



# Better Buying

Applying AI to Corporate Purchasing

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Foundry.ai

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## ABOUT THE AUTHORS

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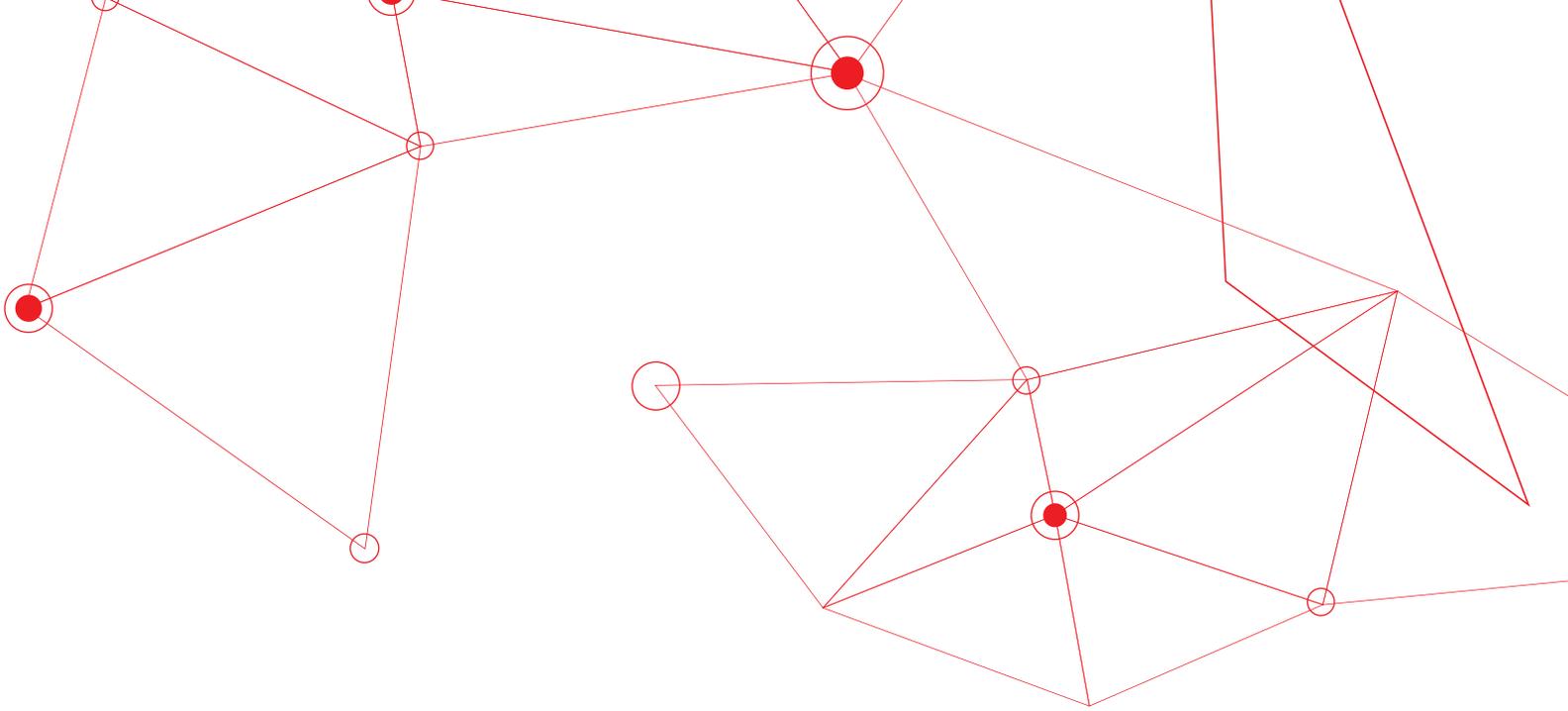
Scott leads Foundry.ai's San Francisco office. Prior to joining Foundry.ai, Scott was co-founder and Managing Director of Applied Predictive Technologies. Previously, Scott sat on the Board of Directors of Oliver Wyman (formerly Mercer Management Consulting), and ran the firm's global Oil, Gas, Chemicals, Pharmaceuticals and Process Industries Consulting Group. Scott received an MBA and an A.B. in Human Biology from Stanford University. He sits on the Board of Directors of the Buena Vista Funds, the William Saroyan Foundation and the San Francisco Zoo.

