Private Equity Matchmaker
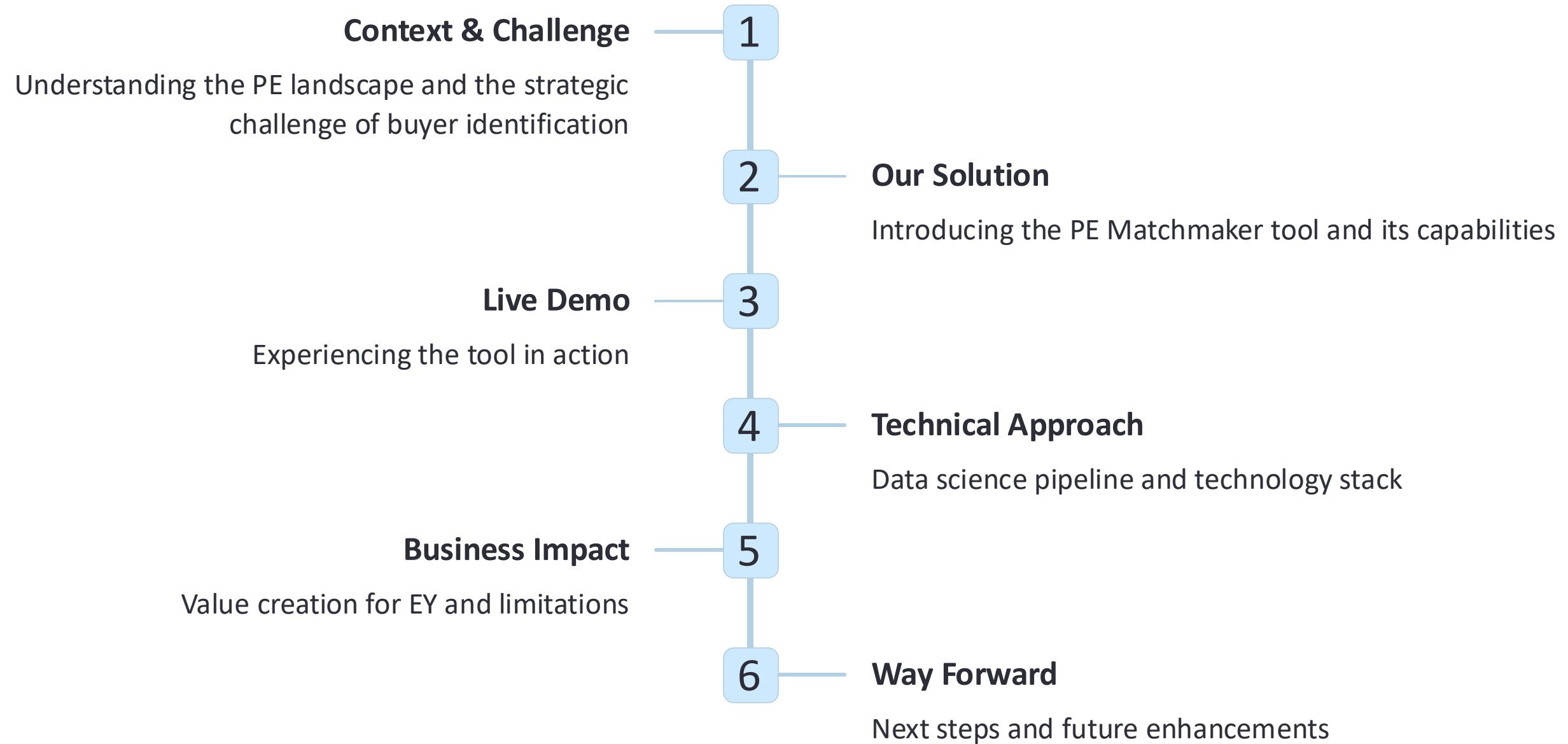
A Predictive Tool for Screening Buyers of Spanish Companies

