

**REDUCING TRADING ERRORS THROUGH STRUCTURED  
COMMUNICATION: A CASE STUDY IN PORTFOLIO MANAGEMENT**

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*Abstract*

*This paper presents a case study on the development and implementation of a structured intent communication tool designed to reduce trading errors in a portfolio management setting. The tool addresses the challenges of miscommunication between portfolio managers (PMs) and portfolio analysts by providing a streamlined, user-friendly interface for order entry. Despite initial resistance from PMs, the tool's efficiency and ease of use led to widespread adoption, resulting in a significant reduction in trading errors caused by miscommunication.*

**I. INTRODUCTION**

In the fast-paced world of portfolio management [2], clear and accurate communication of trading intents is crucial. Traditionally, portfolio managers (PMs) have relied on unstructured methods such as email and phone calls to convey their trading intentions to portfolio analysts. However, this approach is prone to errors due to miscommunication, potentially leading to significant financial losses and operational risks.

This paper describes the development and implementation of a structured intent communication tool designed to address these challenges. We explore the motivations behind the tool's creation, the design considerations that guided its development, and the outcomes of its implementation.

**II. BACKGROUND**

**2.1 Traditional Communication Methods**

Historically, PMs communicated their trading intents through unstructured methods such as: Email correspondence and phone calls

Both of these methods send the details in an unstructured manner.

These methods, while familiar and seemingly efficient, posed several risks - which include potential for misinterpretation of order details, lack of standardization in order specification, difficulty in tracking and auditing communication and increased likelihood of human error in order translation

## **2.2 The Need for Change**

The frequency of trading errors resulting from miscommunication highlighted the need for a more structured and standardized approach to intent communication. These errors not only posed financial risks but also consumed valuable time in error resolution and correction.

## **III. TOOL DEVELOPMENT**

### **3.1 Design Objectives**

The primary objectives in developing the structured intent communication tool were:

1. Reduce trading errors caused by miscommunication
2. Maintain or improve the speed of order entry compared to email
3. Ensure ease of use to encourage adoption by PMs
4. Standardize the order entry process
5. Enable mobile access for on-the-go intent communication

### **3.2 Key Features**

To meet the design objectives and ensure widespread adoption, the following key features were implemented in the structured intent communication tool:

#### **1. Autocomplete Security Search**

- Implemented using Elasticsearch[2] for high-performance, fuzzy matching capabilities
- Allows PMs to quickly find and select securities by typing partial names, tickers, or CUSIP numbers
- Provides real-time suggestions as the user types, reducing the cognitive load of remembering exact security identifiers
- Includes relevant metadata (e.g., current price, asset class) in search results for quick verification

#### **2. Simplified Order Type Selection**

- Large, clearly labeled buttons for all valid order types (e.g., Shares, % of Client)
- Color-coded for quick visual differentiation (e.g., blue for some order types, green for some other types)
- Dynamic display of relevant fields based on the selected order type (e.g., showing limit price field only for limit orders)
- Tooltip explanations for each order type to prevent confusion

#### **3. Intuitive Product Selection**

- Similar to order type selection, using large, easy-to-click buttons
- Organized into logical categories for faster navigation
- Ability to set and display frequently used products for each PM, further speeding up the process
- Clear visual indicators for product-specific restrictions or compliance requirements

#### **4. Flexible Size Entry**

- Accepts various formats for order size input, including:
  - Standard numerical input (e.g., 1000000)
  - Abbreviated formats (e.g., 1M for 1 million, 500K for 500 thousand)
  - Percentage of portfolio or specific account holdings (e.g., 5%)
- Real-time conversion and display of entered size in standard format for verification
- Built-in validation to prevent out-of-range or invalid entries

#### **5. Mobile Compatibility**

- Responsive design that adapts to various screen sizes and orientations
- Touch-optimized interface for easy use on smartphones and tablets
- Simplified view for mobile devices, focusing on essential fields for quick order entry
- Push notifications for order status updates and approvals

#### **6. Smart Defaults and Personalization**

- Ability to save and quickly access frequently used order templates
- Intelligent default values based on PM's historical trading patterns
- Customizable interface layout to match individual PM preferences
- Quick-switch between multiple accounts or portfolios

#### **7. Order Summary and Confirmation**

- Concise, clearly formatted summary of the order details before submission
- Option to save draft orders for later completion or approval
- Two-step confirmation process for large or unusual orders to prevent accidental submissions

#### **8. Email Confirmation**

- PMs were sent an email confirmation of the order so that they can validate what they have entered and also have a record of their trade.

