

# Domain 2: Quantitative Trading (by Balaena Quant)

Group (131) Little Vege Chicks



# TABLE OF CONTENTS

**01**

**Problem Statement**

**02**

**Validation**

**03**

**Solution Overview &  
Demo**

**04**

**Business Model**

**05**

**Impact**



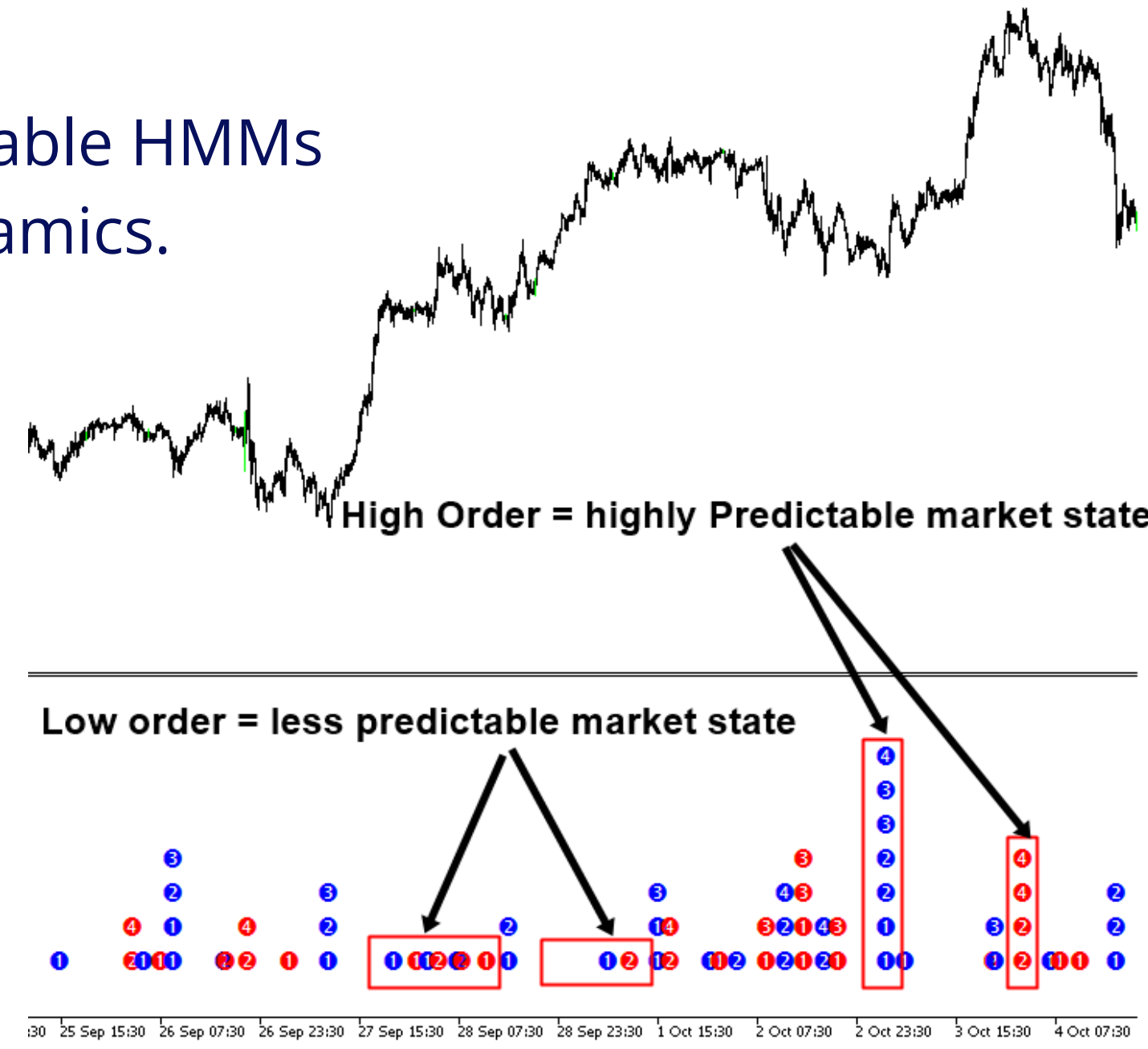
# Problem Statement

## Noise in Crypto Markets

- 89% of traders lose money due to false signals from noisy on-chain data.