Master in Business Analytics & Data Science
Capstone Project

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Madrid, Spain

Agenda

Context & Challenge — 1

Understanding the PE landscape and the strategic challenge of buyer identification

2 — **Our Solution**

Introducing the PE Matchmaker tool and its capabilities

Live Demo — 3

Experiencing the tool in action

4 — **Technical Approach**

Data science pipeline and technology stack

Business Impact — 5

Value creation for EY and limitations

6 — **Way Forward**

Next steps and future enhancements

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Industry Context

Private Equity firms face increasing pressure in a competitive landscape:

- **Increased complexity in deal sourcing** due to volatile macroeconomic conditions, tighter credit, and rising competition for high-quality assets.

- **Traditional origination methods** (personal networks, intermediaries, manual screening) are **no longer sufficient** in a fast-moving and fragmented market.

- Firms now need to **evaluate more opportunities** across different sectors and regions, while also considering a growing list of criteria to ensure strategic fit.

- This **complexity slows execution** and **increases the risk** of losing deals to faster competitors.

Business Problem & Opportunity

Resource-Intensive Current Process

EY's **current approach** to PE buyer identification **requires significant resources.** EY typically contacts 15-20 PE firms, conduct 5-6 deep dive calls, create 3 proposals, resulting in 1-2 wins.