#### **9. Unstructured Communication Fallback**

- Integrated free-form text field for situations where structured input is not possible or sufficient
- Allows PMs to communicate intents for securities or order types not yet supported by the tool
- Enables addition of contextual information or special instructions alongside structured data

This unstructured communication fallback feature serves several crucial purposes:

- It prevents users from reverting to email or other external communication methods when faced with limitations in the tool
- It provides flexibility for handling exceptional or complex cases that may not fit the standard order templates
- It allows for a gradual transition from unstructured to structured communication as the tool's capabilities expand

- It captures valuable information about user needs and preferences, informing the tool's ongoing development

These features work in concert to create a tool that not only structures the intent communication process but also enhances the speed and accuracy of order entry. By addressing the specific needs and pain points of PMs, the tool successfully bridges the gap between the flexibility of traditional methods and the precision required in modern portfolio management.

To keep the schema of the order types flexible, we used Elasticsearch as the backend to store the submitted orders. This helped us quickly upgrade and improve the tool, responding to feedback.

### 3.3 User Interface Design

The user interface was designed with a focus on simplicity and speed, mimicking the efficiency of email while providing structure and standardization. The layout prioritized the most frequently used elements, ensuring that PMs could quickly input orders with minimal clicks or keystrokes.

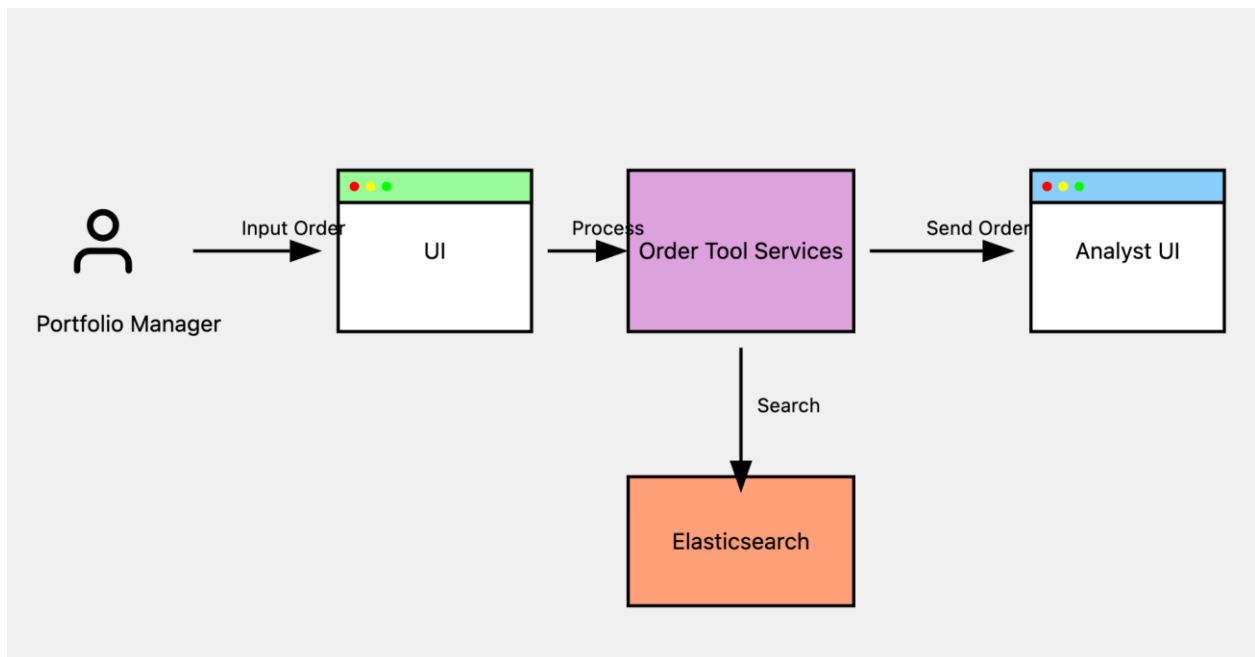


Fig 1. System design of the order tool application

## IV. IMPLEMENTATION AND ADOPTION

### 4.1 Initial Resistance

As with many new tools, there was initial pushback from PMs who were accustomed to the perceived speed and flexibility of email communication. This resistance was primarily based on concerns about reduced efficiency and increased complexity in their workflow.

