Project: Internal Strategy Proposal for Carousell

Dear Mr Siu Rui Quek,

We are a team of strategy analysts from NUS Business School with extensive experience in fintech innovation and digital marketplace ecosystems. We are excited to present a proposal that leverages trust infrastructure and protection-based monetization to strengthen Carousell's payment ecosystem by improving CarouPay.

Our proposal outlines how Carousell can rebuild user confidence, improve transaction safety, and unlock sustainable growth by transforming CarouPay into a capital-light trust and protection platform – an initiative that aligns with evolving consumer behaviors in Southeast Asia's fast-growing second hand economy.

Market Opportunity & FinTech Landscape

1. Market Opportunity

Southeast Asia's second-hand e-commerce market is a rapidly expanding sector, yet its full potential, particularly in the lucrative high-value goods category, remains locked behind a significant "trust barrier." Our analysis indicates a clear and immediate market opportunity to bridge this gap by strategically integrating core FinTech services directly into the transaction process.

The regional recommerce market is fueled by strong consumer demand for value and sustainability. However, growth stagnates where risk perception is highest. The transaction volume of the high-value segment (>$100) drops off significantly due to the fear of purchasing counterfeit goods, items in poor condition, or falling victim to outright scams. This creates massive friction: buyers hesitate, and sellers of legitimate high-value items are unable to command fair prices, leading to a suppressed market.

This suppressed demand represents our single greatest market opportunity. The problem is not a lack of willingness to buy or sell, but a lack of a mechanism to transact safely.

2. The Core Problems: Deconstructing the Trust Barrier

This "trust barrier" manifests as two distinct, critical frictions that limit market potential.

A. Payment & Transaction Risk

Transaction risk remains a significant barrier for all but the lowest-value trades. Because many peer-to-peer transactions still occur "off-platform" through informal bank transfers or cash-on-delivery, users are directly exposed to risk. Buyers fear sending money and receiving nothing, while sellers worry about non-payment or fraudulent disputes after shipping an item. This fundamental lack of a secure payment framework erodes trust across the entire platform.

B. Product Authenticity & Quality Risk

This risk is the primary factor limiting growth in the most lucrative market segments. The "authenticity anxiety" suppresses buyer demand and penalizes honest sellers who cannot formally prove the value and authenticity of their goods. This effectively caps Carousell's ability to host a thriving high-value marketplace.

3. The Solution: Leveraging FinTech Trends to Build Trust

To unlock this suppressed demand, our strategy directly addresses these risks by leveraging two powerful and validated FinTech trends in Southeast Asia. We are not inventing new user behaviors but are channeling existing ones to serve our strategic goals.

Trend 1: Activating Mandatory Escrow for High-Value Transactions

Our solution is to make CarouPay mandatory and deeply integrated with the "Premium Protection" service. For these transactions, fund release will be triggered only upon successful third-party authentication. This evolves CarouPay from a passive feature into an active guarantee of both payment security and product authenticity, making it the essential trust-building engine for our high-value strategy.

Trend 2: The Emergence of "Trust-as-a-Service" (The "Premium Protection" Thesis)

Beyond simple payment security, a more sophisticated trend is emerging: providing tangible trust for the product itself. Global platforms like The Rea

lReal and StockX have validated a powerful model where consumers eagerly pay a premium for authentication and quality verification.

Our "Premium Protection" service directly addresses the "Product Authenticity & Quality Risk." By offering professional verification for a fee, we convert "authenticity anxiety" into a confident, retail-like experience, allowing buyers to purchase and sellers to transact high-value items with peace of mind.

By strategically implementing these two solutions, we directly resolve the core frictions in our marketplace, turning our biggest weaknesses into our most promising revenue opportunities.

Company's unique position

1. Porter's 5 Forces

(1) Threat of New Entrants - Moderate

The C2C e-commerce space has relatively low entry barriers technologically, but trust and liquidity are difficult to replicate. Carousell's entrenched brand, data advantage, and localized presence create a defensible moat. Fintech integration (escrow, credit scoring) further raises entry barriers by embedding financial complexity and regulatory compliance into its ecosystem.

(2) Bargaining Power of Buyers - High but Declining with Fintech Integration

In traditional C2C marketplaces, buyers hold strong bargaining power due to abundant alternatives and low switching costs. However, CarouPay's escrow payments and Buyer Protection services reduce transaction risks and ensure secure delivery, offering a level of assurance absent on informal resale channels. As users accumulate CarouPay balances and transaction history, their switching costs increase and platform loyalty strengthens. Over time, Carousell evolves from a listings platform into a trusted, closed-loop marketplace, narrowing buyer leverage.

(3) Bargaining Power of Sellers -Moderate but Shifting Toward the Platform

Sellers primarily value reach, credibility, and payout reliability. Carousell's large buyer base, instant CarouPay disbursement, and TrustScore reput

ation system make it a preferred channel for high-quality or professional sellers. Optional Seller Protection features further reduce risk exposure, encouraging repeat listings. As sellers gain visibility and verified credibility unique to Carousell, their dependence grows, gradually tilting bargaining power toward the platform.

(4) Threat of Substitutes - Moderate to High

Alternatives include B2C resale platforms (Reebonz, Refash) or informal channels like Facebook groups. However, these often lack the same reach, convenience, and integrated financial services. Carousell's differentiation lies in combining peer-to-peer affordability with enterprise-grade security through protection and scoring tools.

(5) Industry Rivalry - High

The recommerce market is crowded and price-sensitive. Regional giants like Shopee and Lazada have entered resale spaces, leveraging strong logistics and payments. Carousell's competitive edge rests on its C2C authenticity, community trust, and fintech-enhanced transaction safety, which rivals cannot easily replicate without altering their business models.

