

SteadySyncAgent: An agent submitted to the ANAC 2026 SCML OneShot track

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June 5, 2026

Abstract

This report details the design and implementation of “SteadySyncAgent”, an agent developed for the ANAC 2026 Supply Chain Management League (SCML) OneShot track. The agent’s strategy combines a Boulware pricing model, a Profit-Guardrail mechanism to prevent negative margins, and a Quantity-First approach for managing concurrent negotiations.

1 Introduction

The SCML OneShot track challenges agents to negotiate multiple one-shot contracts simultaneously within a limited timeframe to maximize their profit in a simulated supply chain network. Our proposed agent, “SteadySyncAgent”, focuses on securing necessary quantities while strictly controlling profit margins. By dynamically adjusting its target prices based on time and the available market limits, the agent aims to achieve long-term dominance in the tournament.

2 The Design of SteadySyncAgent

2.1 Negotiation Choices

SteadySyncAgent utilizes a Boulware concession strategy for its pricing. At the beginning of negotiations, it demands the most favorable price. As the deadline approaches, it exponentially concedes towards the opponent’s reservation value using an exponent of 2.0. Furthermore, a last-minute compromise logic is implemented: when the remaining time falls below 5% (relative time > 0.95), the agent relaxes its price constraints to secure agreements before the negotiation terminates.

2.2 Concurrent Negotiation

To manage multiple negotiations simultaneously, SteadySyncAgent adopts a synchronous, Quantity-First distribution mechanism. Initially, the agent distributes its required supply and sales targets evenly across all available partners. When evaluating incoming offers, the agent sorts them by profitability (cheapest first for supplies, highest first for sales). It then greedily accepts the best offers until the required quantity is met. For any remaining needs, it issues counter-offers with its current target price.

2.3 Risk Management

A key feature of SteadySyncAgent is its “Profit-Guardrail” mechanism. Simple concession strategies risk agreeing to prices that result in overall losses when buying and selling prices are considered together. To mitigate this, the agent dynamically adjusts its maximum acceptable buying price and minimum acceptable selling price based on the current market bounds of both inputs and outputs. For example, it restricts its buying price limit so that it never exceeds a certain percentage of the expected selling price limit, ensuring that a positive margin is maintained for every unit produced.

3 Evaluation

To evaluate the performance of SteadySyncAgent, we conducted a local tournament consisting of 150 independent world simulations. The tournament included five different agent types. The final results, aggregated over 450 score records, are presented in Table 1.

Agent Type	Average Score
SteadySyncAgent	1.05849
SyncRandomOneShotAgent	1.04371
PatientAgent	1.02606
Agent112	1.01705
QuantityOrientedAgent	1.00437

Table 1: Tournament Results (150 Worlds)

The results demonstrate that SteadySyncAgent outperformed all other competitors, securing the first place with an average score of 1.05849. This confirms that the combination of the Boulware strategy with the Profit-Guardrail effectively prevents loss-making contracts while maintaining high overall profitability during concurrent negotiations.

4 Lessons and Suggestions

During development, we realized that independent negotiations for inputs and outputs can lead to severe coordination failures if prices are not linked. The introduction of the Profit-Guardrail solved this issue. Future work could explore tracking opponent behavior across steps to adjust the concession exponent dynamically.

Conclusions

SteadySyncAgent presents a robust approach for the SCML OneShot track by tightly integrating quantity distribution with margin-aware price concessions. Its defensive pricing strategy protects against market volatility, making it a highly competitive participant.