaboration could help to achieve the objectives in Singapore's Green Building Masterplan



NovA! x SLEB collaboration – potential impact



Realising Singapore's
Green Building Masterplan 2023¹



80%

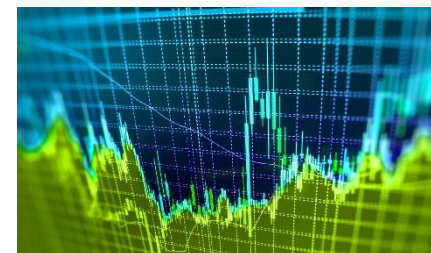
...of buildings to be
'greened' by 2030 based
on gross floor area

...of new buildings to be
**Super Low Energy
Buildings** from 2030

...improvement in
energy efficiency by
2030



Accelerating green financing and supporting
a Net Zero built environment



\$13_{bn}

Yearly market size estimate² (from 2024 - 2027) of **new green development** (commercial & residential) within the public sector → Huge untapped market potential for green building solutions.



\$6_{bn}

Estimated annually for **retrofit**³ in green building project market size



up to 37%

Cost savings⁴ for commercial buildings expected from low energy use. Strong business case for commercial building owners to "green" their buildings.



up to 84%




Potential **carbon emissions reduction**⁵ for buildings globally; ranges between 13% - 36% for shallow retrofitting & 34% to 84% for deep retrofitting

¹BCA, ²Estimates are based on internal calculations where data is obtained from forecasted information provided by BCA, ³BCA, ⁴UOB, ⁵Nature Communications