Strategic Implication:

While competitive pressure is intense, the integration of embedded finance transforms Carousell from a listings platform into a trusted financial intermediary. This structural shift changes the basis of competition from price and volume to trust, data, and service reliability, thereby strengthening long-term defensibility.

2. SWOT Analysis

Strengths	Weaknesses

· **Strong brand recognition** and user base across Southeast Asia, particularly among younger, mobile-first consumers. · **Deep behavioral data** on users' transaction patterns, providing a foundation for proprietary credit scoring and personalized services. · **Low customer acquisition cost (CAC)** due to strong organic traffic and community-driven engagement. · **Asset-light business model** allows scalability with limited operational overhead. · **Existing CarouPay infrastructure** provides a ready entry point for embedded finance.	· **Current monetization** is limited relative to total platform traffic. · **Fragmented trust and verification mechanisms**: some users remain cautious about high-value transactions. · **Lack of institutional-grade risk management** and financial infrastructure compared to B2C or fintech peers. · Heavy **dependence on external payment gateways** and third-party logistics partners.
Opportunities	Threats

· Rapid growth of the secondhand economy driven by sustainability trends and circular consumption. · Persistent **trust gaps in C2C transactions** create significant room for differentiation. · **Under-monetized high-value verticals** (luxury, electronics, collectibles) remain untapped due to lack of transaction assurance; trust-based solutions can unlock premium categories. · Increasing **willingness of users to pay** for value-added security features (authentication, insurance) as recommerce becomes mainstream. · Strong regional tailwinds in digital payments and financial inclusion, supported by **pro-fintech regulation** (e.g., MAS, Bank Negara). · Potential for **cross-selling fintech products** (micro-lending, BNPL, loyalty rewards) using CarouPay as a foundation.	· Intensifying **competition** from regional e-commerce and recommerce players (Shopee, Lazada, TikTok Shop, Facebook Marketplace). · **Regulatory scrutiny** around digital payments, escrow, and data privacy. · **Low switching costs** among users if trust or UX declines. · **Economic downturns** could reduce transaction frequency and discretionary spending.

The largest growth opportunity lies not in expanding listings volume, but in **solving the structural frictions of C2C trade.** Carousell's fintech-led initiatives directly address these pain points, allowing it to capture higher-value transactions and move up the trust curve.

Investment Thesis & Strategic Fit

1. Rationale

- First Layer: Credit Scoring—The Foundation of Trus

Regarding the credit score: After a transaction is completed, both parties rate each other, accumulating credit. This creates a long-term trust profile for the community, a natural extension of CarouPay's functionality, consistent with the logic of Alipay's Sesame Credit.

- Second Layer: Premium Protection Service — The Value Engine

An "optional value-added service" built upon CarouPay, specifically targeting the high-value goods market.

It addresses deeper trust concerns: "Is the expensive item I'm buying authentic? Does it have quality issues?" These are problems standard payment escrow cannot solve.
For an additional service fee, buyers have their items professionally authenticated and quality-inspected by third-party partners before shipment. Only after passing these checks are goods delivered to buyers with a guarantee commitment.

2. How it creates value and fits strategically

- Cedit Scoring:

Our solution is a holistic, trust-based financial ecosystem native to Carousell. It begins with the Carousell TrustScore, a dynamic system that calculates a user's reputation based on their complete platform history: transaction success rates, community ratings (buyer), and dispute resolution records. The innovation is twofold:
Gamified Incentives: The TrustScore directly unlocks tangible Trust-Based Benefits. A high score is rewarded with perks like lower transaction fees or premium seller badges, actively encouraging positive community behavior. A low score can trigger additional verification, safeguarding the ecosystem.

Value Proposition: This system democratizes access to higher-value goods. Creditworthy users are empowered to purchase expensive items on an installment basis, while sellers gain access to a vastly larger pool of potential buyers for their premium inventory. It creates a virtuous cycle where good behavior is directly rewarded with financial flexibility.

Strategic Fit: This initiative is highly feasible as it leverages Carousell's most valuable proprietary asset: years of user transaction and behavioral data. Strategically, it is a game-changer. It directly addresses the platform's challenge of facilitating high-value transactions, unlocking significant Gross Merchandise Value (GMV) potential. It also creates a powerful competitive moat built on unique data and introduces a new, high-margin revenue stream through BNPL service fees.

- **Buyer/Seller Protection Services:**

We propose a suite of optional, premium services designed to build ultimate confidence in high-stakes transactions. This moves beyond basic guarantees to offer tailored protection, including:

· Third-party authentication for luxury goods.
· Extended warranty options for electronics.
· Insured return guarantees for key categories.

Value Proposition: The core value is the near-total elimination of risk for high-value purchases. For buyers, it removes the fear of fakes or defects. For sellers, it legitimizes their listings, builds instant buyer trust, and justifies premium pricing. It builds the ultimate confidence needed for high-stakes purchases.
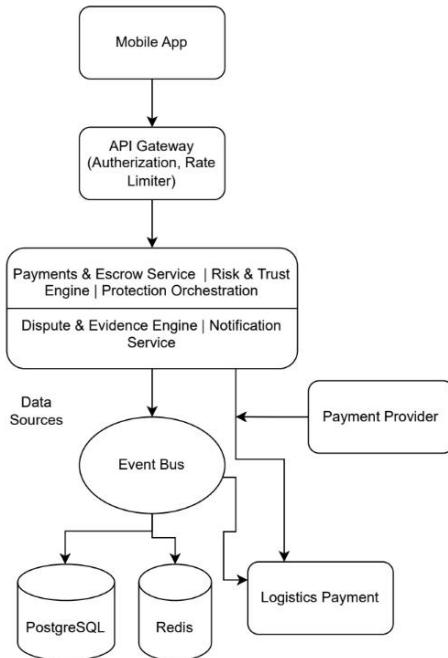
Strategic Fit: Feasibility is achieved through an asset-light partnership model, integrating with established third-party authenticators and warranty providers rather than building these costly operations in-house. Strategically, this is a masterstroke. It unlocks the full potential of lucrative secondhand markets (e.g., luxury, high-end electronics) currently limited by trust issues. This initiative not only generates a new stream of high-margin ancillary revenue but also cements Carousell's brand reputation as the safest and most reliable C2C marketplace.