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Venu is a Vice President at Supplier.ai. Prior to joining Supplier.ai, Venu was at Nike, where he designed and led the integration of Zodiac, an AI startup the firm acquired in 2018. Previously, Venu was a Vice President at Zodiac and a Principal at Applied Predictive Technologies. Venu received a B.S. in Economics, summa cum laude, from the Wharton School at the University of Pennsylvania.



## ABSTRACT

- Tens of millions of dollars per year in profit improvement are available to S&P 500 companies by improving the management of *Non-Strategic Purchases*;
- Achieving these savings by using more people is cost prohibitive;
- Recent advances in Artificial Intelligence have led to the creation of software that can achieve the profit benefits of non-strategic spend management at a fraction of today's human process cost;
- These solutions expand the group of potential suppliers for every transaction and incentivize each player to provide its lowest acceptable bid;
- Implementing an AI system of this nature requires specialized technology, which can be either developed in-house or secured commercially from leading AI software companies;
- Realizing the benefits requires initial user support and ongoing monitoring to ensure the system is used correctly and consistently.

## INTRODUCTION

We at Foundry.ai have met with numerous CEOs and CFOs over the last three years, discussing how Artificial Intelligence software may improve the profitability of their businesses. The purpose of these discussions is to identify opportunities to apply ‘Practical AI’ – software powered by the application of data and math that is designed to statistically improve key business processes and increase profits.

We look for three specific characteristics within business processes that qualify them for potential improvement by Practical AI:



Repeatable decisions that occur at high volume



Decisions that, in aggregate, have high profit leverage



Decisions with large data sets available that are not fully optimized

Many of these executives have described corporate purchasing as an area they believe is rich with opportunity. This has been surprising to us – after all, aren’t corporate purchases evaluated and managed by specialists, both internal and external to the company?

The answer we hear repeatedly is, “Yes, but ... we cannot afford to do it everywhere.” Focused professionals work to reduce the costs of Strategic Purchases, but there are thousands of buys each year that do not justify significant scrutiny from specialists, which we call *Non-Strategic Purchases* (e.g., tail spend, distributed spend, non-core spend, indirect spend).

The characteristics of these *Non-Strategic Purchases* indicate an opportunity to apply Practical AI, for the following reasons:

- They occur at high volume and can make up as much as 90% of all transactions for a typical large enterprise;
- These purchases, in aggregate, sum to an average of about \$2 billion annually per company for the S&P 500. Accordingly, the bottom-line benefits of reducing spend by even a few percentage points can be tens of millions of dollars per year;
- There are numerous relevant data sources that can be integrated to help manage these purchases, both inside and outside the organization.

To better understand the scope and sources of opportunity associated with *Non-Strategic Purchases*, Foundry.ai has analyzed thousands of transactions made by large corporations. This white paper highlights selected results of Foundry.ai's research and describes the implications of using Practical AI software to realize the profit potential of improving *Non-Strategic Purchases*.

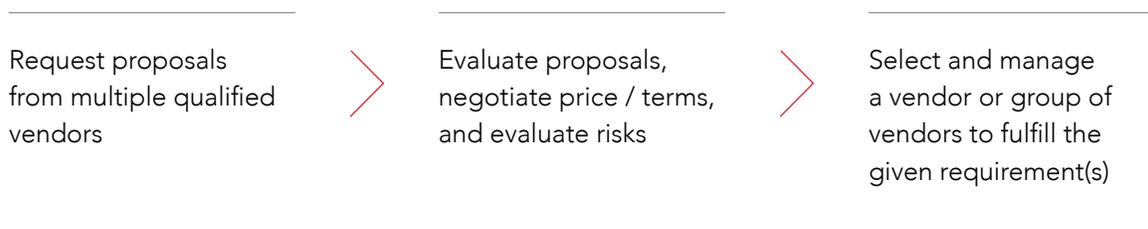
## **CORPORATE PURCHASES: STRATEGIC AND NON-STRATEGIC**

This year, companies in the S&P 500 will spend over \$8 trillion in cash on things that make their enterprises go (excluding people), according to Goldman Sachs Global Investment Research and Foundry.ai analysis. These investments range from raw materials to equipment to advertising to energy to cash used for corporate acquisitions.

