

AlgoTrader

Shaping Institutional Trading Technology

For digital and traditional assets

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Macro Economic & SWOT Analysis

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Solution 1: Wireswarm

A digital asset trading and connectivity
for banks and brokers

04

Solution 2: OEMS

Order and Execution Management
System for systematic and discretionary
buy-side institutions

05

Solution 3: Quant

An end-end trading solution with
automated trade signal generation and
order execution



Meet the Team



Chi Hui

Chief Executive Officer



Marcus

Chief Technology Officer



Wei Jie

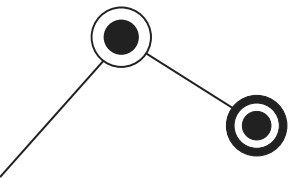
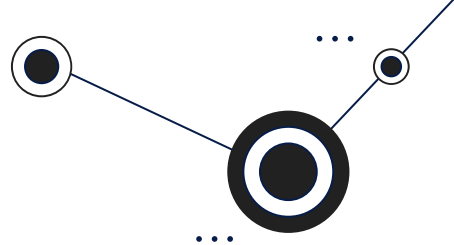
Quantitative Developer Lead



Aileen

Quantitative Strategy Lead

About AlgoTrader



Based in

Singapore, New York, Zurich

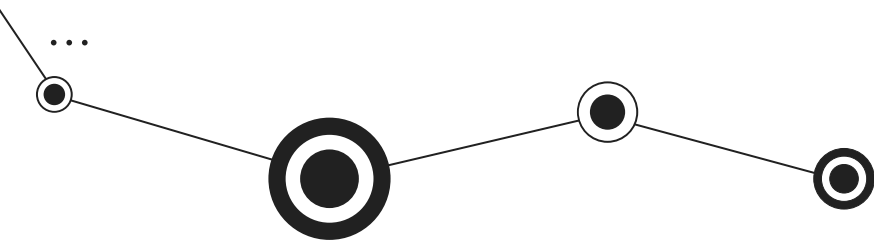
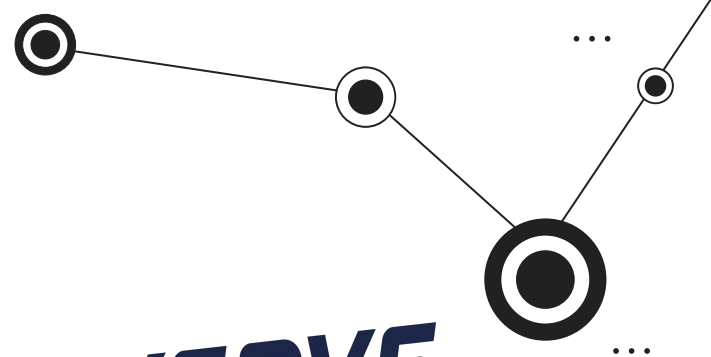
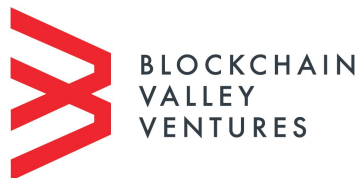
Global Leader in

End-to-end trade automation & DMA tools

Unique Selling Propositions

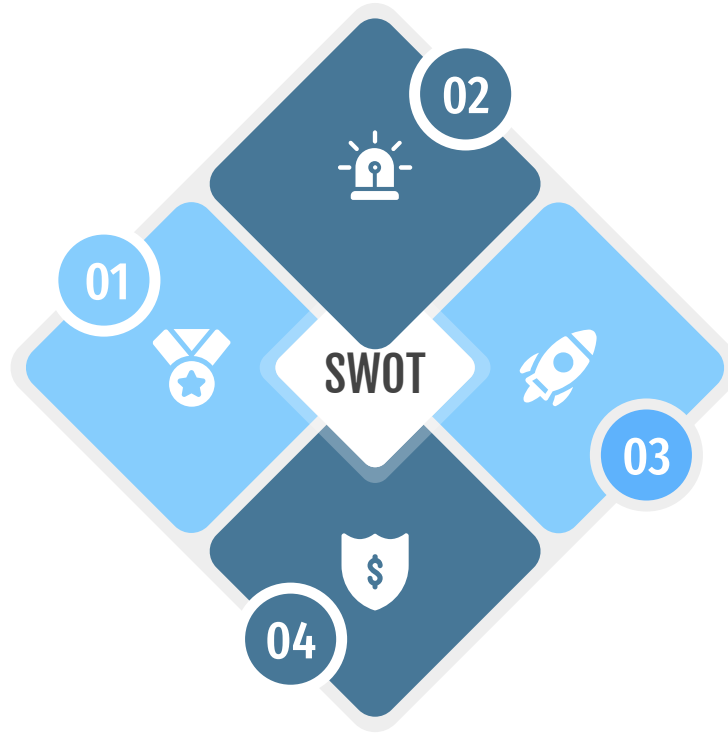
Digital assets offerings and Quant Strategies

Our Investors



A deeper look into NTUBank's SWOT

Strengths
Excellent Financial
Position



Strengths: Excellent Financial Position



Enjoy significant growth &
a robust balance sheet
despite global uncertainty
and turbulence

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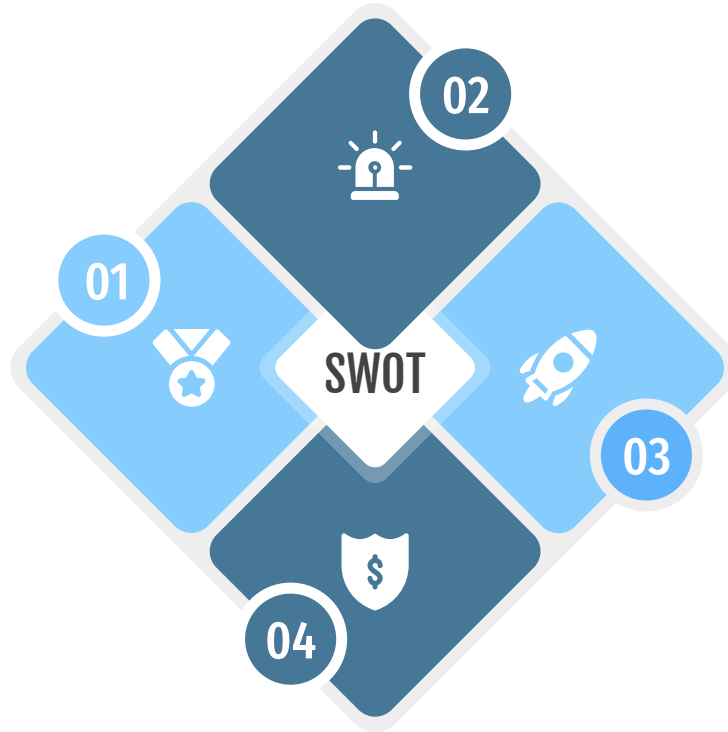
With a strong free cash flow,
NTU bank will have sufficient
resources to upgrade and
expand into new projects.