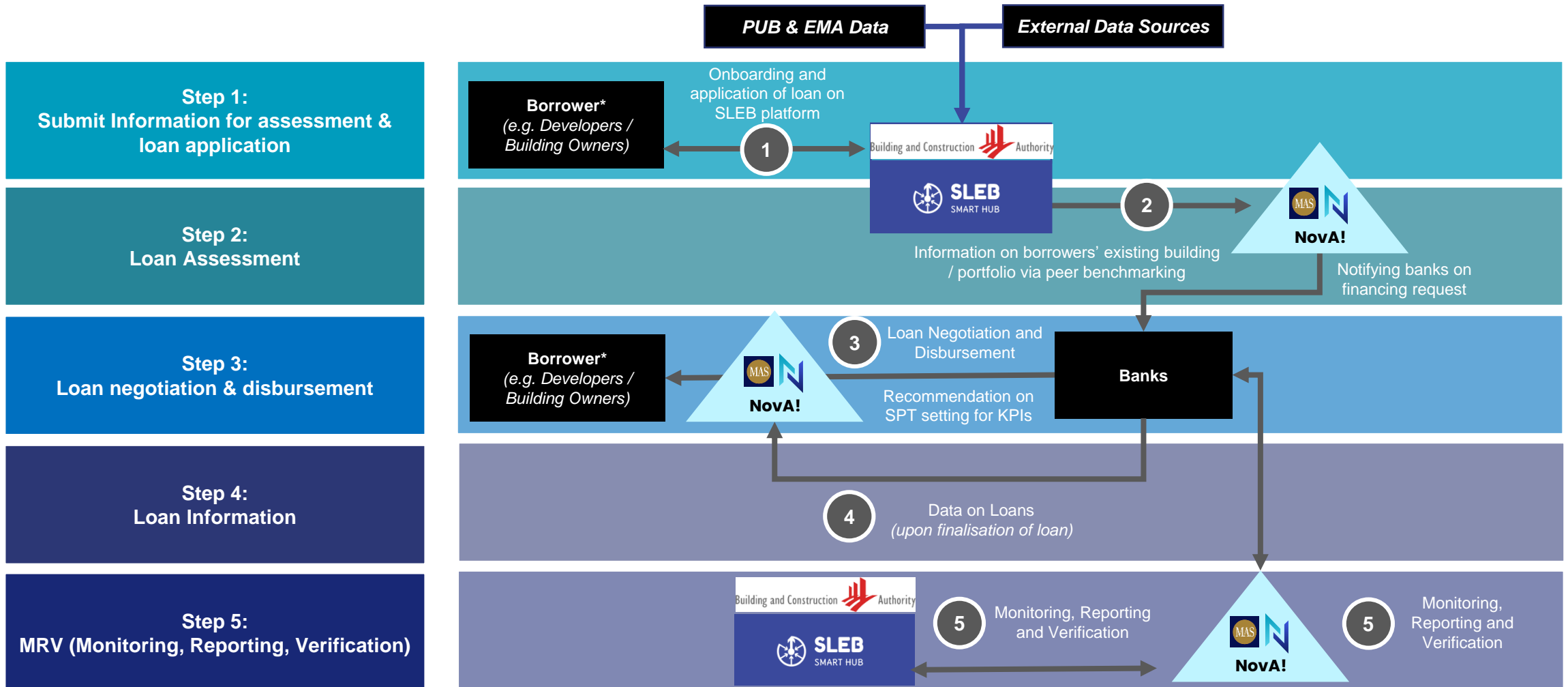


Overview of NovA!-SLEB - What is the solution?

Summary of scope & key capabilities

Key Stakeholder Groups (i.e. Users of NovA!)	NovA! Capability Benefits	Scope of Coverage
 <p data-bbox="254 491 652 611">Relationship / Portfolio Manager</p>	<p data-bbox="766 491 1689 611">1. Identification of prospective borrowers</p>	<p data-bbox="1755 406 2438 449">Environmental Data Coverage</p> <ul data-bbox="1755 449 2438 642" style="list-style-type: none">• Carbon Emissions (Scope 1 & 2)• Electricity (Consumption & Efficiency)• Green building certification• Water• Town Gas Consumption <p data-bbox="1755 678 2438 721">Type of Buildings - Operational & New</p> <ul data-bbox="1755 721 2438 828" style="list-style-type: none">• Commercial Buildings (Retail, Office, Hotel)• Industrial Buildings• Residential Properties <p data-bbox="1755 863 2438 906">Geographical Coverage</p> <ul data-bbox="1755 906 2438 1110" style="list-style-type: none">• Singapore• Future Geographical Coverage:<ul data-bbox="1860 985 2242 1110" style="list-style-type: none">○ UAE○ China○ Southeast Asia
 <p data-bbox="254 805 652 925">ESG Solutions Team</p>	<p data-bbox="766 648 1689 768">2. Peer benchmarking insights on environmental performance</p>	
 <p data-bbox="254 1133 652 1253">Risk Management Team</p>	<p data-bbox="766 805 1689 925">3. Recommendations on SPT setting</p>	
	<p data-bbox="766 976 1689 1096">4. Robust monitoring, reporting and verification</p>	
	<p data-bbox="766 1133 1689 1253">5. Forecast of environmental performance</p>	<p data-bbox="1755 1110 2438 1153">Financial Products</p> <ul data-bbox="1755 1153 2438 1323" style="list-style-type: none">• Sustainability-linked loans• Green Loans• Green Mortgages

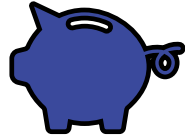
Overview: how NovA!-SLEB supports sustainable financing



There are three key benefits for Building Owners and Developers; Energy Cost Savings, Rental Premiums and Cheaper Financing



Overview of Commercial Benefits for Building Owners



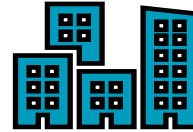
1 Energy Cost Savings

~17% reduction in energy usage

- USD\$7-18/sqm/yr in reduced energy cost per square meter
- USD\$187k/building/yr in cost savings from reduced energy use

Assumptions:

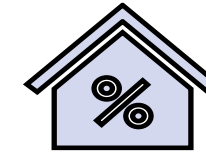
Based on an average commercial property of 20,000 sqm



2 Rental Premiums

4-9% increase in rental premiums for buildings

- USD\$1.3M increase in yearly rental yields per building



3 Cheaper Financing

5-10 Bps/loan discount coupon for SLLs

- Sustainalytics: 5-10% discount coupon of base interest rate for SLLs

Assumptions:

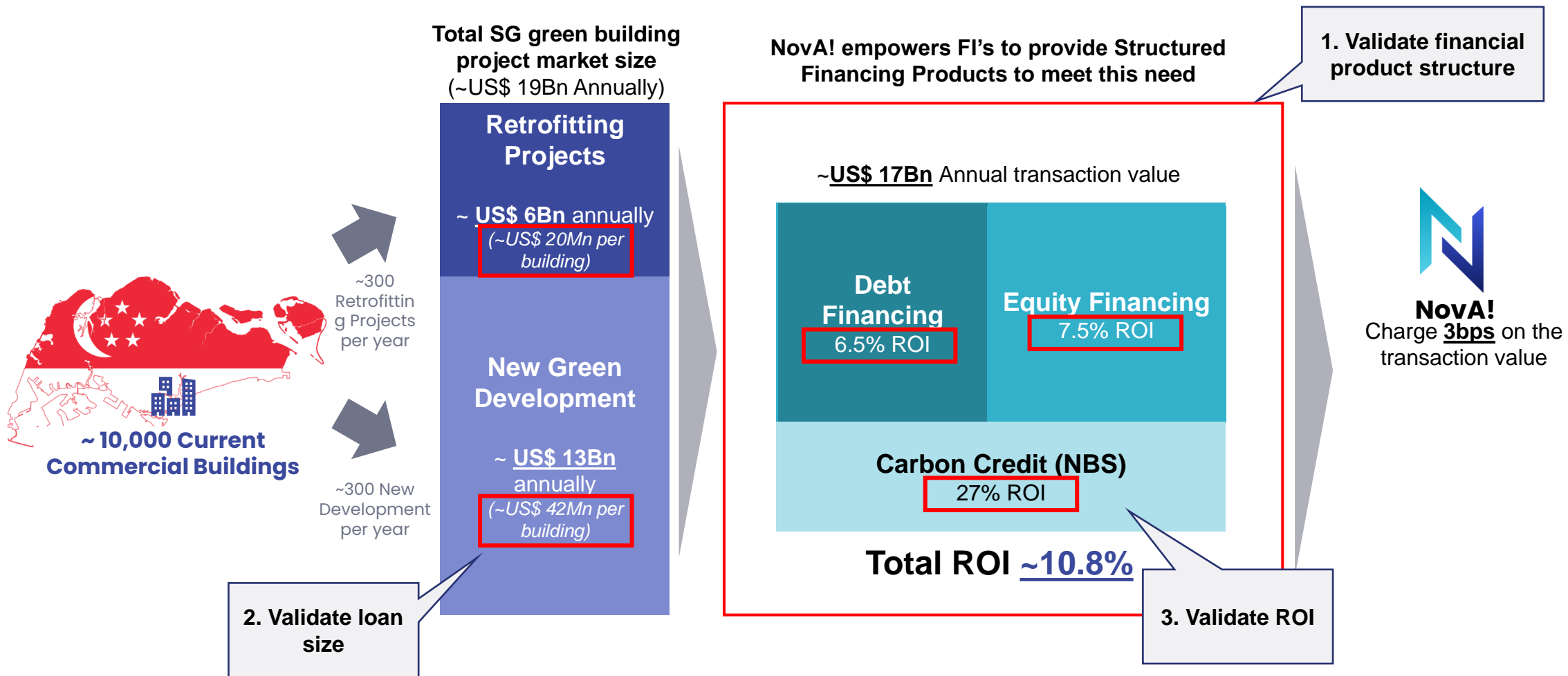
Based on industry insight from subject matter experts

Source: [BCA Building Energy Benchmarking Report](#), [BCA-NUS](#), [BCA Green Mark](#), [Construction Cost Handbook](#), [SingStat](#), PwC Analysis




NovA! will enable more market opportunities to FI's – we would like to validate three areas with you

Indicative Business Case



Sources: *BCA Building Energy Benchmarking Report, Singapore Green Building Master Plan (2014), Available And Vacant Commercial And Industrial Properties*