Spend efficiency is high-leverage, as any amount saved on a purchase falls directly to the bottom line. Accordingly, all corporations employ a range of professionals

to buy as efficiently as possible, whether it's outside investment bankers, lawyers, ad agencies, contractors, or an internal procurement team. These professionals manage Strategic Purchases, which are characteristically very large transactions (e.g., systems acquisitions, major media campaigns, large capital investments) and/or purchases of goods and services that are critical to the central mission of the company. These transactions generally range from \$1 million to over \$100 million each.

Corporations use an exacting human process to manage their Strategic Purchases once a need is defined. They:



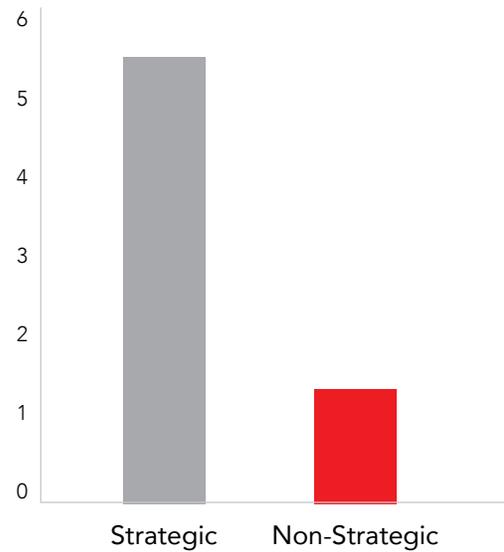
Even a small percentage improvement in price and terms on a large-ticket transaction can result in significant returns on this investment. For example, a purchasing process that costs \$50,000 in time and resources that reduces the cost of a \$10 million expenditure by 10% (and therefore saves \$1 million) is well worth it.

In contrast, many corporate expenditures fall below the threshold required to justify the cost and complexity of significant human evaluation. These *Non-Strategic Purchases* are typically found in diverse areas of the company – operations, supply chain, marketing, and facilities, for example. They are often distributed geographically and managed by employees who are not purchasing experts. These purchases tend to range from \$2,000 to roughly \$1 million each. *Non-Strategic Purchases* comprise up to 90% of all purchase events and about 20% of total spend excluding labor.

*Non-Strategic Purchases* are generally not managed using as rigorous a process as for Strategic Purchases. Foundry.ai research shows that Strategic Purchases typically field over 4x the number of potential suppliers as *Non-Strategic Purchases* (Figure 1).