...

...

A deeper look into NTUBank's SWOT

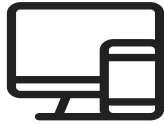
Strengths
Excellent Financial
Position



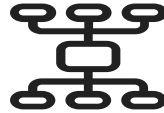
Weaknesses

Backdated Legacy System in
Investment Banking Division
(S&T)

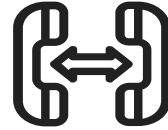
Weakness: Backdated Legacy Systems



Unsuccessful
upgrade of legacy
in-house systems.



Lack of end-to-end
automation of a trade



Continues to conduct
Agency Trading
through phone calls

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...

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A deeper look into NTUBank's SWOT

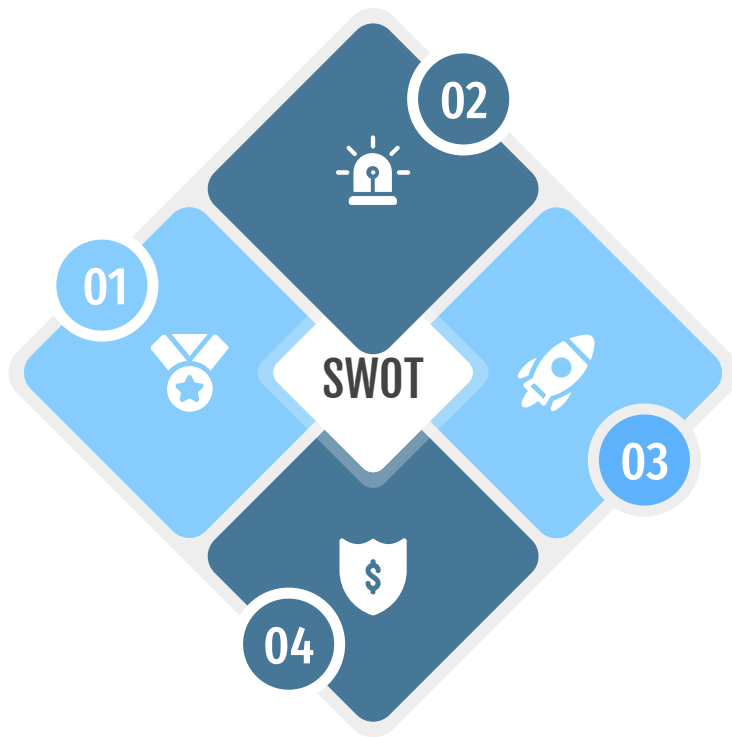
Strengths

Excellent Financial
Position

Weaknesses

Backdated Legacy System in
Investment Banking Division
(S&T)

Threats
Competitive Banking
Landscape



Threats: Competitive Banking Landscape



Entry of new digital
players in the banking
and finance sector

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Competitive product
offerings by other banks

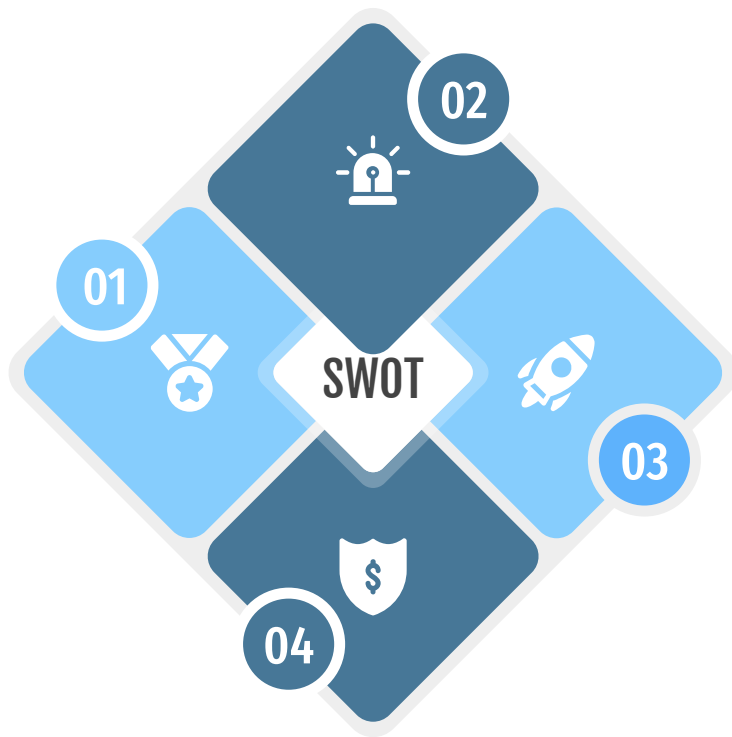
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A deeper look into NTUBank's SWOT

Strengths
Excellent Financial
Position

Threats
Competitive Banking
Landscape



Weaknesses

Backdated Legacy System in
Investment Banking Division
(S&T)

Opportunities

- Boom in the Cryptocurrency Landscape has accelerated demand for cryptocurrency offerings
- Revitalize Quant Strategies

Opportunities: Accelerated Demand for Cryptocurrency Offerings



Singapore as the
global crypto hub

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Increased demand for
retail and institutional
crypto trading services

...

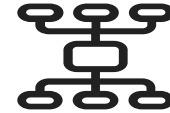
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Opportunities: Revitalise Quant Strategies



Move to trade with
strategic algorithms

...



Increase in demand for
integrated platform to develop
strategic algorithms to capture
profit opportunities

...

...

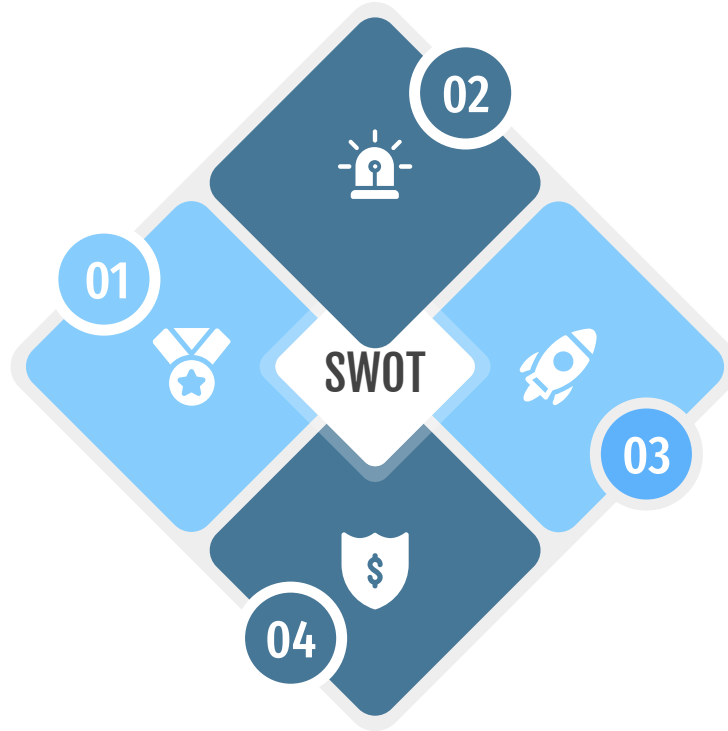
In Summary:

Strengths

Excellent Financial
Position

Threats

Competitive Banking
Landscape



Weaknesses

Backdated Legacy System in
Investment Banking Division
(S&T)

Opportunities

- Boom in the Cryptocurrency Landscape has accelerated demand for cryptocurrency offerings
- Revitalize Quant Strategies

Three-Pronged Approach



Trading Platform +
Settlement



Trading Algos +
SOR



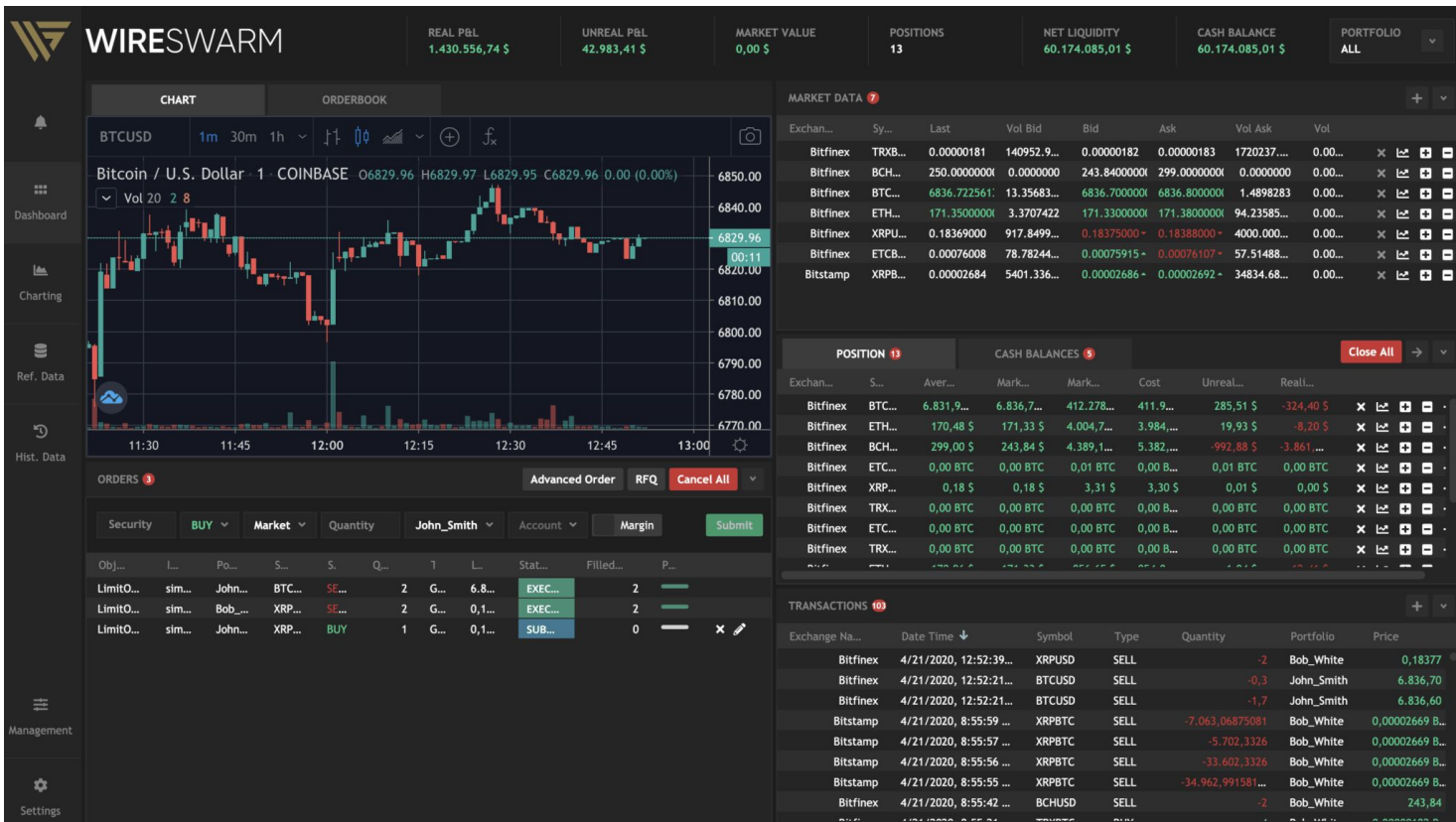
Backtesting and
Quant Analytics



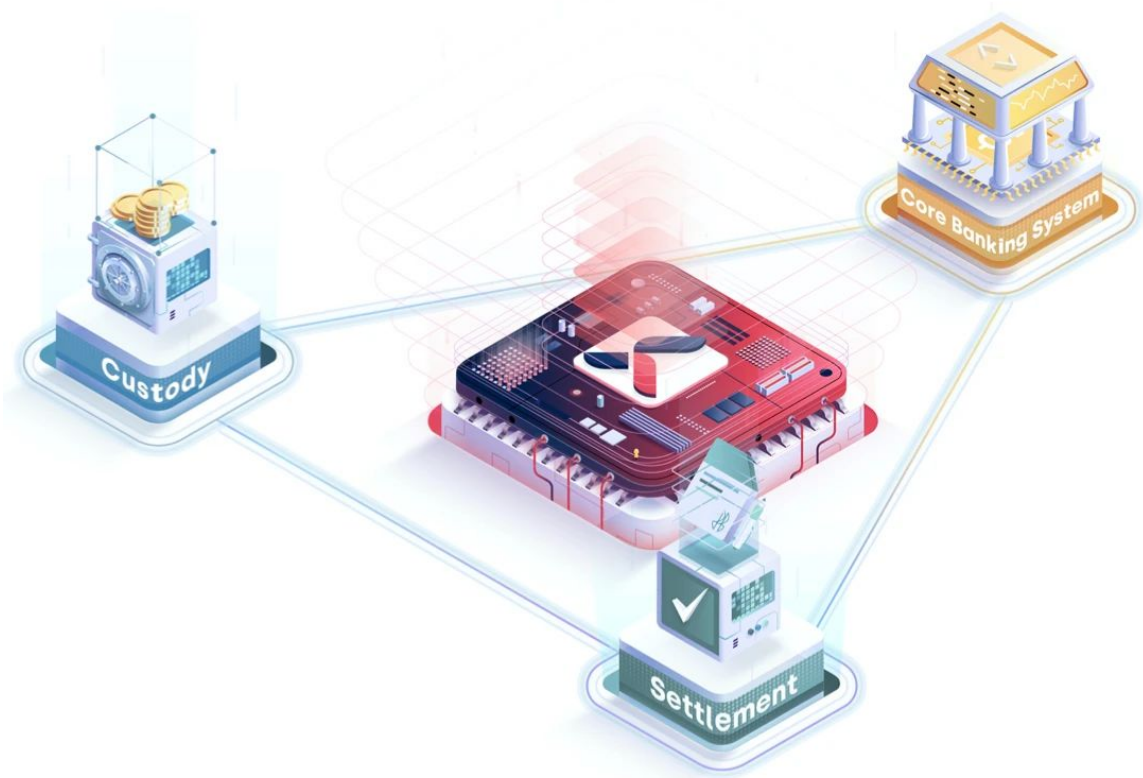
AlgoTrader
WIRESWARM

**All-in-one Trading Platform for
Financial Institutions**

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Overview



Traditional Assets

Equity | Forex | Derivatives | Fixed Income

...