- Traditional Price Charts vs HMM-Based Segmentation

Traditional price charts often appear erratic and unpredictable HMMs provide a structured and interpretable view of market dynamics.



# Problem Statement

## Blind Spots in Traditional Models

- Standard indicators (eg, RSI, MACD) fail to detect regime shifts.
- HMM vs. Traditional Methods



| Metric   | HMM  | Traditional Indicators                           |
|----------|--|--|
| Accuracy | Higher predictive accuracy                       | Lower predictive accuracy                        |
| Latency  | Offers earlier detection of market regime shifts | Signals often lag behind actual market movements |
| Drawdown | Demonstrates reduced drawdowns                   | experience higher drawdowns                      |

# Validation

● (Source: The Star, 2024)

According to the FBI,  
In 2023 : **over \$5.6 billion** was lost to crypto scams.  
A **45% increase** Investment scams made up 71% of these losses from 2022.

● (Zhou & Sornette, 2006)

Traditional indicators like **RSI and MACD often lag behind** actual market changes,  
making them **less effective** in volatile periods.

● Kritzman et al. (2012)

● Bulla et al. (2011)

**Hidden Markov Models (HMMs)** can detect market regime shifts earlier and help reduce drawdowns,  
making it **high effective** in volatile periods



# Solution & Demo

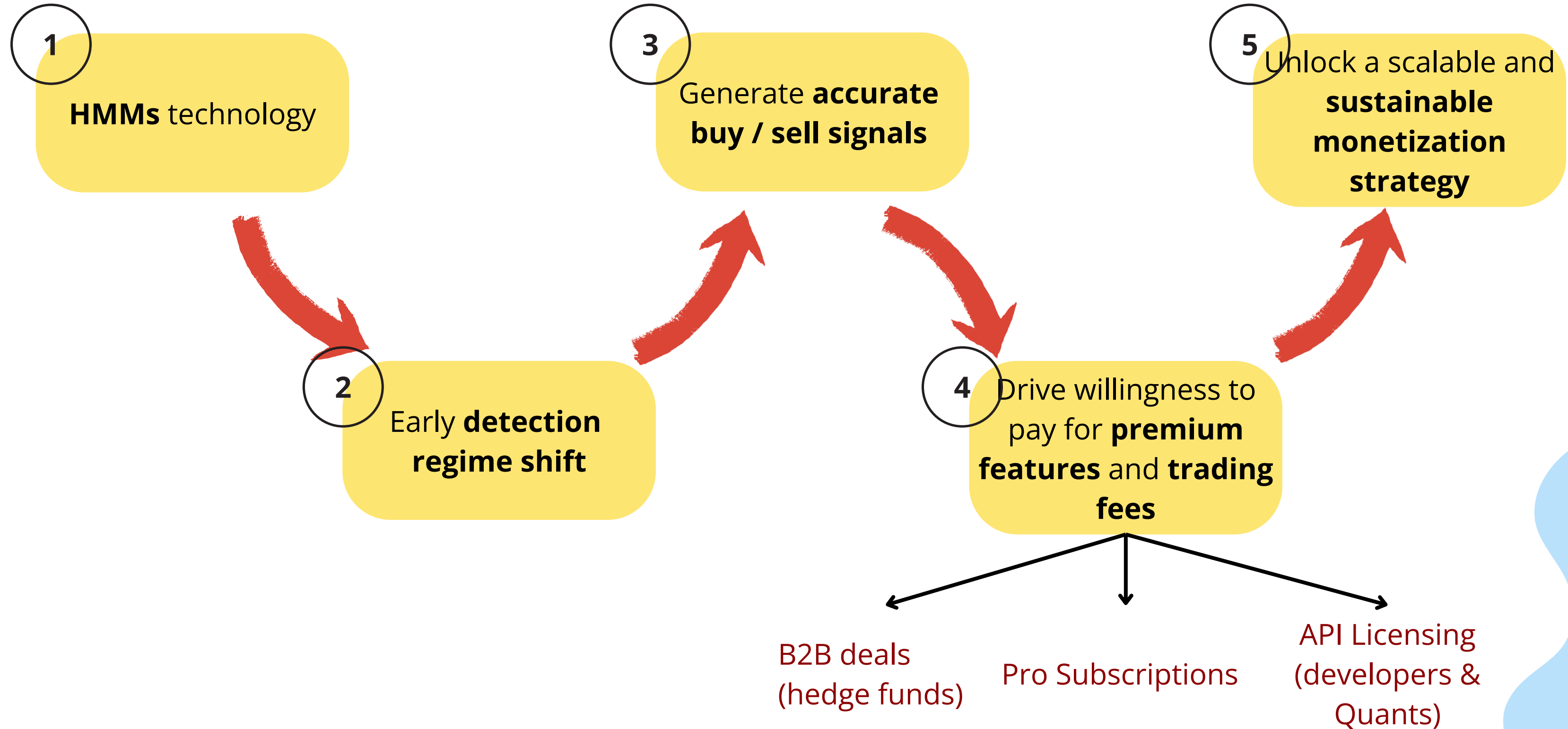
Link to Our Alpha Trading Page:

<https://www.figma.com/proto/pANNJcbh35wPWnPTqRNHTx/Alpha-Trading-Strategy?node-id=60-8&t=drAdWFGQZ9yTptaX-1>





# Business Model



## Target User

### **Retail Trader (Beginner)**

- Easy follow states and reduce decision fatigue and improving timing

### **Quant Trader**

- API access to real time regime signals for backtesting and execution

### **Institutions**

- Strategic market insights for portfolio rebalancing and hedging



# Impact

| For Traders   | For Industry  | Future Vision  |                                |     |                     |     |                  |     |                                 |     |  |   |
|---|---|--|--------------------------------|-----|---------------------|-----|------------------|-----|---------------------------------|-----|--|---|
| Achieve 2.1 Sharpe Ration with -40% drawdown  | Bringing institutional-grade regime detection to retail traders | Add non-fungible token (NFT) minting volume as a state feature |                                |     |                     |     |                  |     |                                 |     |  |   |
| <table><caption>Impact Breakdown</caption><tr><th>Category</th><th>Percentage</th></tr><tr><td>Improved Risk-Adjusted Returns</td><td>40%</td></tr><tr><td>Drawdown Protection</td><td>30%</td></tr><tr><td>Regime Detection</td><td>20%</td></tr><tr><td>Easy-To-Use Dashboard &amp; Signals</td><td>10%</td></tr></table> | Category  | Percentage   | Improved Risk-Adjusted Returns | 40% | Drawdown Protection | 30% | Regime Detection | 20% | Easy-To-Use Dashboard & Signals | 10% | Overlaid with checkmarks: <ul style="list-style-type: none"><li>• <math>SR \geq 1.8</math></li><li>• <math>MDD \leq -40\%</math></li><li>• HMM-based macro state detection</li></ul> | Achievements: <ul style="list-style-type: none"><li>• Live paper trading</li><li>• NFT+ macro feature integration</li><li>• Automated execution with CEX/DEX connectors</li></ul> |
| Category  | Percentage  |  |                                |     |                     |     |                  |     |                                 |     |  |   |
| Improved Risk-Adjusted Returns  | 40%   |  |                                |     |                     |     |                  |     |                                 |     |  |   |
| Drawdown Protection   | 30%   |  |                                |     |                     |     |                  |     |                                 |     |  |   |
| Regime Detection  | 20%   |  |                                |     |                     |     |                  |     |                                 |     |  |   |
| Easy-To-Use Dashboard & Signals   | 10%   |  |                                |     |                     |     |                  |     |                                 |     |  |   |



**Thank You !**