4. Consultation on potential industry-wide initiatives



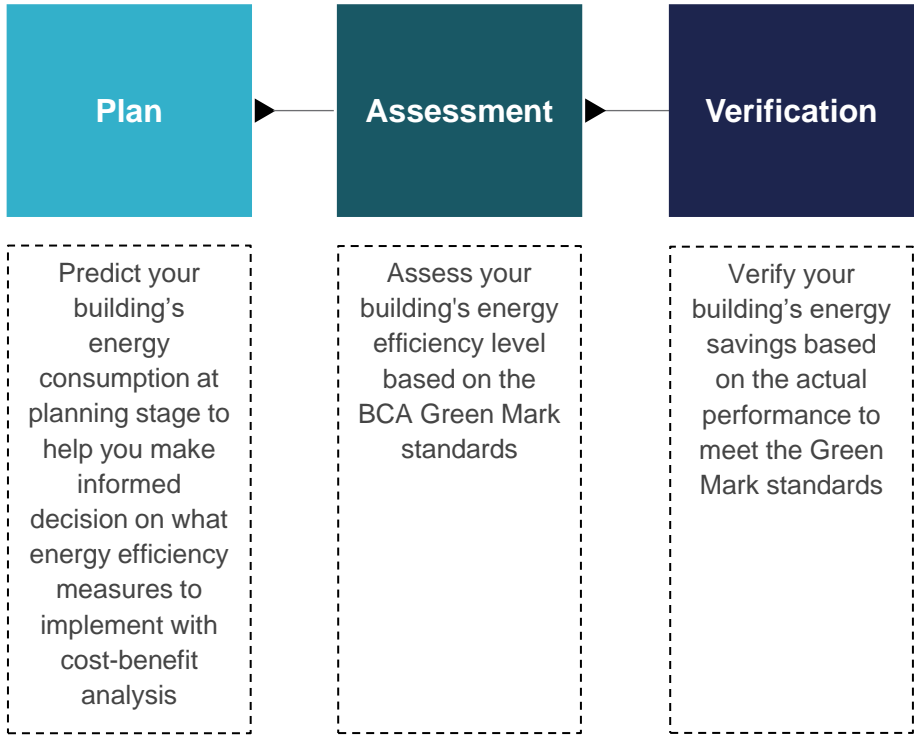
2. Create a Project

2. Create a Project.

Building Energy Efficiency Assessment (BEEA)



BEEA can be used at any phase of a building, including design/planning, and can facilitate a smoother and quicker GM submission process



SLEB App Assessment Module

Midtown Mall (Office) | Midtown Mall (Retail) | Midtown Residences

Excellent Vista Complex
 1 HarbourFront Avenue, Singapore 098632
 GFA: 40,000 m²
 Project Status: New Development
 Green Mark Version: Lorem Ipsum
 Green Mark Reference Number: Lorem Ipsum

Generate Report

Building Name: Midtown Mall
 Address: 1 HarbourFront Avenue
 Postal Code: 098632
 Gross Floor Area (m²): 40,000
 Number of Storeys: 10
 Year of TOP/CSC: 40,000
 Operation Schedule (hr/week): 40,000
 Building Type: Mixed-Use Development
 Building Use Type: Office Building
 Number of Storeys in Building: 40,000
 Floor Area (m²): 40,000
 Floor Area of Data Centre/ Server Room (m²): 40,000
 F&B Area (m²): 40,000
 Supermarket Area (m²): 40,000
 Operation Schedule of Sub-Areas (hr/week): 40,000

Save **Next**

SLEB App Assessment Report

Summary:
 Congratulations! The proposed model **saves 40% energy** compared to Green Mark 2015 (Green Mark version) standard, and **saves 60% energy consumption** compared to the 2005 code compliant building. Hence, the energy efficiency of the project has met Green Mark Platinum SL (Green Mark rating) requirements.

Energy Consumption, EUI and Energy Savings	2005 Code Compliant Building	Reference Model	Proposed Model
Total Energy Consumption (kWh)	4,526,000	3,277,625	2,148,383
EUI (kWh/m ² /year)	236.3	163.9	107.4
Percentage of Energy Savings	-	34.56%	-
Renewable Energy Generated on Site (kWh/year)	-	-	127,750
Net Energy Consumption (kWh/year)	4,526,000	3,277,625	2,020,633
Net EUI (kWh/m ² /year)	236.3	163.9	101
Percentage of Energy Savings (Including Renewable Energy)	-	35.40%	38.49%

EUI Breakdown

Energy Consumption Breakdown

	Reference Model Energy Consumption (kWh)	Proposed Model Energy Consumption (kWh)
ACMV	#####	#####
Lighting	#####	#####
Mechanical Ventilation	#####	#####
Receptacle Load*	#####	#####
Others	#####	#####
Total Building Energy Consumption	#####	#####

Performance Metrics Under Pathway 2

Parameter	Proposed Model
ETTV	50
Non-AC Areas	25.00%
ACMV EUE (kWh/REI)	1
Air Side Efficiency (AAWT) (DCS)	Three phases - 3 ticks Single phase - 3 ticks
ACMV (Unibary)	
Lighting Power Budget (W/m ²)	5
Mechanical Ventilation (MCMH)	0.2
Integrated Energy Management & Control Systems	MOE Energy Management System ACMV Demand Control Energy Consumption Monitoring and Benchmarking System Lighting Demand Control Energy Recovery System
On-Site Renewable (kWh/year)	127,750

Download Report

Proposal of Sustainability Performance Tracking and Energy Conservation Certificate (ECC)



Current Pain Points



There is currently a **lack of a centralised platform to quantify energy savings from retrofitting efforts**, which is fundamental for financial institutions to provide sustainability-linked loans and verify the actual performance.