Technical Proof Of Work

The PoC adopts a modular, event-driven architecture (Figure 1) where client applications (iOS, Android, Web) connect via an API Gateway managing authorization and rate-limiting. Core backend modules handle Payments & Escrow, Risk & Trust, Protection Orchestration, Logistics, Dispute Resolution, and Notifications.

A central Event Bus records key transaction states – OrderCreated, EscrowFunded, Shipped, Delivered, DisputeOpened, and PayoutIssued, ensuring synchronized updates across services.

Persistent data (orders, wallet balances, disputes, audit logs, TrustScore) is maintained in PostgreSQL and Redis, with daily reconciliation against payment providers and logistics partners.
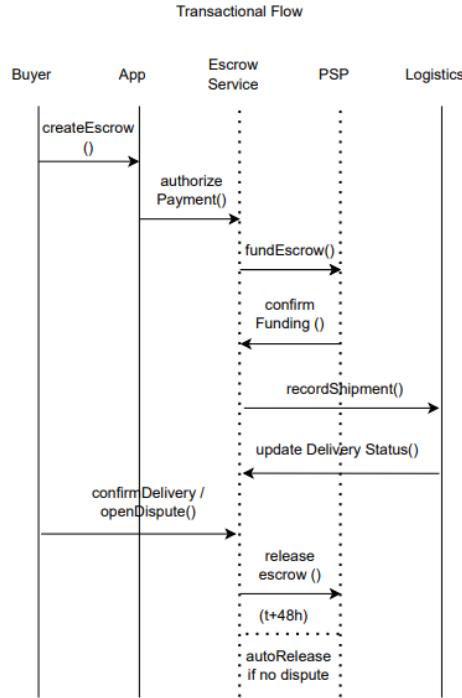
Figure 1. System Architecture Overview

The diagram illustrates the modular microservices, event-driven communication, and integrations across payment and logistics providers within Carousell's GCP environment.

Implementation and Control Framework

The PoC operates through a minimal set of well-defined interfaces connecting payments, logistics, protection, and dispute systems without requiring a full microservices buildout. Core APIs include (i) create and fund escrow,

(ii) release escrow, (iii) record shipping and delivery events, (iv) manage disputes, and (v) create and reconcile protection jobs. These interfaces form the complete transactional flow shown in Figure 2, linking buyer, seller, PSP, and logistics actions through event-based state transitions.

Figure 2: Transactional Flow

Each transactional event shown above is also written to immutable data stores and mirrored to the risk and TrustScore engines for reconciliation and audit. This ensures financial integrity and compliance readiness without duplicating system logic.

User Journey

As summarized in the Enhanced Buyer-Seller Journey (Appendix User Journey Diagram), the PoC translates the above architecture into a seamless user experience (See Appendix - UX Changes).

Buyer: Engages through trust indicators (CarouPay badge, TrustScore), selects payment and optional protection, and tracks delivery until auto-release (T + 48 h). On receipt, the buyer either confirms delivery-triggering payout or raises a dispute, resolved automatically through authentication and evidence checks.

Seller: Ships post-escrow confirmation, receives logistics updates, and gets payouts after confirmation or auto-release. Ratings feed into the TrustScore, enhancing reputation and visibility.

High-Value Path: When Premium Protection is enabled, the flow routes through authentication or warranty checks AuthPass proceeds to release, AuthFail triggers refund and reverse logistics, all managed seamlessly within the same transaction loop.

Quantitative Analysis: DCF

Assumptions

We conducted a DCF valuation for Carousell, projecting its GMV growth, monetization layers, and cost structure based on market data, Carousell's product ecosystem, and regional e-commerce benchmarks. The model incorporates both base transaction income and incremental monetization from high-value goods, consistent with the platform's strategic evolution.

- **GMV Growth**

We assume Carousell's GMV to grow at **10% annually**, reflecting a conservative estimate against Southeast Asia's e-commerce market average growth of approximately 12% (Source: Momentum Works). This assumption captures Carousell's steady expansion in recommerce transactions while accounting for increasing competition from vertical platforms.

- **CarouPay Penetration Rate**

The CarouPay penetration rate is expected to rise **from 10% in Year 1 to 30% by Year 5**, assuming a 5ppt annual increase. This reflects growing user adoption of in-platform payment features and the company's focus on enhancing transaction safety through CarouTrust.

- **High-Value Goods Segment**

Proportion of high-value goods: Estimated at **10% of total GMV**, as most recommerce volume originates from apparel and electronics, which together account for 70-80% of total sales.

Attach rate: Expected to grow from **8% to 30%** over five years as user confidence in CarouTrust's verification system increases.

Transaction fee rate: Defined at **5%** for products above **S$1,000**.

Partner share ratio: Set at **50%**, balancing third-party authentication costs and ensuring sustainable profitability for the platform.