Brokers



Data Vendors



Intermediaries

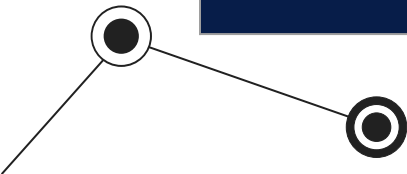


Crypto Assets

Spot | Options | Futures | Perpetual Swaps



Brokers	  Bitcoin Suisse  CRYPTO FINANCE
Data Vendors	 CoinAPI.io  CoinMarketCap
Exchanges	   FTX  Deribit



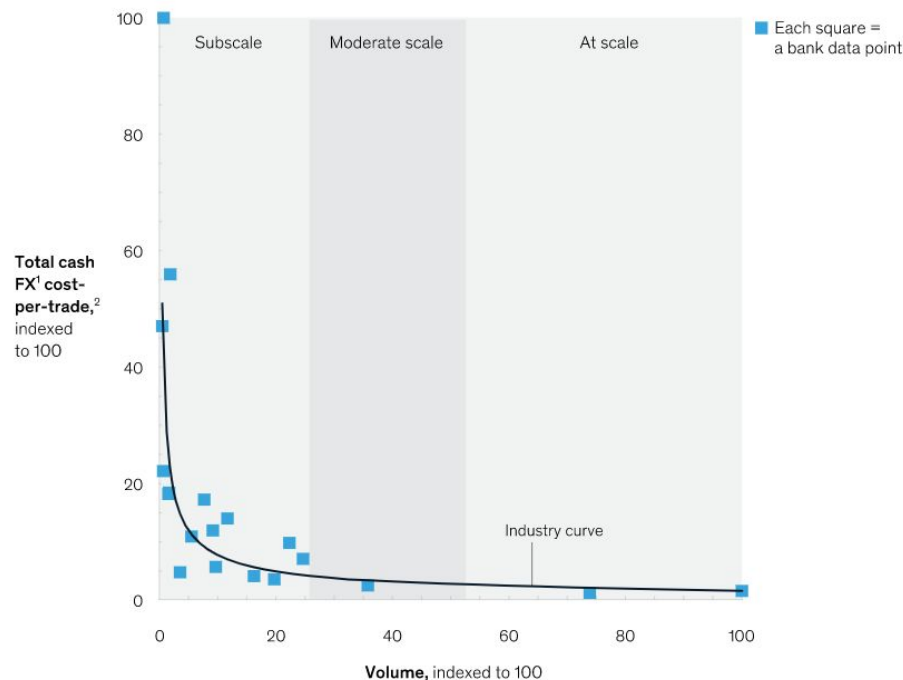
Benefits of Scalable Flow

Key Idea:

Trading as a service is a huge potential to improve scalability while minimising costs in sell-side flow businesses (McKinsey & Co., 2021)

Execution:

An exponential decrease in cost per trade as volume increases for banks which have structurally adapted itself to scale their trading volume capabilities.



¹Foreign exchange.

²Costs consist of back and middle office, IT run-the-bank, and IT change-the-bank.

Source: McKinsey Capital Markets Trade Processing Benchmarking Survey

Value Add to Business Streams

Principal Trading

Internal Service

- Internally net client orders and execute them against NTUBank's inventory.
- Decrease overall trading costs by trading on aggregated client flow

Agency Trading

External Service

- Execute orders on behalf of buy-side.
- Wireswarm as a Plug-and-play model to automate trade lifecycle

Further Threats: High Frequency Trading



Competing Flow

Erodes NTUBank's S&T
profit margins

Technology

NTUBank's orders loses out to
nanosecond trade executions

Wireswarm's Value Add



Improve Scalability

Wireswarm automates standardised trades, enabling traders to focus on big-ticker discretionary trades



Enabling Edges

Take the first-mover advantage and establish a reputation as the goto investment bank for crypto trading in APAC



Non-Flow Trading

Simple API integration with existing infrastructure to unlock new opportunities. (Automated Hedging for complex products, e.g. Cross-Asset & Exotic Derivatives)

Hedging (Illustration)

One Click Delta hedge

BTC-PERP	BTC-15APR22	BTC-22APR22	BTC-29APR22
BTC-27MAY22	BTC-24JUN22	BTC-30SEP22	BTC-30DEC22
BTC-31MAR23			

Total	Bid Size	Bid	Ask	Ask Size	Total
8000	8000	43,251.5	43,252.0	24250	24250
9010	1010	43,250.0	43,253.5	5000	29250
9520	510	43,249.5	43,254.0	139940	169190
10530	1010	43,248.0	43,254.5	18360	187550

☒ BTC Standard ☐ USD Standard

Current: 8 0.0000

Hedge: 80.0000

Taker	Maker
-------	-------

Target Delta:

0

One Click Delta hedge

Open Orders (0)

Side	Instrument	* Volume	Price	Completed	Actions
------	------------	----------	-------	-----------	---------

[Goto advanced DDH Settings](#)

Advanced Dynamic Hedging

USD-native mode enabled Target Delta(\$): 0 Current Delta(\$): 0

Long contract: ETH-PERPETUAL Short contract: ETH-PERPETUAL

Positive Delta Threshold (\$): 1 Positive deviation from Delta(\$): NaN

Positive Delta Hedge Ratio: 100

Negative Delta Threshold (\$): 1 Negative Deviation Delta(\$): NaN

Negative Delta Hedging Ratio: 100

Single transaction volume (\$): 0.2

☐ switch

submit

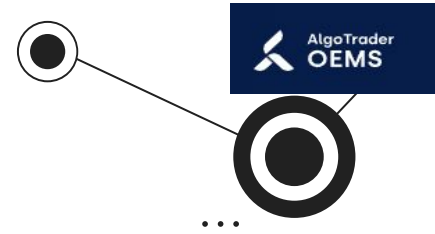
Cancel



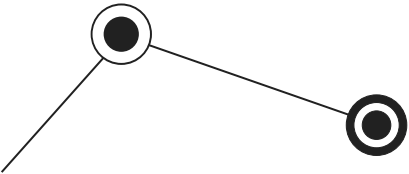
Fully Integrated Order, Execution and Position Management Solution