Suboptimal Matchmaking Effectiveness

Without data-driven insights into PE investment patterns, EY struggles to efficiently shortlist the most relevant buyers. This leads to **wasted resources on unsuitable prospects** and **missed opportunities** with ideal acquirers who remain unidentified.
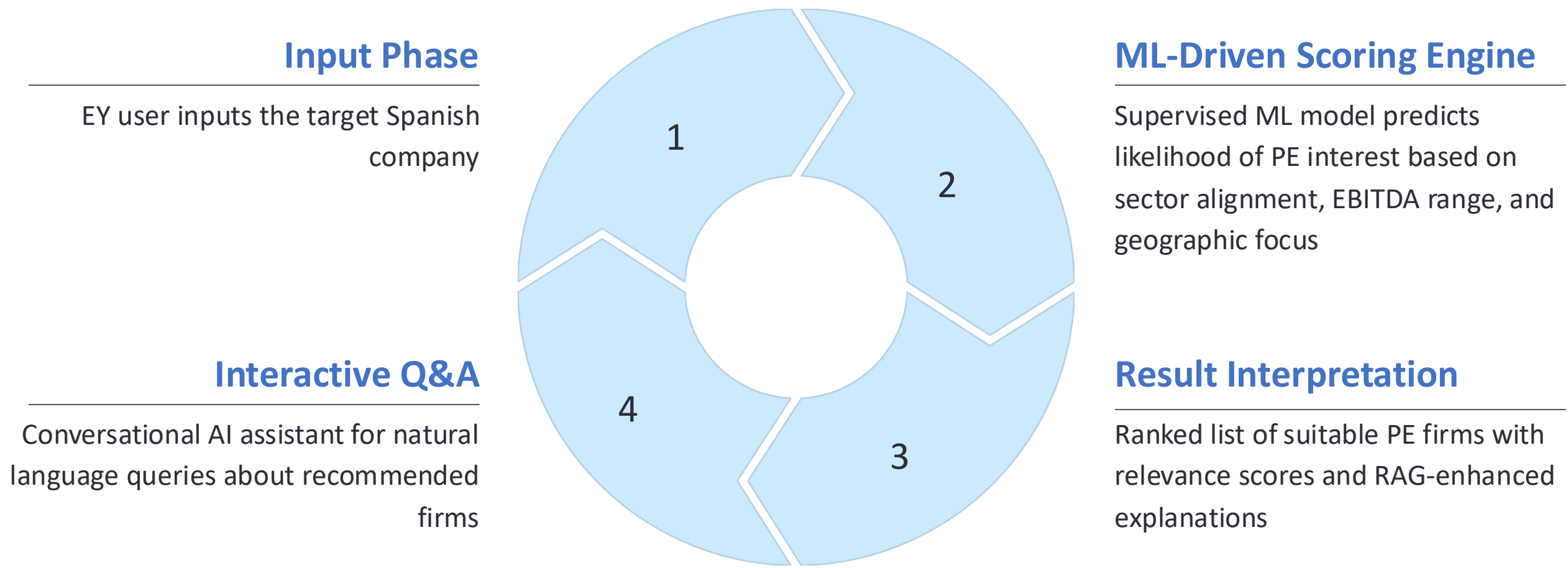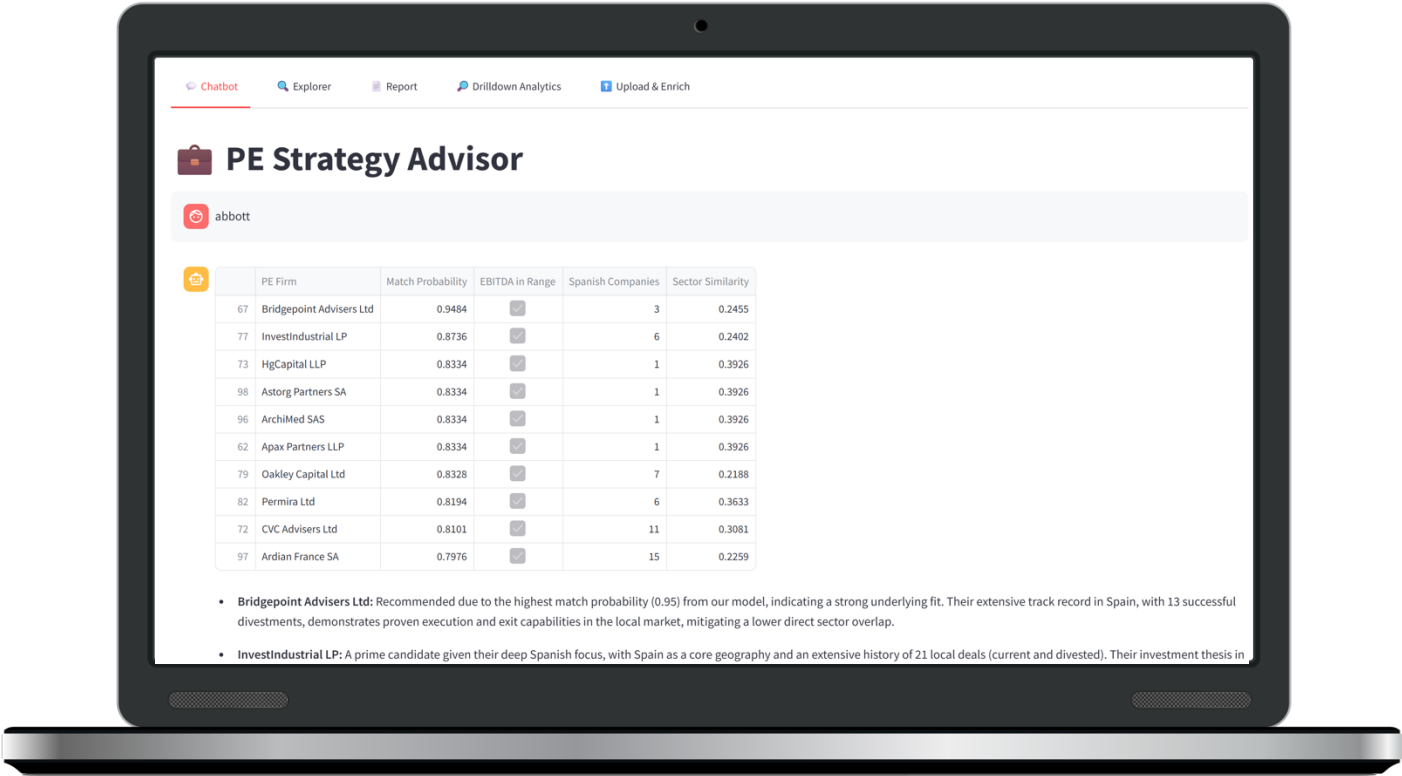
Opportunity for EY to Innovate