- **Cost Structure & Operating Expenses**

Payment processing costs: Estimated at **0.6%** of GMV, directly proportional to transaction volumes.

Operating expenses: Include R&D and maintenance (S$2-3m), marketing, and compliance costs, reflecting continued investment in platform safety and infrastructure.

CapEx: Assumed at **S$5m per annum**, covering system development, API integration, and engineering team expansion.

- **Financial Parameters**

WACC: 15.0%, slightly above the technology industry average (10-12%) to reflect platform-specific execution and scaling risks.

Terminal growth rate (g): 4.7%, in line with Southeast Asia's long-term GDP growth (Source: China Economic Network).

- **DCF Results**

The valuation yields a **Net Present Value (NPV) of S$7.5 million** and an **Internal Rate of Return (IRR) of 27.8%**, indicating strong value creation potential under the modeled assumptions.

Quantitative Analysis: Monte Carlo

To assess the robustness of our DCF valuation for Carousell, we conducted a Monte Carlo simulation with **10,000** iterations, introducing stochastic variation to the model's key input parameters. The variables selected—**GMV growth rate, proportion of high-value goods, discount rate (WACC), and terminal growth rate (g)**—represent the main drivers of both top-line expansion and valuation sensitivity. Each was modeled as a **normally distributed variable** centered on its base-case assumption, with standard deviations reflecting realistic uncertainty derived from market and operational factors.

- **Assumptions**

Specifically, we assume GMV growth to have a base value of **10%** with a standard deviation of **6%**, capturing potential volatility due to macroeconomic conditions, competitive intensity, and user engagement levels. The proportion of high-value goods is modeled at **10% ±3%**, reflecting fluctuations in demand for higher-ticket categories such as electronics and collectibles. The discount rate (WACC) is assumed to vary around **15% ±2%**, consistent with changes in market risk premium and platform-specific execution risk, while the terminal growth rate is relatively stable at **4.7% ±0.8%**, anchored to long-term GDP and e-commerce penetration trends in Southeast Asia.

- **Results**

Simulation results show a mean NPV of **S\$9.4 million** and a median of **S\$7.7 million**, broadly consistent with the deterministic DCF valuation (NPV = S\$7.5 million). The mean IRR is **27.5%**, with the median slightly higher at **29.3%**, confirming the model's resilience under stochastic variation. On the downside, the 5th percentile NPV of **-S\$13.1** million and IRR of **-9.8%** represent adverse conditions characterized by slow GMV growth or weak monetization traction. Conversely, the 95th percentile NPV of **S\$37.3** million and IRR of **57.9%** highlight the upside potential from faster CarouPay penetration and stronger adoption of high-value goods transactions.

The dispersion of outcomes, measured by a standard deviation of **S\$15.8 million** for NPV and **20.6%** for IRR, indicates a moderate degree of valuation volatility. The overall distribution is positively skewed, implying that while downside risk exists, the potential upside is significantly larger. This asymmetry reflects the platform's scalability—once network effects and payment adoption accelerate, incremental revenues can expand rapidly with relatively stable fixed costs.

- Conclusion

In conclusion, the Monte Carlo simulation suggests that Carousell's valuation remains robust yet sensitive to revenue-side dynamics, particularly GMV growth and monetization intensity. Even under conservative assumptions, the expected returns are attractive, with an IRR around **27%**. The positively skewed distribution reinforces the investment case for Carousell as a high-variance, high-upside digital platform, where successful execution of payment integration and trust-based monetization could drive substantial long-term value creation.

References

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Appendix

DCF

Assumption	Value	Justification & Rationale
GMV	10%	Based on the average growth rate of Southeast Asia's e-commerce market (approximately 12%), we conservatively estimate Carousell's revenue growth to be approximately 10% (Source: Momentum Works)
CarouPay Penetration Rate	from 10% to 30%	Carousell estimates a 10% penetration rate for its recommerce (secondhand) segment within Southeast Asia's overall e-commerce Gross Merchandise Value (GMV) in 2024. Assume that the penetration rate increase 5% every year.
Basic transaction fee rate	0.8%	The base transaction fee on the second-hand platform is competitive (vs. Xianyu's 0.6%), aiming not to profit but to cover payment costs and guide users to adopt in-platform payment.
Proportion of high-value goods	10.0%	Based on the Carousell Recommerce Index report, apparel and electronics are the main categories of second-hand sales platforms, accounting for 70-80% of the total. Therefore, we estimate that the proportion of high-value categories is relatively low, at around 10%.
Attach rate of high-value goods	from 8% to 30%	It is expected that only a portion of the high-value goods will be actually sold, with an initial penetration rate of approximately 8%. As users become more aware of the CarouTrust function, it is expected to increase to 30% in the fifth year.
Transaction fee rate of high-value goods	5.0%	We define high-value products as those above S$1,000. Carousell currently charges a 5% fee for products at S$1,000.
Partner share ratio	50.0%	The set profit sharing ratio takes into account the support provided by third-party suppliers in areas such as identification of high-value goods, while ensuring the platform's profit margin.
Capex	S$ 5.0m per year	Used for infrastructure investment, including establishing an engineering team, developing and maintaining the CarouPay module, and connecting with external system interfaces and APIs.
WACC	15.0%	The WACC of the technology industry is between 10% and 12%, and 15% is used as the discount rate to reflect the greater risks faced by the platform.
g	4.70%	Reference is made to the GDP growth rate of Southeast Asia (approximately 4.7%) to assess the terminal growth trend. (Source: China Economic Network)
Bad Debt	0.00%	Because the platform does not directly bear the transaction risks of buyers and sellers, the bad debt rate is expected to be zero.