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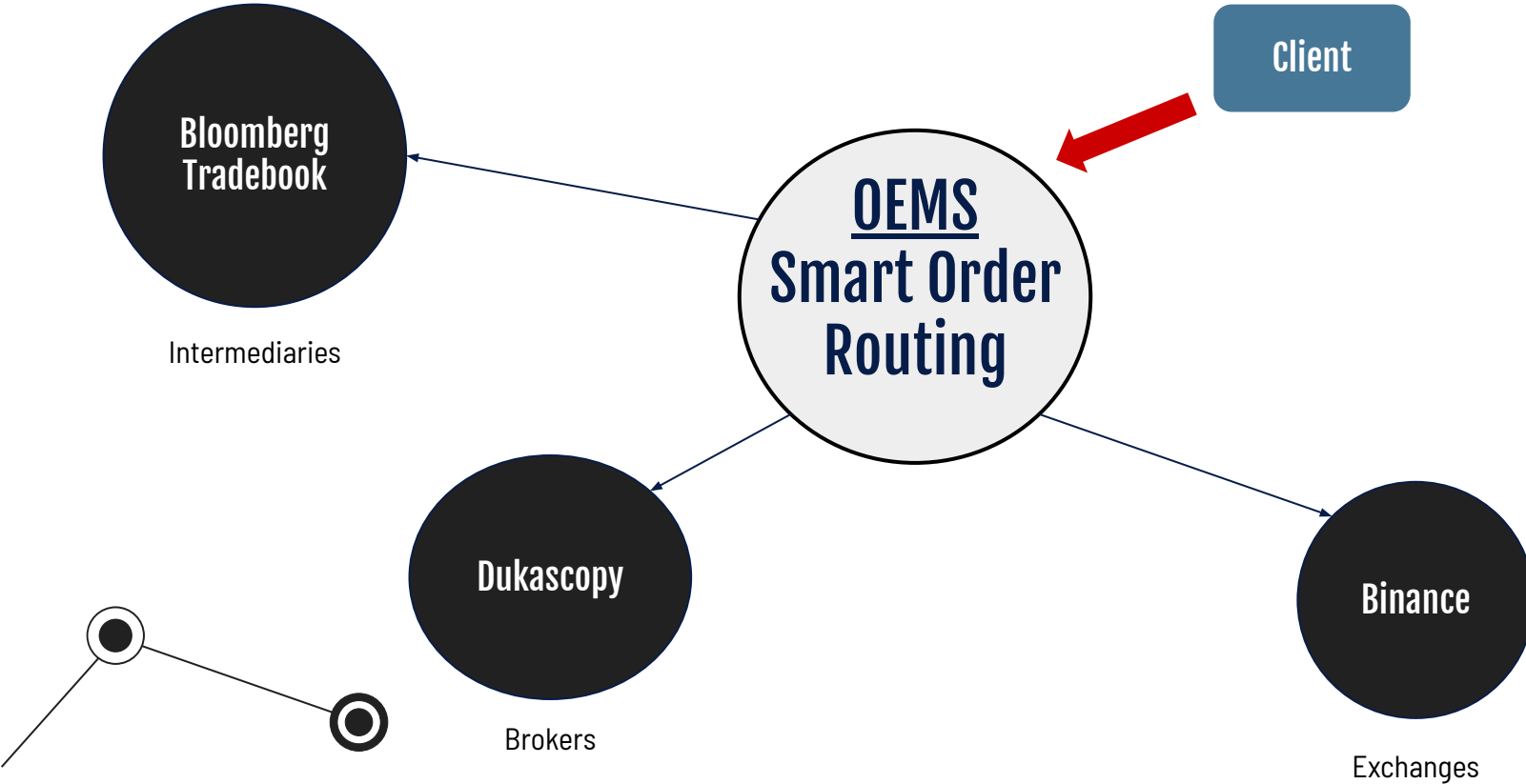
Overview of OEMS



- ✓ Order Management System (OMS)
- ✓ Algorithmic Execution
- ✓ Pre-trade Analytics
- ✓ Margin Trading
- ✓ T+0 Settlement

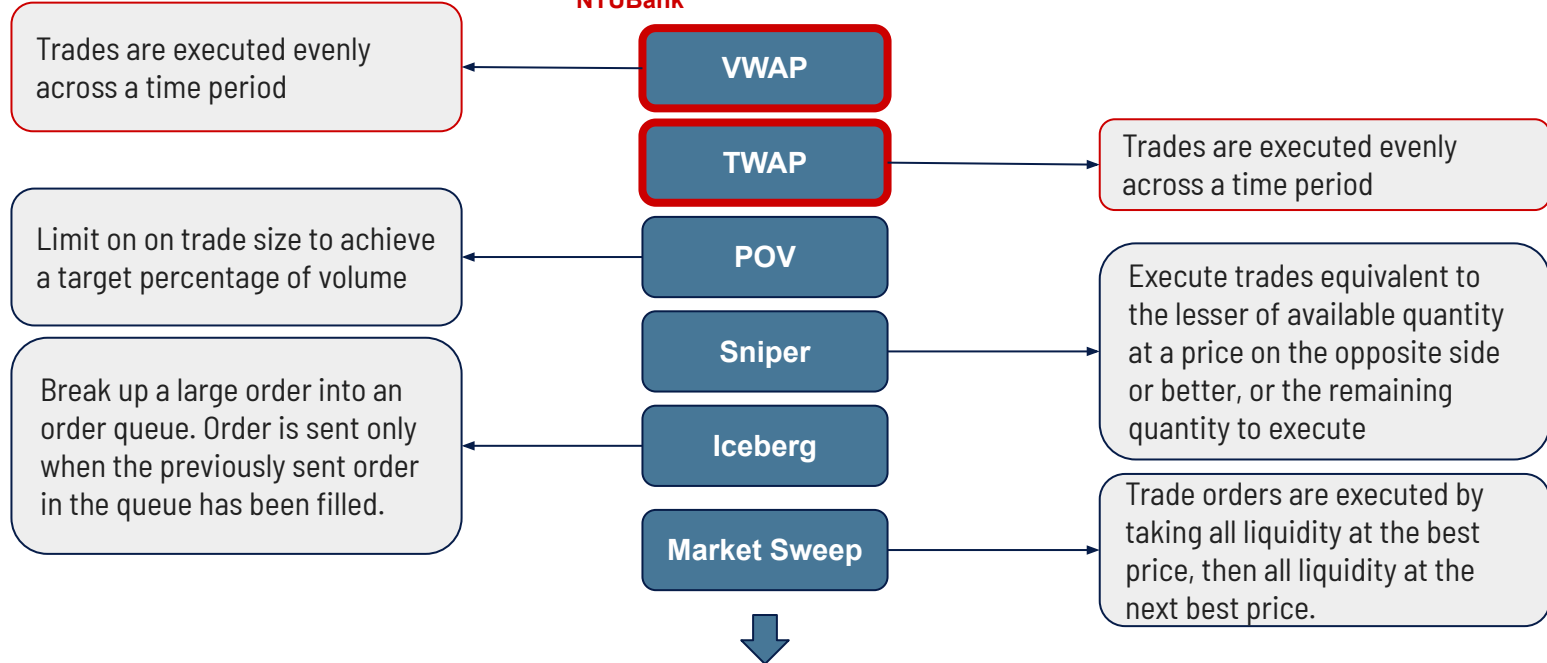


Order Management System



Algorithmic Execution

NTUBank



Anonymity with Orders, Lower Implementation Shortfall

Pre-trade Analytics



Credit Risk Compliance

Admin can administer rule-based checks on credit limit for each trading account

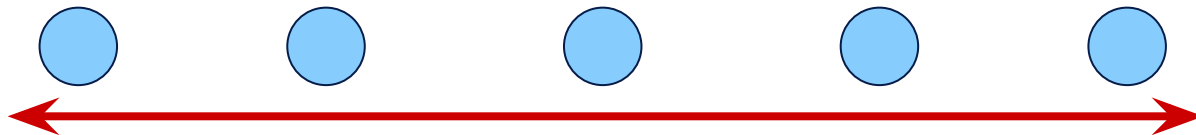


Market Risk Compliance

Admin can administer rule-based checks on the limit on the volume for a single equity