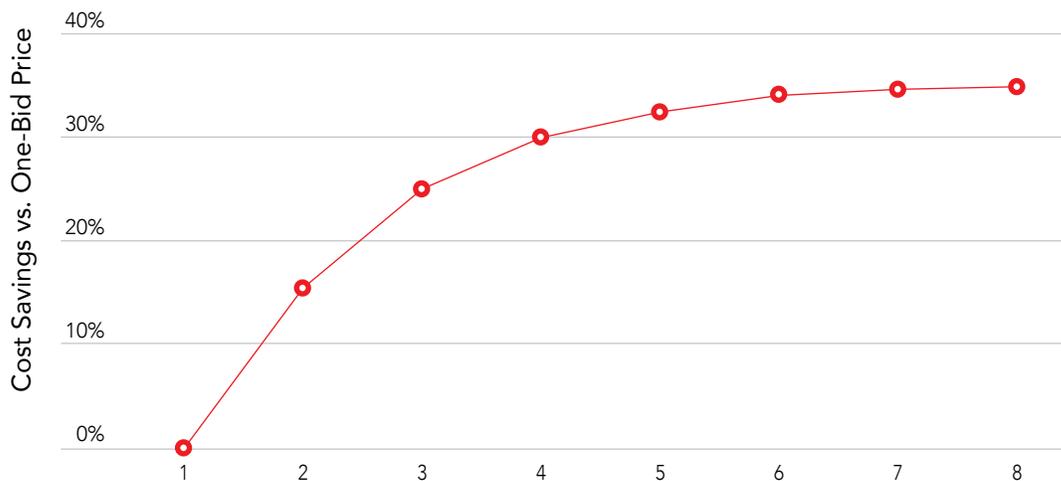
And this difference is more than academic, as the greater the count of suppliers considered, the lower the ultimate price, by a significant margin. Moving from the consideration of one supplier to two results in price reductions of, on average, 15%. Additional savings are realized (at a declining rate) as additional suppliers are considered (Figure 2).

**FIGURE 1**  
Average Number of Potential Suppliers Per Transaction



Source: Foundry.ai research

**FIGURE 2**  
Cost Savings vs. Number of Potential Suppliers

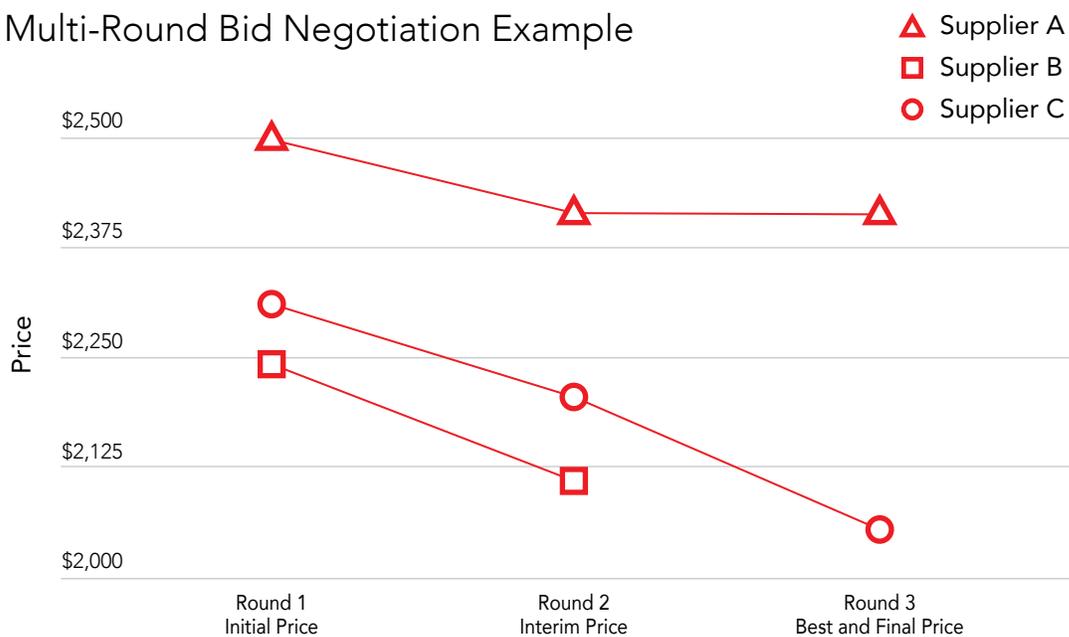


Source: Foundry.ai research

These improvements are realized because adding bidders increases the likelihood of receiving an offer that is lower than the first supplier considered. Additionally, multiple bidders give the purchaser the ability to request the various players to lower their pricing to successfully compete for the sale. This is illustrated in the following analysis of multi-round transactions (Figure 3).

**FIGURE 3**

Multi-Round Bid Negotiation Example



Source: Foundry.ai research, sanitized

But getting the benefit of multiple suppliers and competitive bidding is often cost prohibitive using humans alone. After all, a \$50,000 process that reduces the cost of a \$100,000 purchase by 10% (and therefore saves \$10,000) is not worthwhile.