#### 4.2 Adoption Strategy

To overcome this resistance, the implementation team focused on:

1. Emphasizing the tool's speed and ease of use
2. Providing comprehensive training and support
3. Demonstrating the reduced error rates and improved efficiency
4. Gathering and acting on user feedback for continuous improvement

#### 4.3 Results

Following the implementation and adoption period:

90% of trading intents are now communicated through the structured tool

Trading errors due to miscommunication have been reduced to zero

PMs report satisfaction with the tool's efficiency and ease of use

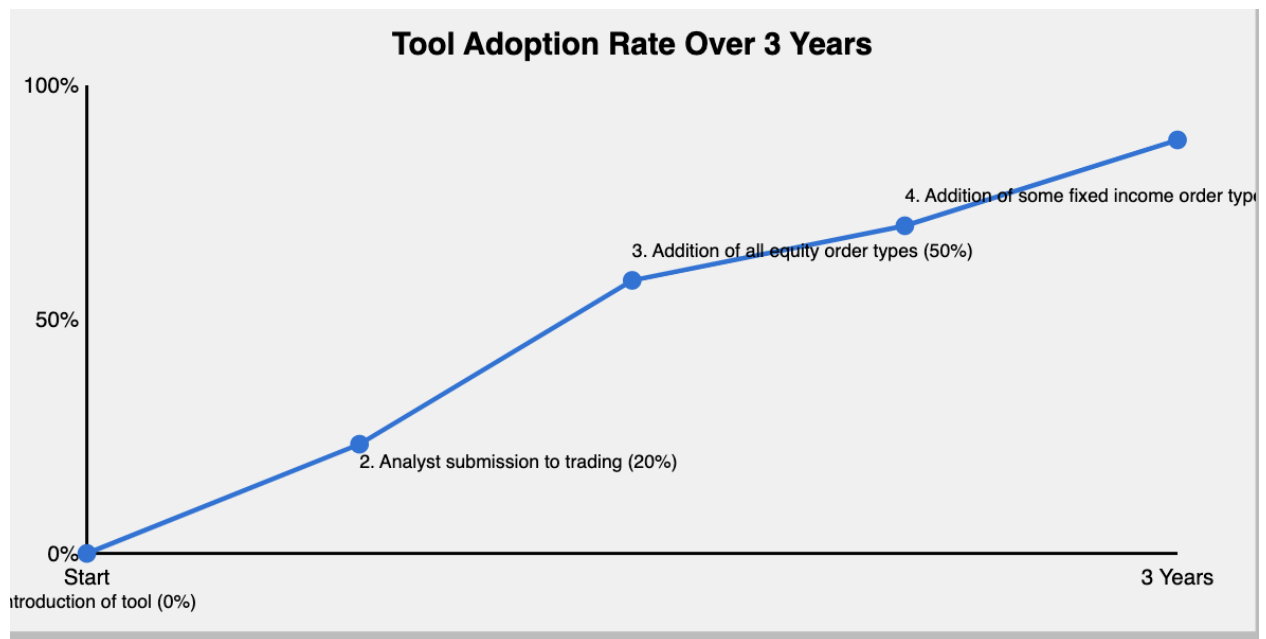


Fig 2: Adoption rate of the tool

## V. DISCUSSION

The success of the structured intent communication tool demonstrates the importance of user-centric design in financial technology. By focusing on the specific needs and workflows of PMs, the tool was able to overcome initial resistance and achieve widespread adoption.

Key factors contributing to the tool's success include:

1. Matching or exceeding the speed of traditional methods
2. Simplifying complex processes (e.g., security selection)

3. Providing flexibility in input methods
4. Ensuring mobile accessibility

The significant reduction in trading errors highlights the value of structured communication in high-stakes financial operations. This case study provides insights that may be applicable to other areas of financial services where clear, accurate communication is crucial.

## **VI. CONCLUSION**

The implementation of a structured intent communication tool in portfolio management demonstrates the potential for targeted technological solutions to significantly reduce operational risks. By carefully considering user needs and workflows, it is possible to develop tools that not only improve accuracy but also gain widespread adoption among users accustomed to traditional methods.

Future research could explore the long-term impacts of such tools on portfolio performance, team dynamics, and regulatory compliance. Additionally, the principles applied in this case study could inform the development of similar tools in other areas of finance and beyond.

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