Off-Chain Trade Funding and Settlement for Digital Assets

Trades are settled immediately on the exchange without counterparty risks using deposits on exchange custodian account



Fireblocks

OEMS supports FireBlocks

- Helps to eliminate these transaction fees by transacting between exchange custodian accounts off-chain
- Allows instant funding before making an order by reducing the need to place funds in different custodian accounts.

T+0 settlement, Reduce Transaction Fees, Reduce Counterparty and Systematic Risk

OEMS's Value Add



Vertical Integration of Value Chain

Wide ranging low-touch services from order routing to pre-trade analytics will allow NTUBank to offer more services than market access and cater to demand of low-touch clients without the need to increase headcount



Synergy with Existing Financial Services

Integration of OEMS with NTUBank's credit, treasury and portfolio management services for margin trading and global transactions



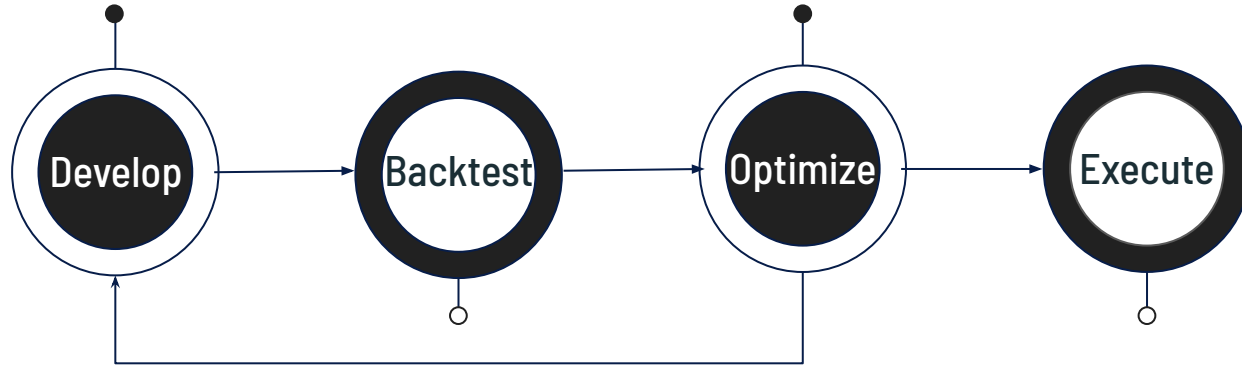
End-to-end Quantitative Trading Technology

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Strategic Algorithms Development Cycle

Flexible system design

Developed on AlgoTrader platform or integrate existing strategies into AlgoTrader API



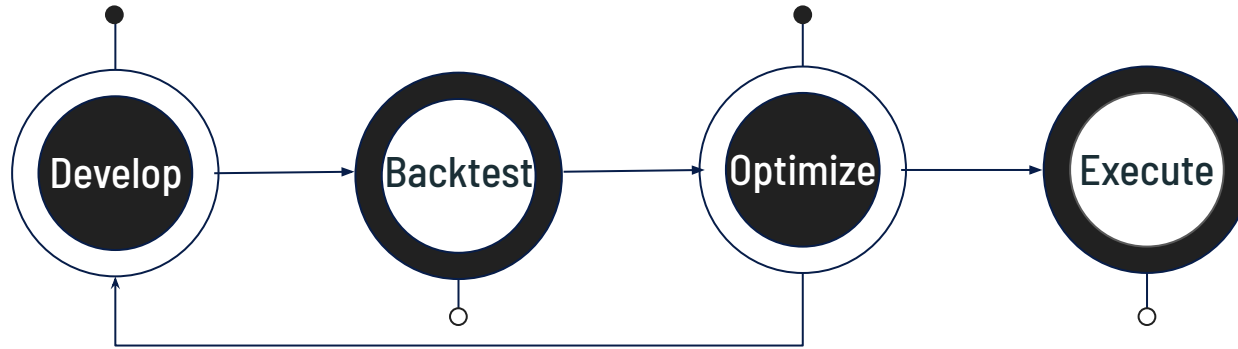
```

100 protected void onInit(LifecycleEventVO event) { init(); }
101
102
103 @Override
104 public void onStart(final LifecycleEventVO event) { getSubscriptionService().subscribeMarketDataEvent(getStrategyName(), this.securityId, defaultAdapterType); }
105
106 @Override
107 public void onBar(BarVO bar) {
108
109     this.series.addBar(toBar(bar));
110
111     int i = this.series.getEndIndex();
112     Num currentValue = this.emaDifference.getValue(i);
113     Num previousValue = this.emaDifference.getValue(index i - 1);
114
115     if (currentValue.isPositive() && previousValue.isNegativeOrZero()) {
116         sendOrder(Side.BUY);
117     } else if (currentValue.isNegative() && previousValue.isPositiveOrZero()) {
118         sendOrder(Side.SELL);
119     }
120 }
121
122 private void sendOrder(Side side) {
123
124     MarketOrderVO order = MarketOrderVOBuilder.create()
125         .setStrategyId(getStrategy().getId())
126         .setAccountId(this.accountId)
127         .setSecurityId(this.securityId)
128         .setOrderType(OrderType.LIMIT)
129         .setPrice(this.price)
130         .setQuantity(this.quantity)
131         .build();
132
133     getOrderService().sendOrder(order);
134 }
135 }

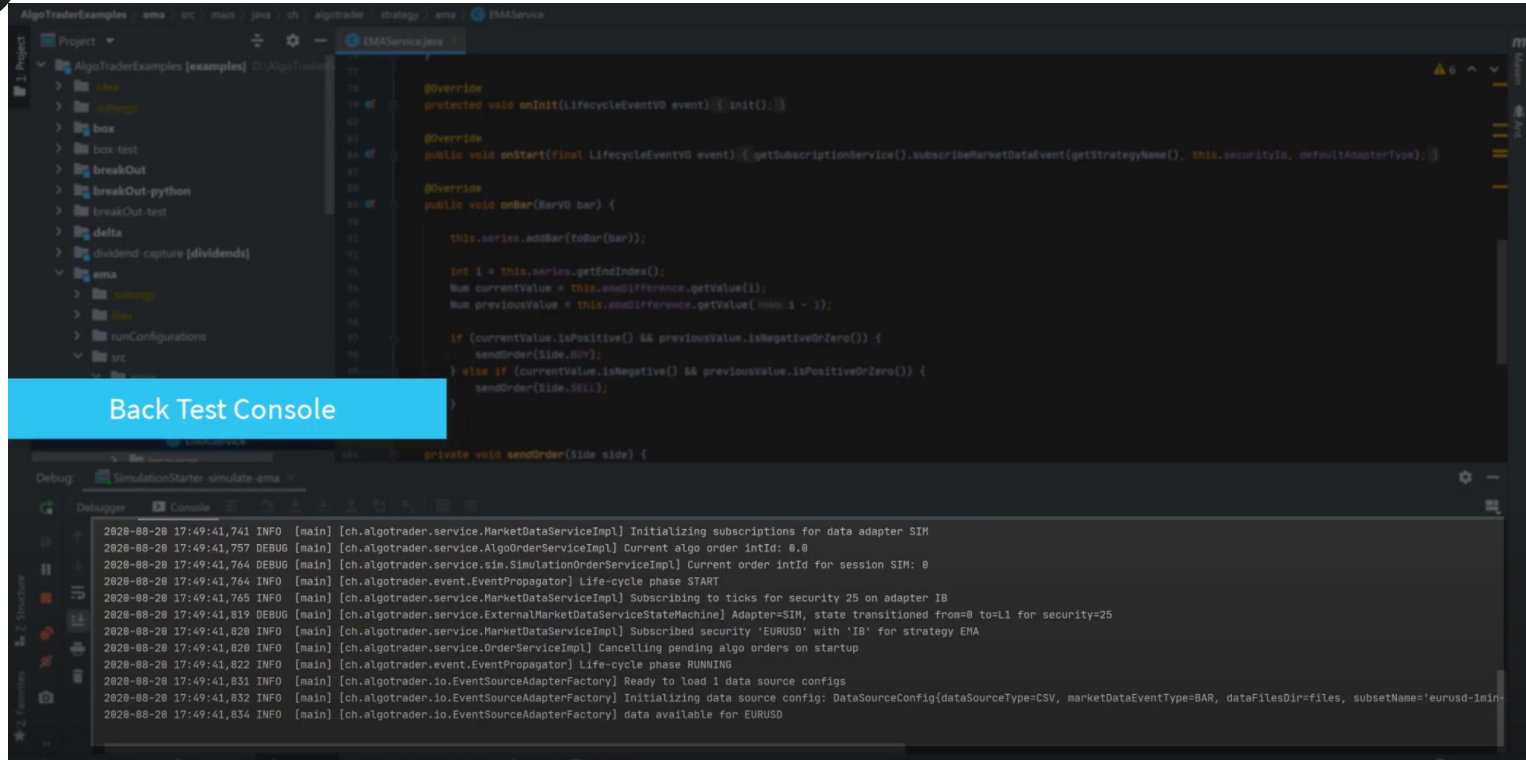
```