However, new developments in AI mean that companies can now use technology to leverage people to unlock these savings on *Non-Strategic Purchases*.

## NON-STRATEGIC PURCHASES AND AI

'Artificial Intelligence' (AI) has recently surpassed 'Big Data' as today's leading buzz-phrase. One reason AI is becoming such a focal point is that computing and data management capabilities have recently crossed a threshold where, in many cases, software can do what we humans would do if we had unlimited time, access to complete data, and computational infallibility – at a very low cost. AI is being developed to solve business problems in ways that are simultaneously better, faster, and less expensive than human alternatives.

In the world of corporate purchasing, a combination of natural language processing, machine learning, machine vision, and large scale multi-source data integration is being deployed to power tools that address the challenges of identifying more suppliers and managing the negotiation process.

Specifically, AI software is being constructed to:

1. Ingest a purchase request with specifications (including text and images)
2. Automatically identify a set of relevant suppliers with contact information
3. Generate automated, intelligently-worded digital requests for interest
4. Accept and reply to statements of interest with a formal request for proposal
5. Collect and prioritize incoming bids for management review
6. Respond as appropriate with a negotiating request for best and final bid
7. Provide management with a curated set of final bids for selection
8. Recommend the supplier to be awarded the business

The process works with minimum human interaction and can be executed in a controllable number of days at nearly zero cost (Figure 4).

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**FIGURE 4**  
Sample AI-Driven Purchasing System



To quantify the actual impact of the AI approach for *Non-Strategic Purchases*, Foundry.ai designed a controlled experiment that focused on over one thousand purchasing events for an S&P 500 company.

The total savings generated by bringing additional bidders into the process constituted 3% of total costs, equating to an annual savings company-wide of \$20 million (see Case Study Insert). These significant savings were realized solely by increasing bid density and without the additional discipline of multi-round bid negotiation.

# Case Study: AI-Driven Purchasing

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## TEST DESIGN

Hypothesis:  
Adding qualified bidders to sourcing events will lower costs.

Altered 1,200 spending events:

- Buyers sourced suppliers as usual and send RFQs
- Supplier.ai search tool used to identify and contact additional potential suppliers
- Buyers considered bids from all contacted suppliers

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## MEASURED RESULTS

Savings were defined as those events where:

- An RFQ was sent to a supplier suggested by the search tool, that had not been previously sent by the Buyer
- The newly-identified supplier submitted the low price bid
- The buyer accepted this bid and awarded the contract

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## VALUE CREATED

- An AI-generated bid was selected approximately 25% of the time
- The AI-selected bid was, on average, 11.2% lower than the next lowest bid
- Overall, non-strategic purchase costs declined by 3%
- The overall value observed was approximately \$20MM per year for this organization

## GETTING STARTED

There are two dimensions to successfully implementing an AI system for *Non-Strategic Purchases*:



### Technical

Dedicated AI software is required to support the process. We recommend a cloud-based platform, utilizing data from multiple sources, leveraging expertise in natural language processing, machine learning, machine vision, and large scale cloud-based data integration. We also recommend a tightly focused development plan, with clear economic objectives, designed to realize tangible financial benefits in less than 12 months.

This is a “build vs. buy” decision. Some companies possess the specialized engineering and development resources to design, implement, manage, support, and continuously upgrade homegrown systems. Commercial systems are also available from software companies such as Supplier.ai (a subsidiary of Foundry.ai) that can be implemented quickly and efficiently.