By leveraging proprietary data to predict PE firm interest, EY can transform its client service approach - focusing resources on high-probability matches, reducing time-to-close, and **delivering superior outcomes** for our sell-side clients while **improving win rates**.

Our Solution: The PE Matchmaker Tool

A data-driven platform that streamlines how analysts match acquisition targets with the most relevant PE buyers.

Input Phase

EY user inputs the target Spanish company

ML-Driven Scoring Engine

Supervised ML model predicts likelihood of PE interest based on sector alignment, EBITDA range, and geographic focus

Interactive Q&A

Conversational AI assistant for natural language queries about recommended firms

Result Interpretation

Ranked list of suitable PE firms with relevance scores and RAG-enhanced explanations

Demonstrating the Tool

Demo Link: https://mbd-corporateproject-ey-npvtpf4mvfsmhj6hkwcdge.streamlit.app/

Data Science Pipeline designed for Robust Prediction

Data Sources

- **PE Firms:** Profile data including sector focus, geography, and ticket size
- **Portfolio Companies**: Historical investments with company metadata
- **Transactions**: Deal-level records including value, timing, and parties

Key Features

- **EBITDA Range Fit**: Company's EBITDA vs. PE's typical investment size
- **Geographic Presence**: PE's portfolio companies in Spain
- **Sector Matching**: NLP-based similarity between company and PE sectors

Model Performance

Model	Accuracy	F1 Score
CatBoost	**0.88**	**0.89**
Random Forest	0.87	0.87
XGBoost	0.81	0.82

CatBoost was selected as the final model based on superior predictive performance and interpretability.

Application: Large Language Model

LLM for Natural Language Querying

- Gemini 2.5 pro with advanced reasoning capabilities
- LangChain to orchestrate LLM-based workflow
- Grounded with RAG to enrich model with EY private data

Lightweight & Interactive Application

- Streamlit intuitive & interactive web application
- Standalone & lightweight, independent of EY's infrastructure
- Flexible for integration into EY's environment