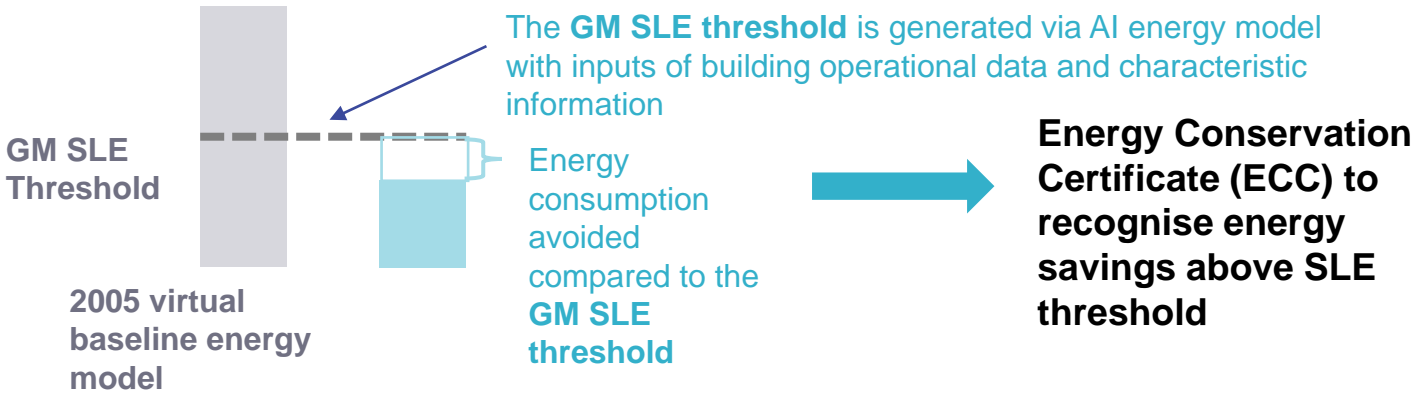
There is a delta of ~40% when comparing between Green Mark Super Low Energy (SLE) and Zero Energy (ZE) building certification requirements, hence the need to **incentivise going beyond the minimum SLE standard**.

Proposed Solution



During building operation phase, building owners can share their energy consumption data. Through this SLEB-NovA! collaboration, financial institutions can have high quality data to **assess the performance of projects post retrofits or energy conservation efforts**. Building owners can justify the key sustainability performance targets (for green or sustainability linked loans). They may also use the BEEA tool for planning by consultancy team and application of sustainable financing (ECC issued only during operation phase).
The **actual energy savings above SLE threshold** may also receive an Energy Conservation Certificate (ECC) to recognise and confirm the efforts.

The computation of ECC is illustrated below. The process involves measuring the building's energy consumption on an annual basis and comparing it against a predefined threshold calculated by an AI energy calculator.



How ECC supports Sustainable Financing



Target Outputs

- **Building Owners and Material Suppliers:** Greater access to sustainable financing opportunities and incentive to go above SLE standards
- **Building Owners:** Access to recommendations / measures to be taken for energy conservation and benchmark against peers

FIs can enhance sustainable financing product offerings and incorporate:

1. Eligibility criteria for sustainable financing products
2. Environmental targets / sustainable performance targets

Thereafter provide interest rate discount or rebate for better performance

Green Loans



Green Mortgages

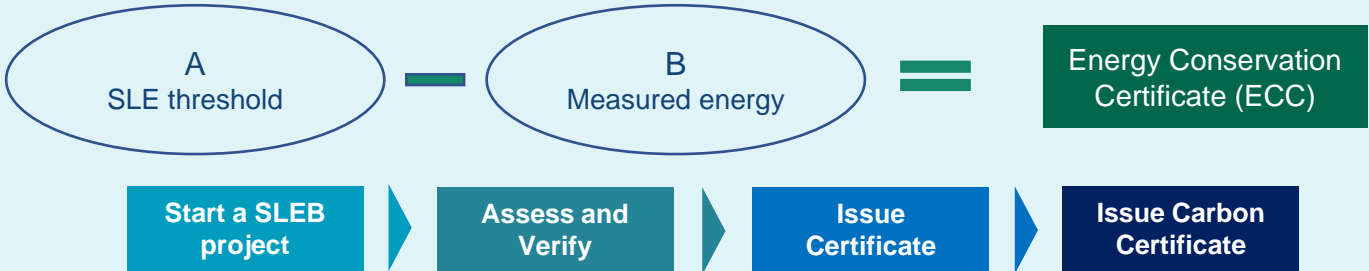


Sustainability Linked Loans



Provision of data and insights on buildings / projects that are certified as ECC

AI-empowered energy calculations supported via SLEB-NovA! collaboration





5.

Break & Networking





6.

Closing Address by Danielle Jiang

Deputy Director of AI
Development Office (FinTech
& Innovation Group)





6.1

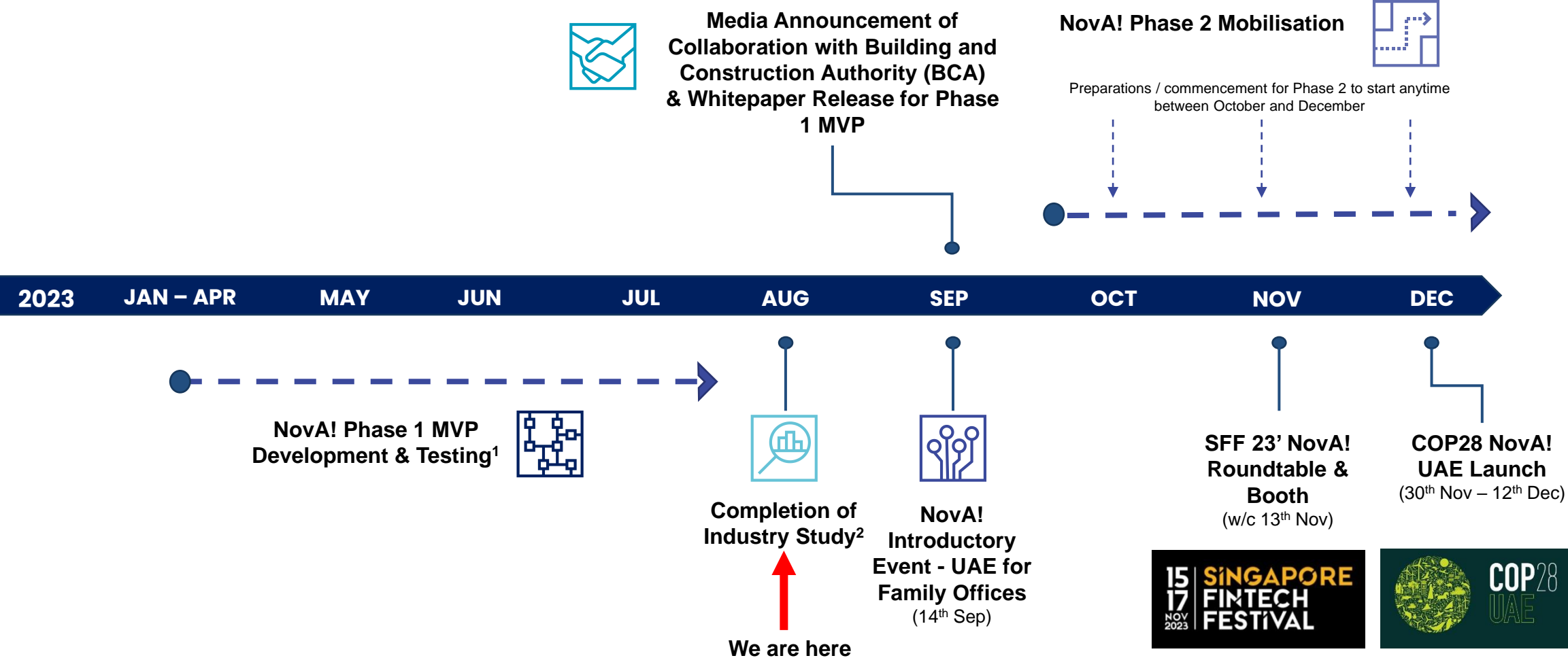
Showcase Opportunity at Singapore Fintech Festival '23



