# ROI Model for Inventory Automation at Scale

## 1. Assumptions

- Each transaction (batch) processes 100–500 inventory records  
- Bot runs continuously, processing ~4000 transactions per day  
- Manual workflow takes 2 mins per batch; automation reduces it to 10 sec  
- Estimated error rate: 3%; retry cost is 2× normal transaction cost  
- CPU time per batch: 0.15 seconds; cost: $0.0005 per CPU-sec

## 2. Synthetic Metrics

- Daily Transactions: 4,000  
- Average Duration: 0.15 sec  
- Error Rate: 3% (120 retries)  
- CPU Seconds/day: ~600 sec  
- Daily Compute Cost: $0.30

## 3. Labor Savings

- Manual Time: 4,000 x 2 mins = 8,000 mins (133 hrs/day)  
- Automated Time: ~12 mins total/day  
- Net Savings: ~132.8 hrs/day or ~$3,984/day (at $30/hr rate)

## 4. Qualitative Benefits

- Reduced human error  
- Consistent SLA delivery  
- Scalable with low marginal cost  
- Better audit logging and visibility  
- Frees up staff for higher-value tasks

## 5. ROI Summary

Projected ROI after rollout to 10 warehouses exceeds 10×, with cumulative savings >$1M annually and operational improvements in accuracy and uptime.