Strategy Trading Logic

Strategic Algorithms Development Cycle



**Convenient
Backtesting Method**
Use the same code for
backtesting and trading



The screenshot displays an IDE with the `EMAService.java` file open. The file contains the following code:

```

1  @Override
2  protected void onInit(LifecycleEventVO event) { init(); }
3
4  @Override
5  public void onStart(final LifecycleEventVO event) { getSubscriptionService().subscribeMarketDataEvent(getStrategyName(), this.securityId, defaultAdapterType); }
6
7  @Override
8  public void onBar(BarVO bar) {
9
10     this.series.addBar(toBar(bar));
11
12     int i = this.series.getEndIndex();
13     Num currentValue = this.emaDifference.getValue(i);
14     Num previousValue = this.emaDifference.getValue(Math.max(i - 1, 0));
15
16     if (currentValue.isPositive() && previousValue.isNegativeOrZero()) {
17         sendOrder(Side.BUY);
18     } else if (currentValue.isNegative() && previousValue.isPositiveOrZero()) {
19         sendOrder(Side.SELL);
20     }
21 }
22
23 private void sendOrder(Side side) {

```

Below the code editor, the console window shows the following logs:

```

2020-08-20 17:49:41,741 INFO [main] [ch.algotrader.service.MarketDataServiceImpl] Initializing subscriptions for data adapter SIM
2020-08-20 17:49:41,757 DEBUG [main] [ch.algotrader.service.AlgoOrderServiceImpl] Current algo order intId: 0.0
2020-08-20 17:49:41,764 DEBUG [main] [ch.algotrader.service.sim.SimulationOrderServiceImpl] Current order intId for session SIM: 0
2020-08-20 17:49:41,764 INFO [main] [ch.algotrader.event.EventPropagator] Life-cycle phase START
2020-08-20 17:49:41,765 INFO [main] [ch.algotrader.service.MarketDataServiceImpl] Subscribing to ticks for security 25 on adapter IB
2020-08-20 17:49:41,819 DEBUG [main] [ch.algotrader.service.ExternalMarketDataServiceStateMachine] Adapter=SIM, state transitioned from=0 to=L1 for security=25
2020-08-20 17:49:41,820 INFO [main] [ch.algotrader.service.MarketDataServiceImpl] Subscribed security 'EURUSD' with 'IB' for strategy EMA
2020-08-20 17:49:41,820 INFO [main] [ch.algotrader.service.OrderServiceImpl] Cancelling pending algo orders on startup
2020-08-20 17:49:41,822 INFO [main] [ch.algotrader.event.EventPropagator] Life-cycle phase RUNNING
2020-08-20 17:49:41,831 [main] [ch.algotrader.io.EventSourceAdapterFactory] Ready to load 1 data source configs
2020-08-20 17:49:41,832 INFO [main] [ch.algotrader.io.EventSourceAdapterFactory] Initializing data source config: DataSourceConfig[dataSourceType=CSV, marketDataEventType=BAR, dataFilesDir=files, subsetName='eurusd-1m]
2020-08-20 17:49:41,834 INFO [main] [ch.algotrader.io.EventSourceAdapterFactory] data available for EURUSD