NovA! has undertaken an industry study to identify new use cases in preparation for Phase 2



Key milestones for 2023



¹Testing ongoing since November 2022; ² Began in April 2023

The World's Most Impactful FinTech Festival

GET YOUR FESTIVAL PASS

Policy

Finance

Technology

Chairman of MAS¹



Lawrence Wong,
Deputy Prime
Minister & Finance
Minister

Historical Numbers²

40%

Participants are C-Suite, Senior-management level decision makers & influencers

100%

Attended by the top 50 banks globally

This Festival in Numbers³

62,000+

Participants

9,000+

Media mentions

850+

Speakers

570+

Exhibitors & Sponsors

190+

Government Organisations

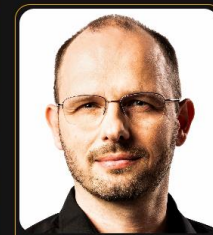
134

Countries

2023 Speakers⁴



Gintare Skaiste
Minister of Finance
Republic of Lithuania



Thomas Dohmke
CEO
GitHub



Timothy Adams
President & CEO
Institute of International Finance (IIF)



Vinod Nair
Founder & Chief Executive Officer
MoneySmart Group



Melissa Guzy
Co-founder & Managing Partner
Arbor Ventures



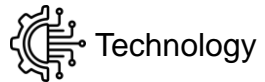
Paula Bellizia
President of Global Payments
EBANX

About the Singapore Fintech Festival '23 Showcase



Background

1. A platform to share with global FinTech & Industry leaders.
2. Discover the latest products & services from partners in the following field:



Technology



ESG



RegTech & SupTech

Benefits



Bank

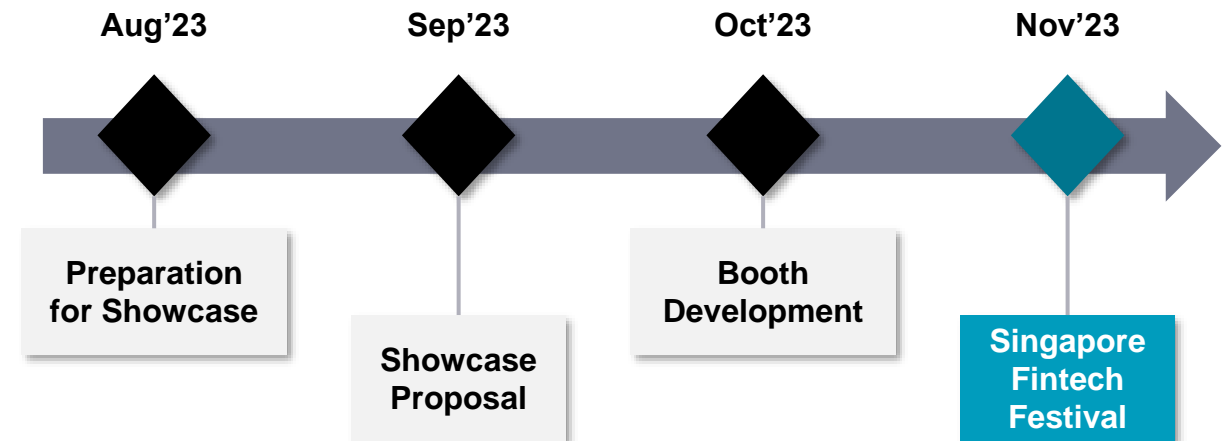
- ✓ Exposure on a Global stage to 60K+ participants
- ✓ Increased brand and reputation as leader in sustainability
- ✓ Exposure to cutting-edge fintech solutions/ trends



Building Owner

- ✓ Opportunity to showcase buildings to 60K+ participants worldwide
- ✓ Smarter building management with exposure to fintech innovations
- ✓ Widespread branding/ marketing opportunities on your sustainable building(s)/ property portfolio

Timeline



Express Interest & Provide Feedback on Workshop

Post-Workshop Survey:

<https://form.gov.sg/64c48af936f2ba0011b7af4b>



<https://go.gov.sg/vku139>



NovA!

**Thank you for coming
today!**