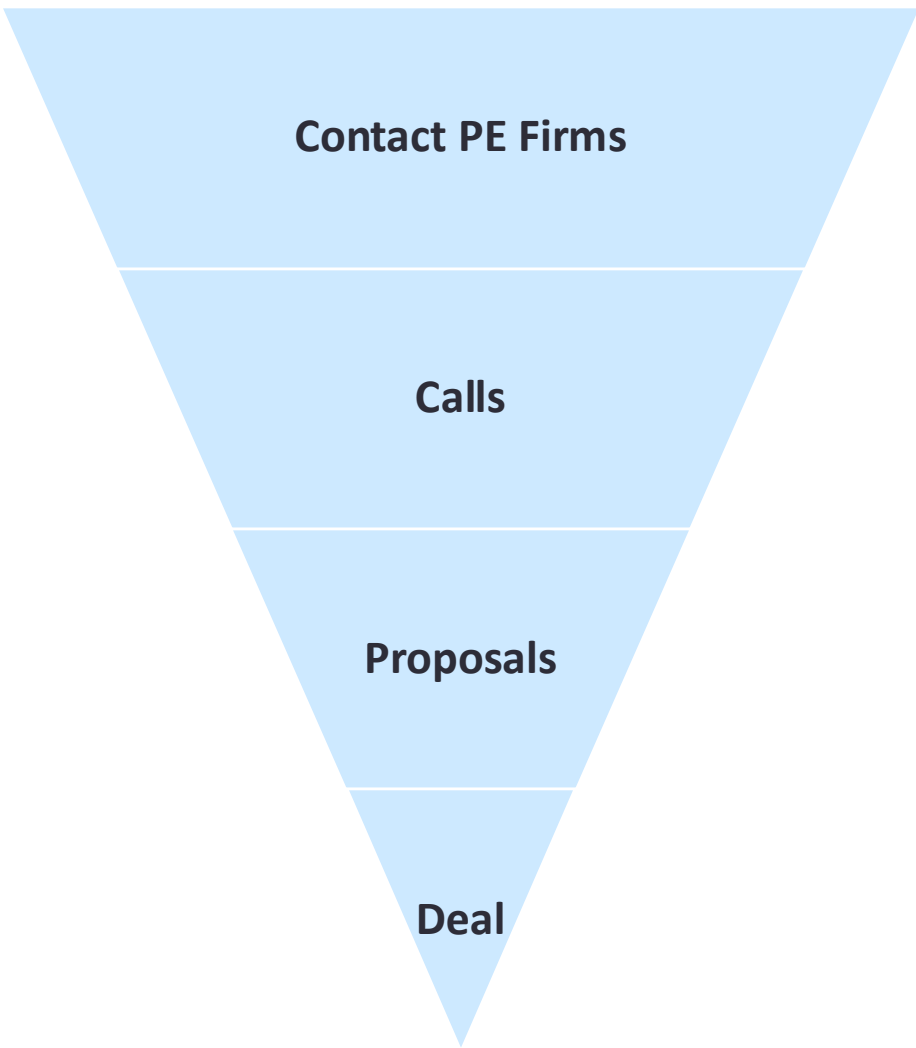# Business Impact alongside Matchmaking Funnel

Manual Matchmaking

15-20 PE firms

5-6 Calls

3 proposals sent

1-2 deals (conversions)

Contact PE Firms

Calls

Proposals

Deal

PE Matchmaker

10 PE firms – algorithmically selected

4-5 Calls – higher relevance

2-3 proposals sent

1-2 deals (conversions)

Business Impact & Value for EY

Strategic Benefits

- Accelerated Deal Timelines through instant, data-driven buyer identification

- Technology-Enabled Differentiation that positions EY as an AI-first M&A advisor

- Improved Match Precision to High-Probability buyers resulting in stronger proposals and higher close rates

- Future-Proof Architecture: Scalable ML + LLM framework unlocks regional expansion and integration into EY's global platforms

Quantifiable Value

10
Hours Saved

Per deal cycle by reducing manual screening efforts

€1,200
Cost Savings

Per deal cycle (10 hours × €120/hour)

€120K
Annual Value

Across 100 projects per year

50%
Effort Reduction

While maintaining business outcomes

Limitations & Considerations

Limited Training Data

- Current dataset restricts generalizability
- More diverse, high-volume data needed to enhance accuracy

Market Volatility

- Sudden strategy shifts or market changes may reduce relevance of predictions
- Periodic updates are essential for maintaining alignment

Model vs Human Judgment

- LLM outputs support - not replace- analyst expertise
- Human insight remains critical in nuanced deal contexts

Unmeasured Relationship Dynamics

- Model lacks visibility into EY's qualitative relationships with PE firms
- Real-world engagement factors are not yet fully represented

Way Forward

Real-Time Data Integration

- Automate updates from EY databases for firm profiles and deal activity
- Ensure continuous learning and reduced manual effort

Scalable Cloud Infrastructure

- Leverage tools like Apache Airflow, Snowflake, or BigQuery
- Ensure secure, version-controlled, and traceable operations

Building a Robust Data Value Chain

- Collect, cleanse, and structure both structured & unstructured data.
- Enable retraining pipelines and centralized access.

Scalable Expansion & Global Readiness

- Extend to new regions and buyer types; integrate into EY's CRM and M&A platforms
- Add macroeconomic signals and multilingual support for global adoption