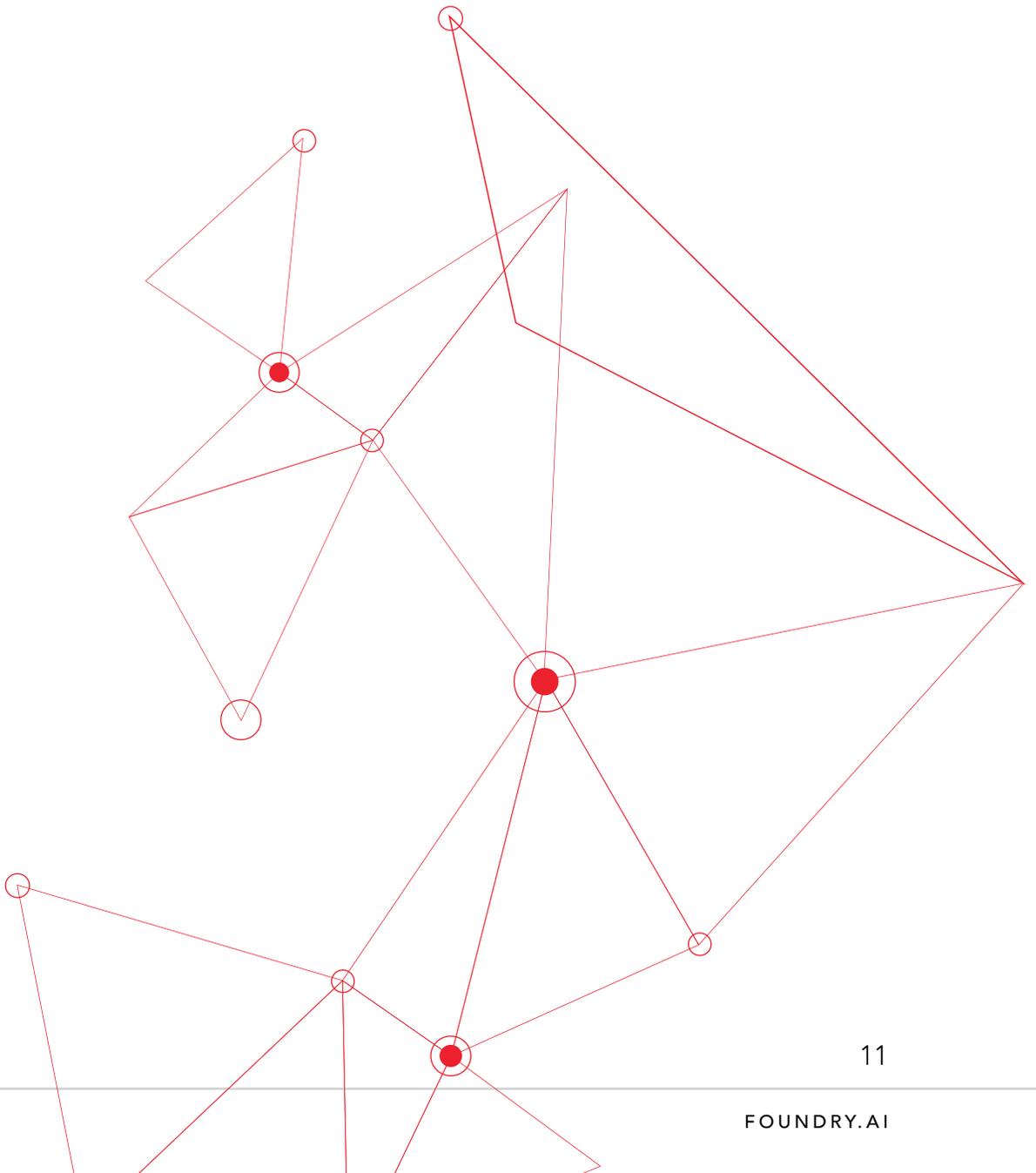


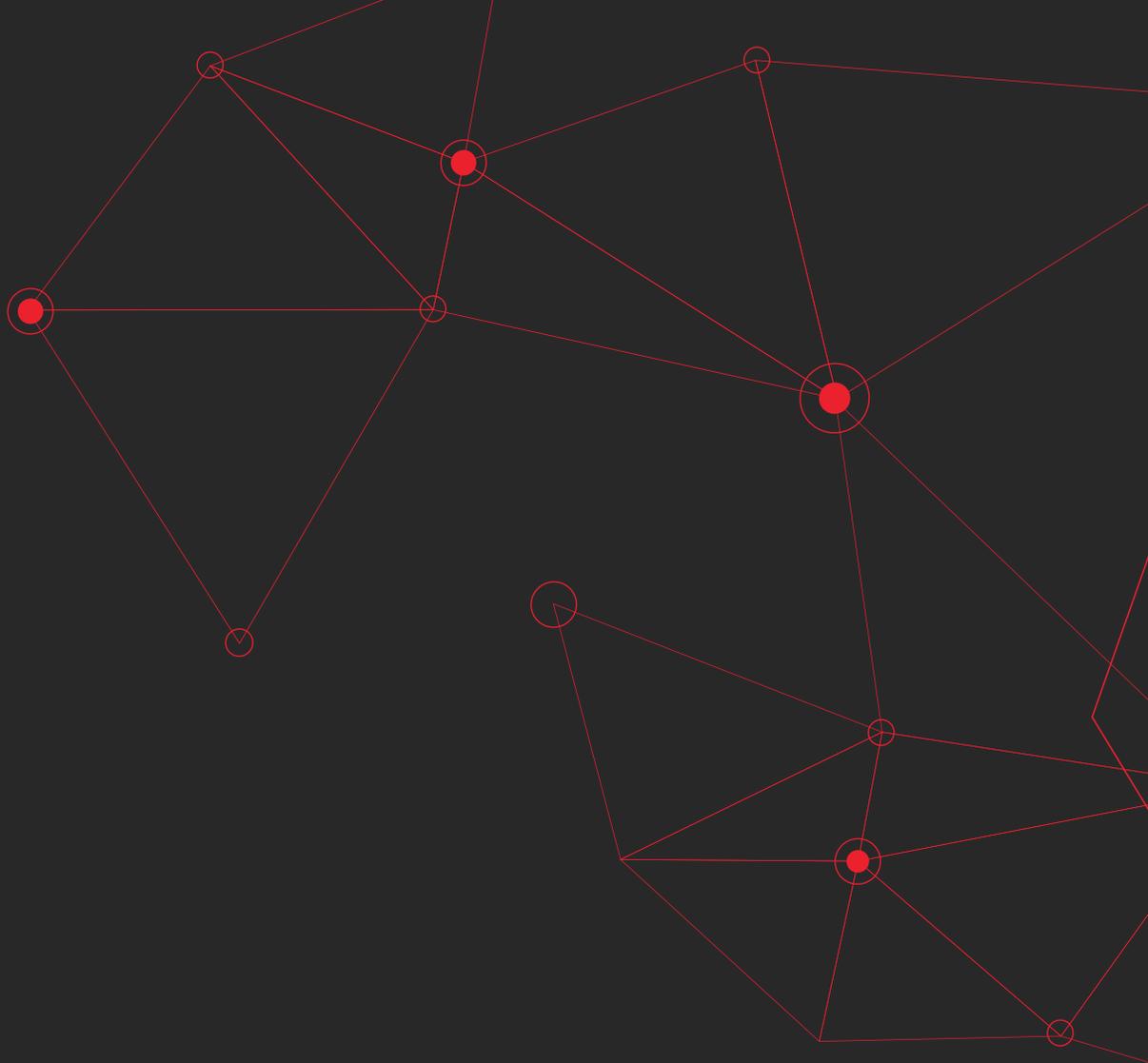
### Process

To realize the available financial improvements, individuals who today are transacting *Non-Strategic Purchases* by hand must change their approaches and use the AI system. Fortunately these tools can be designed to be extremely easy to use. Successful implementation requires targeted training, communication of expectations, and ongoing process checks. (One CFO has enforced usage by indicating that he will refuse to authorize any expense greater than \$2,000 without outreach to at least three potential suppliers.) Financial benefits commence immediately after rollout.

## CONCLUSION

We at Foundry.ai are pleased to be leading the development of AI software addressing the *Non-Strategic Purchasing* opportunity. We are happy to engage in dialog about the opportunity, our work, and possibilities for working together.





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