```

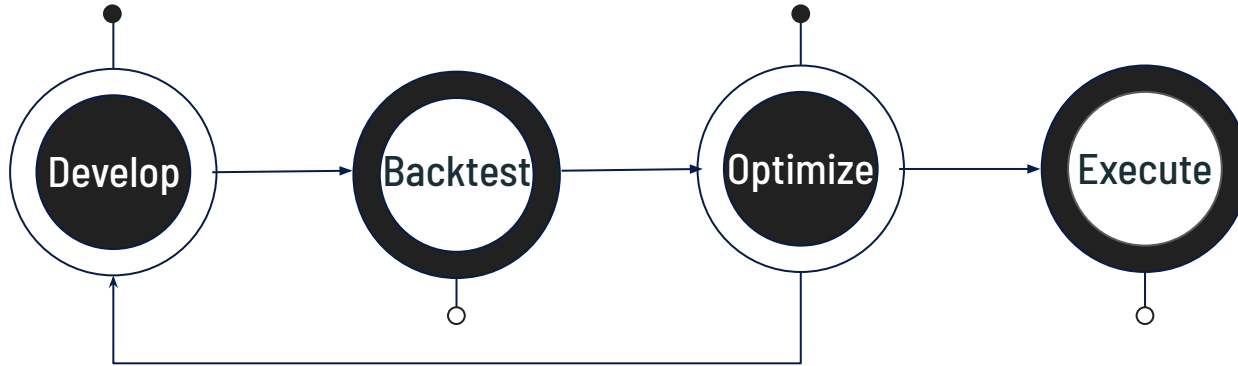
Back Test Console



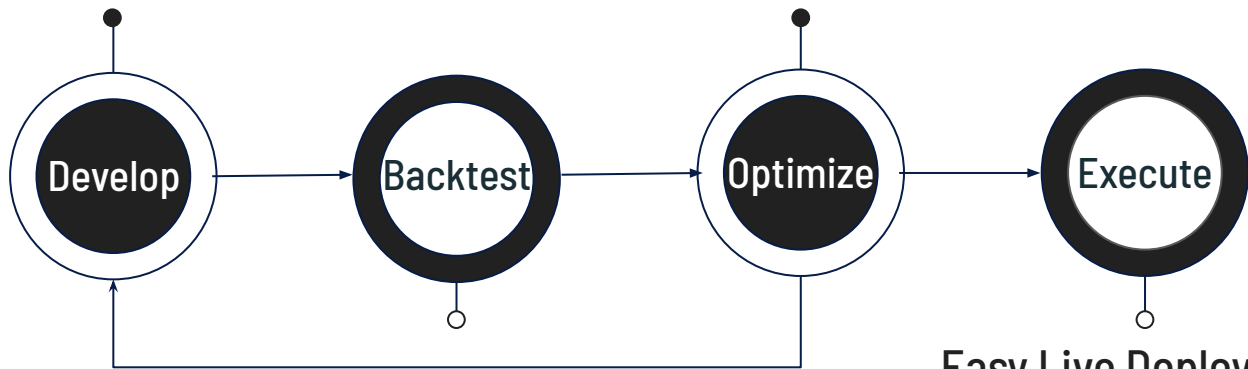
Strategic Algorithms Development Cycle

Auto Optimization

Algotrader can suggest the best parameter ranges generating best returns



Strategic Algorithms Development Cycle



Easy Live Deployment

OEMS used to ensure best execution for the strategy across trading venues

Use Cases



Neutralize Greek exposures In principal trading

Develop strategic algorithms to minimize the risks from principal trading by hedging off greek exposures.



Hedge off risk in OTC trading

Develop strategic algorithms to hedge off the risk involved in OTC trading by using derivatives



Repackage AT Quant for buy side clients

Repackage AT QUANT for buy-side clients, such as systematic hedge funds to enable them to capture profit opportunities.

AT Quant's value add



New potential revenue stream

Top performing hedge funds are increasingly using strategic algorithms



Aid Quant research efforts

Improve quant researchers' workflow



Automated report generation

Generate comprehensive reports automatically, consolidating experiments or actual results accurately

Costing

Fixed cost



Integration cost



Equipment cost

Variable cost



AlgoTrader yearly license

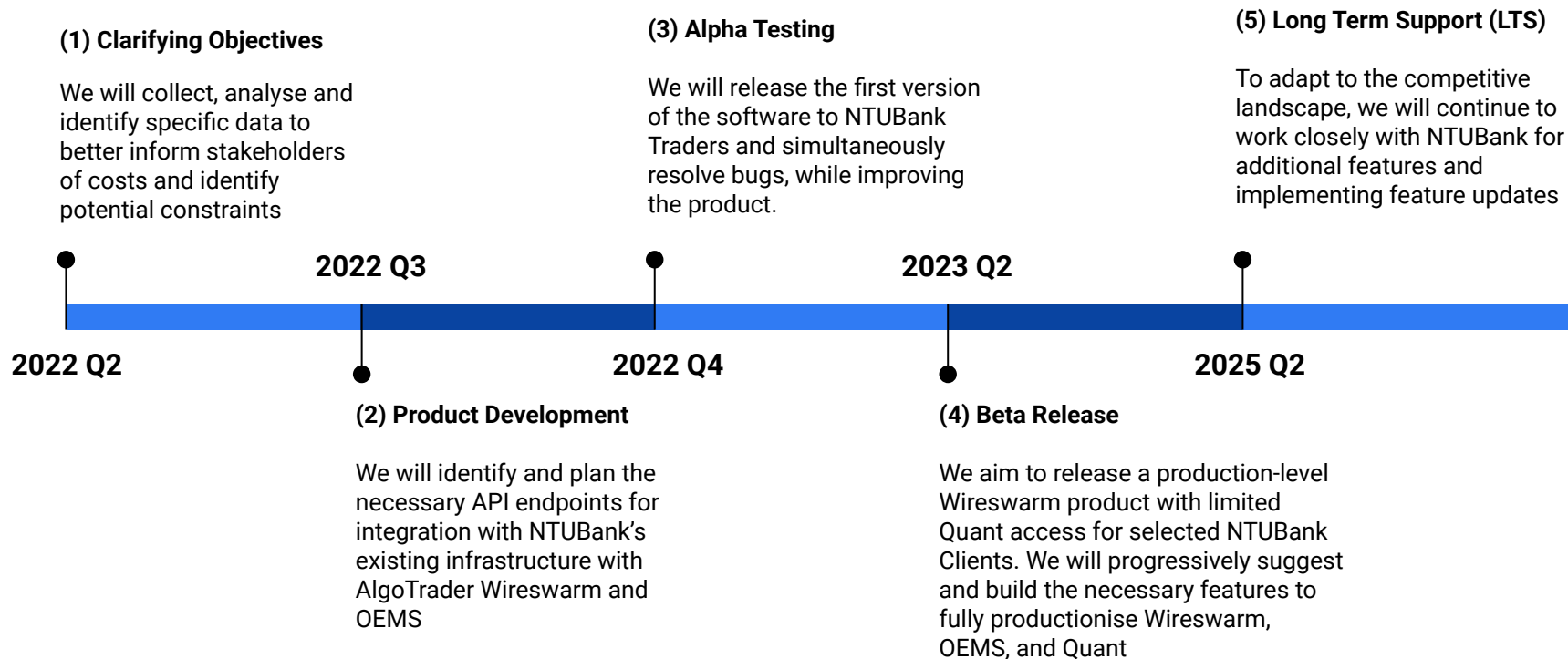


Server hosting



Engineering cost

Implementation Roadmap



Conclusion

All-in-one trading, best execution and seamless portfolio management for buy-side and sell-side institutions.



Trading Platform +
Settlement



Trading Algos +
SOR



Backtesting and
Quant Analytics



Thanks!

Do you have any questions?

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