Line Item	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Key Drivers						
Carousell GMV (S$m)		10,000.00	11,000.00	12,100.00	13,310.00	14,641.00
GMV growth rate		10.00%	10.00%	10.00%	10.00%	10.00%
CarouPay Penetration Rate (%)		10.00%	15.00%	20.00%	25.00%	30.00%
Proportion of high-value goods (%)		10.00%	10.00%	10.00%	10.00%	10.00%
Attach rate of high-value goods (%)		8.00%	12.00%	18.00%	25.00%	30.00%
Incremental Revenues, S$m						
A. Base layer income (Layer 1)						
Transaction fee income (@0.8%)		8.00	13.20	19.36	26.62	35.14
Float interest income (@1.5%) Interest on Float (@1.5%, 3-day hold)		0.12	0.20	0.30	0.41	0.54
B. Monetization layer income (Layer 2)						
Advanced protection service revenue (@5.0%)		0.40	0.99	2.18	4.16	6.59
Total incremental revenue	-	0.52	14.39	21.84	31.19	42.27
Incremental Costs, S$m						
Direct Costs						
Payment processing costs (@0.6%)		-6.00	-9.90	-14.52	-19.97	-26.35
Partner share (@50%)		-0.20	-0.50	-1.09	-2.08	-3.29
Operating Expenses						
R&D and Maintenance		-2.00	-2.20	-2.42	-2.66	-2.93
Marketing		-1.50	-2.00	-2.50	-3.00	-3.50
Customer Support & Compliance		-0.50	-1.00	-1.50	-2.00	-2.50
Total Incremental Costs	-	-10.20	-15.60	-22.03	-29.70	-38.58
--- FCF CALCULATION (S$m) ---						
EBIT	-	-9.68	-1.20	-0.19	1.48	3.69
Taxes (Tax Rate @ 17%)		0.00	0.00	0.00	-0.25	-0.63
EBIAT	-	-9.68	-1.20	-0.19	1.23	3.06
(+) D&A		1.00	1.00	1.00	1.00	1.00
(-) CapEx	-5.00	-	-	-	-	-
(-) Change in NWC	-	-0.03	-0.69	-0.37	-0.47	-0.55
Free Cash Flow (FCF)	-5.00	-8.70	-0.90	0.44	1.76	3.51
Calculation of NPV & TV (S$m)						
Discount Rate (WACC)	0.15					
Terminal Growth Rate (g)	0.047					
Terminal Value (in Year 5)						35.67
Discounted FCF	-5.00	-7.57	-0.68	0.29	1.01	19.48
Net Present Value (NPV) (S$m)	**7.53**					
Free Cash Flow	-5.00	-8.70	-0.90	0.44	1.76	39.18
Internal Rate of Return (IRR)	**27.81%**					

Quantitative Analysis: Monte Carlo

项目 (Line Item)	std	explanation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Key Drivers								
Carousell GMV (S$m)				10,000.00	10,248.39	10,502.95	10,763.84	11,031.20
GMV growth rate	6.00%	GMV growth	-	2.48%	2.48%	2.48%	2.48%	2.48%
CarouPay Penetration Rate (%)				10.00%	15.00%	20.00%	25.00%	30.00%
Proportion of high-value goods (%)	3.00%	The share of	-	15.36%	15.36%	15.36%	15.36%	15.36%
Attach rate of high-value goods (%)				8.00%	12.00%	18.00%	25.00%	30.00%
Incremental Revenues, S$m								
A. Base layer income (Layer 1)								
Transaction fee income (@0.8%)				8.00	12.30	16.80	21.53	26.47
Float interest income (@1.5%) Interest on Float (@1.5%, 3-day hold)				0.12	0.19	0.26	0.33	0.41
B. Monetization layer income (Layer 2)								
Advanced protection service revenue (@5.0%)				0.61	1.42	2.90	5.17	7.63
Total incremental revenue			-	0.74	13.90	19.97	27.03	34.51
Incremental Costs, S$m								
Direct Costs								
Payment processing costs (@0.6%)				-6.00	-9.22	-12.60	-16.15	-19.86
Partner share (@50%)				-0.31	-0.71	-1.45	-2.58	-3.81
Operating Expenses								
R&D and Maintenance				-2.00	-2.20	-2.42	-2.66	-2.93
Marketing				-1.50	-2.00	-2.50	-3.00	-3.50
Customer Support & Compliance				-0.50	-1.00	-1.50	-2.00	-2.50
Total Incremental Costs			-	-10.31	-15.13	-20.48	-26.39	-32.60
--- FCF CALCULATION (S$m) ---								
EBIT			-	-9.57	-1.23	-0.51	0.64	1.91
Taxes (Tax Rate @ 17%)				0.00	0.00	0.00	-0.11	-0.32
EBIAT			-	-9.57	-1.23	-0.51	0.53	1.59
(+) D&A				1.00	1.00	1.00	1.00	1.00
(−) CapEx			-5.00	-	-	-	-	-
(−) Change in NWC			-	-0.04	-0.66	-0.30	-0.35	-0.37
Free Cash Flow (FCF)			-5.00	-8.61	-0.89	0.19	1.18	2.21
Calculation of NPV & TV (S$m)								
Discount Rate (WACC)	2.00%	Reflects regi	0.145					
Terminal Growth Rate (g)	0.80%	Terminal grov	0.040					
Terminal Value (in Year 5)								21.83
Discounted FCF			-5.00	-7.48	-0.67	0.12	0.67	11.95
Net Present Value (NPV) (S$m)			**-0.40**					
Free Cash Flow			-5.00	-8.61	-0.89	0.19	1.18	24.04
Internal Rate of Return (IRR)			**14.16%**					

	NPV	IRR			NPV	IRR
1	NPV	IRR			NPV	IRR
2	2.41063786	0.1967395		mean	9.39	27.47%
3	46.0995117	0.63306714		median	7.72	29.29%
4	15.4352949	0.37958651		5% percentile	-13.09	-9.79%
5	-15.025632			95% percentile	37.33	57.90%
6	30.010187	0.5188441		std	15.78	20.55%
7	18.462707	0.41455807				
8	21.06757	0.43574242				
9	-9.2019737	-0.119239				
10	42.3759237	0.60893067				
11	-22.28189					
12	2.70317511	0.201855				
13	28.6079665	0.50784741				
14	10.3902719	0.31599594				
15	5.1615543	0.24376826				
16	39.5108703	0.5956424				
17	10.2250974	0.31573715				
18	13.266045	0.35129547				
19	-4.2612208	0.05050132				
20	7.45767913	0.2763645				
21	25.3151577	0.48224069				
22	55.5489415	0.69640737				
23	10.9407526	0.32333518				
24	9.82214325	0.31069594				
25	0.1497882	0.15303243				
26	27.1132826	0.49706417				
27	5.30621542	0.24590496				
28	23.3414187	0.46023656				
29	-1.9972233	0.10674993				
30	-3.994525	0.05985207				
31	1.21699453	0.17359933				
32	13.2696404	0.35255598				
33	-6.1803721	-0.0050259				
34	22.373751	0.44954567				
35	7.39420875	0.27549688				
36	6.99468248	0.27227854				
37	-5.9652083	-0.000184				

Codes:

```vb
Sub MonteCarlo_RecordNPV_IRR()
    Dim ws As Worksheet
    Dim wsResult As Worksheet
    Dim i As Long
    Dim nSim As Long

    nSim = 10000
    Set ws = ThisWorkbook.Sheets("Monte Carlo")
```

```vba
    On Error Resume Next
    Set wsResult = ThisWorkbook.Sheets("Results")
    If wsResult Is Nothing Then
        Set wsResult = ThisWorkbook.Sheets.Add
        wsResult.Name = "Results"
    End If
    wsResult.Cells.Clear
    wsResult.Range("A1:B1").Value = Array("NPV", "IRR")

    Application.ScreenUpdating = False
    Application.Calculation = xlCalculationManual

    For i = 2 To nSim + 1
        ws.Calculate

        wsResult.Cells(i, 1).Value = ws.Range("K42").Value   ' NPV
        wsResult.Cells(i, 2).Value = ws.Range("K44").Value   ' IRR
    Next i

    Application.Calculation = xlCalculationAutomatic
    Application.ScreenUpdating = True

    MsgBox "Monte Carlo simulation completed!"
End Sub

Sub AnalyzeMonteCarlo()
    Dim ws As Worksheet
    Set ws = ThisWorkbook.Sheets("Results")

    Dim lastRow As Long
    lastRow = ws.Cells(ws.Rows.Count, "B").End(xlUp).Row

    ws.Range("F2").Value = WorksheetFunction.Average(ws.Range("B2:B" & lastRow))

    ws.Range("F3").Value = WorksheetFunction.Median(ws.Range("B2:B" & lastRow))

    ws.Range("F4").Value = WorksheetFunction.Percentile_Inc(ws.Range("B2:B" & lastRow), 0.05)
    ws.Range("F5").Value = WorksheetFunction.Percentile_Inc(ws.Range("B2:B" & lastRow), 0.95)
```

```
    ws.Range("F6").Value = WorksheetFunction.StDev_S(ws.Range("B2:B" & last
Row))

    MsgBox "Analysis completed!"
End Sub
```
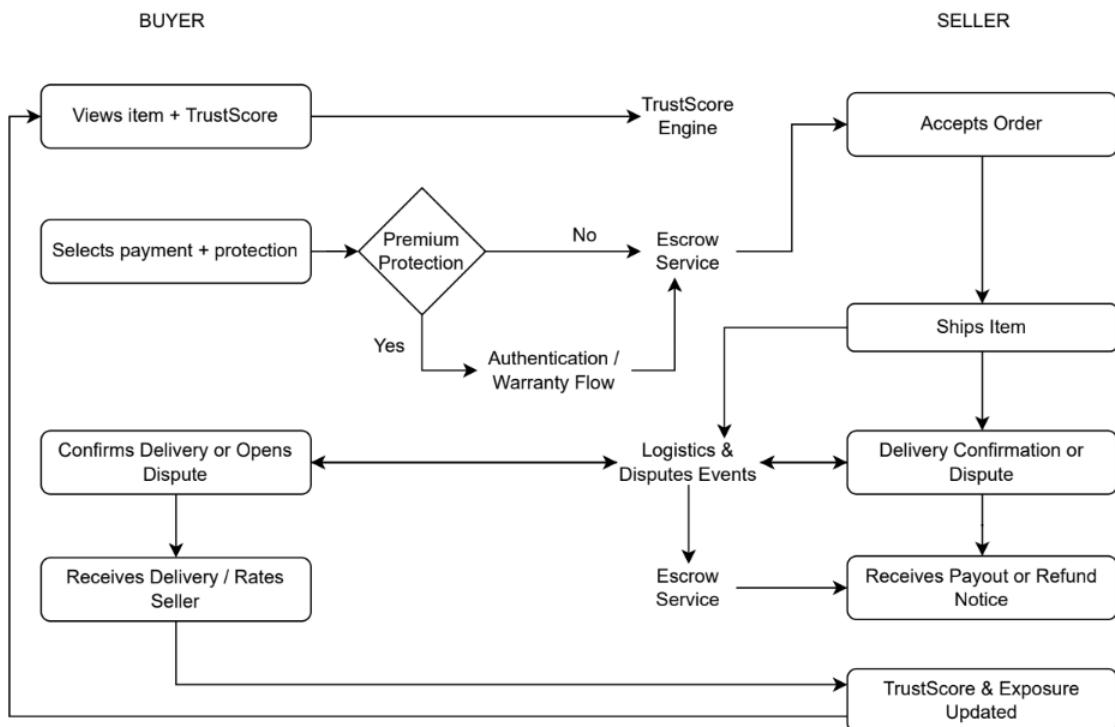
Technology Alignment Summary

Table 1 summarizes how the PoC extends Carousell's existing technology stack to enable escrow, trust, and protection modules.

Tech Area	Existing (Carousell)	PoC Requirement
Backend	Go / Django microservices on GCP GKE	Extend - add event-driven microservices for escrow, protection, trust
API Layer	REST APIs via internal gateway	Extend - add Event Bus (Pub/Sub or RabbitMQ) for async orchestration
Payments	CarouPay wallet + PayNow/FAST integration	Extend - add segregated escrow ledger microservice (double-entry logic)
Data	PostgreSQL / MySQL, Redis, BigQuery	Extend - immutable ledger DB + TrustScore + dispute store
Risk & Trust	ML-based fraud / listing detection	Add rule-based TrustScore and transaction-level risk scoring
Protection	Manual partner auth and refunds	Add Protection Orchestrator for automated API integration
Dispute	Manual CS workflow / refund approval	Add Dispute Engine with rule-based auto-resolution
Security	OAuth 2.0, TLS 1.3, PCI-DSS compliance	Extend - zero-trust IAM + encrypted audit logs
Infra / DevOps	GCP (GKE, CloudSQL, Redis, BigQuery)	Extend - containerized PoC pipeline + CI/CD sandbox
Monitoring	Stackdriver / Datadog	Extend - Prometheus + Grafana for PoC metrics

Table 1: System Architecture extension overview

User Journey Diagram
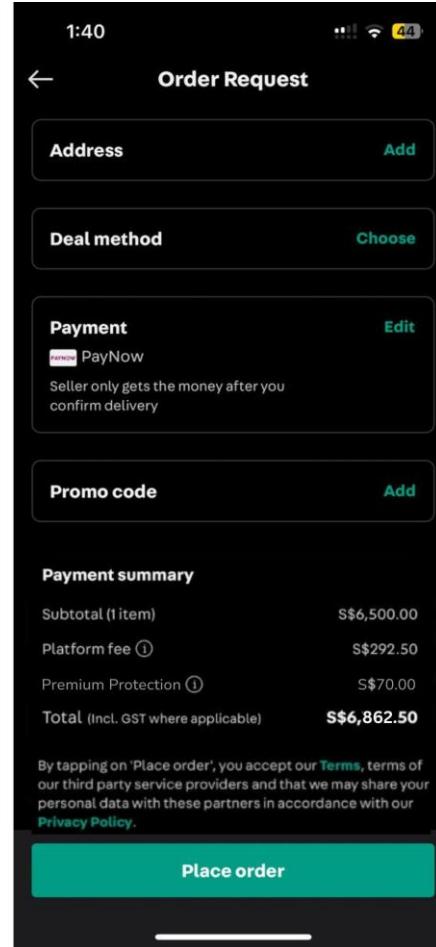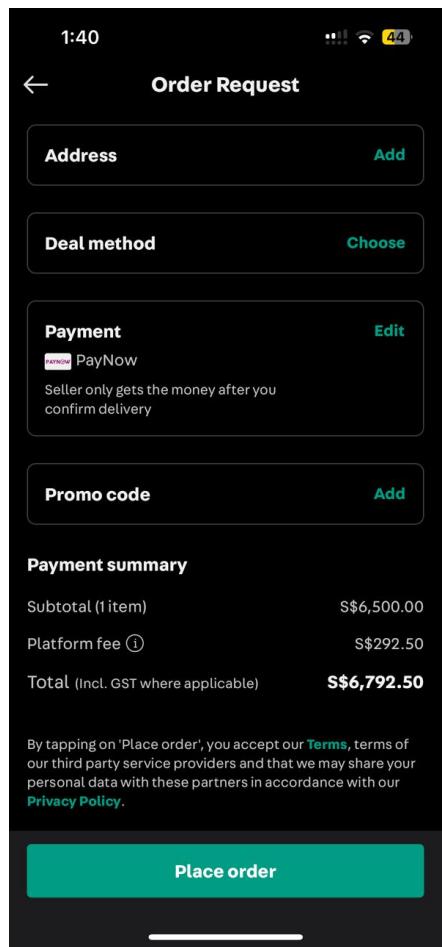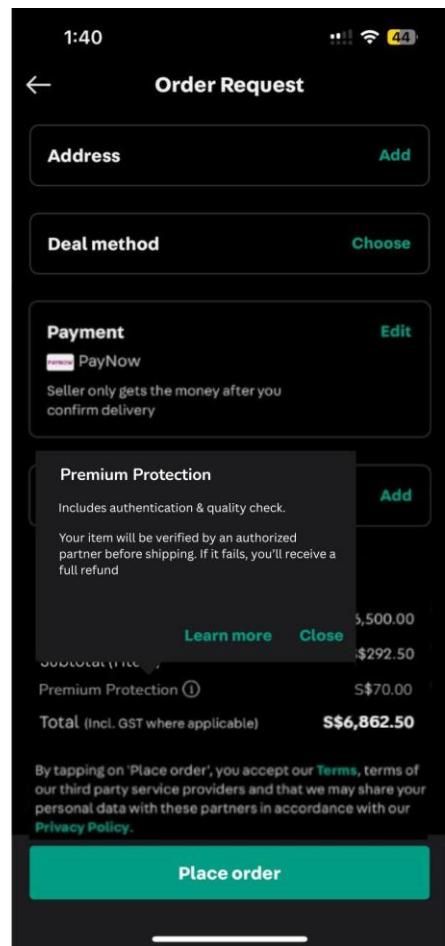
UX Changes

Premium Protection

OLD   NEW

Screen 1

Order Request

Address   Add

Deal method   Choose

Payment   Edit
PayNow

Seller only gets the money after you confirm delivery

Promo code   Add

Payment summary

Subtotal (1 item)	S$6,500.00
Platform fee ⓘ	S$292.50
Total (Incl. GST where applicable)	**S$6,792.50**

By tapping on 'Place order', you accept our **Terms**, terms of our third party service providers and that we may share your personal data with these partners in accordance with our **Privacy Policy**.

Place order

Screen 2

Order Request

Address   Add

Deal method   Choose

Payment   Edit
PayNow

Seller only gets the money after you confirm delivery

Promo code   Add

Payment summary

Subtotal (1 item)	S$6,500.00
Platform fee ⓘ	S$292.50
Premium Protection ⓘ	S$70.00
Total (Incl. GST where applicable)	**S$6,862.50**

By tapping on 'Place order', you accept our **Terms**, terms of our third party service providers and that we may share your personal data with these partners in accordance with our **Privacy Policy**.

Place order

Order Request

Address
Add

Deal method
Choose

Payment
Edit

PayNow

Seller only gets the money after you confirm delivery

Premium Protection
Includes authentication & quality check.

Your item will be verified by an authorized partner before shipping. If it fails, you'll receive a full refund

Learn more   Close

Add

,500.00
$292.50

Subtotal (Inc...)

Premium Protection ⓘ   S$70.00

Total (Incl. GST where applicable)   **S$6,862.50**

By tapping on 'Place order', you accept our **Terms**, terms of our third party service providers and that we may share your personal data with these partners in accordance with our **Privacy Policy**.

Place order

Credit Scoring – What buyer sees

OLD   NEW

✕

andrea ✅

5.0 ⭐	16	11 years
164 reviews	Orders	on Carousell

Reviews | About

All   From Buyers   From Sellers

5.0
⭐⭐⭐⭐⭐
164 Reviews

10	14	10	6

Reviews Newest

G **ecofriendly1**
⭐⭐⭐⭐⭐ · Review from buyer 2d   ⋮
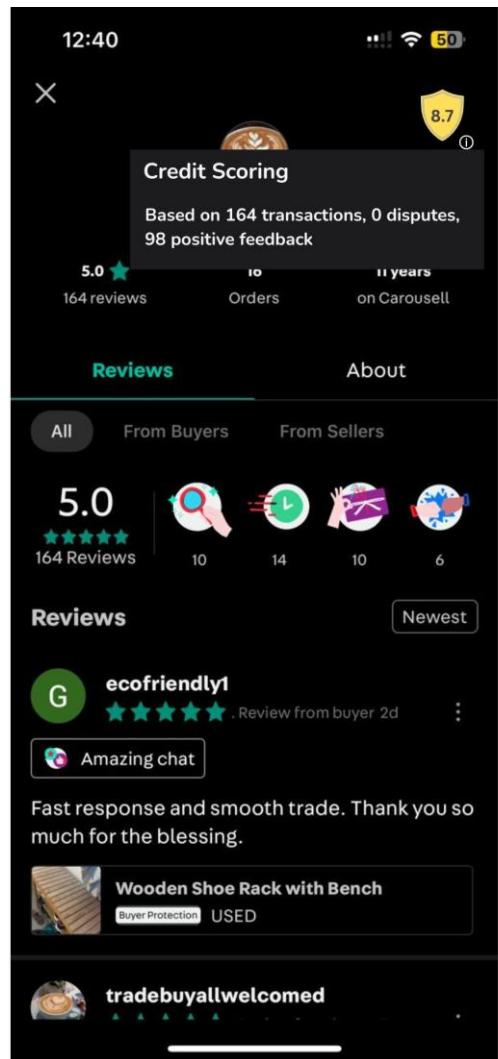
🎬 Amazing chat

Fast response and smooth trade. Thank you so much for the blessing.

Wooden Shoe Rack with Bench
Buyer Protection   USED

tradebuyallwelcomed
⭐⭐⭐⭐⭐

Credit Scoring - What seller sees

OLD

NEW

aarushi singh

None yet	1 year
Reviews	on Carousell

Balance

Purchases

Sales

Insights

Get Coins

CarouBiz

Likes

See All

Listings   Featured

1 listing   Manage listings

🔍 Search this seller's listings

Filters ⇅   Status: All   In: All Categories

over a ye...Carousell

Explore   For You   + Sell   Updates   Me

aarushi singh 8.7

Trust Score - 8.7/10 | Gold Seller ▸

16	98%	0	1 yr
Orders	On time	Disputes	On Carousell

Balance

Purchases

Sales

Insights

Get Coins

CarouBiz

Likes

See All

Listings | Featured

1 listing | Manage listings

🔍 Search this seller's listings

Filters ⇄ | Status: **All** | In: **All Categories**

over a ye...

Explore | For You | Sell | Updates | Me