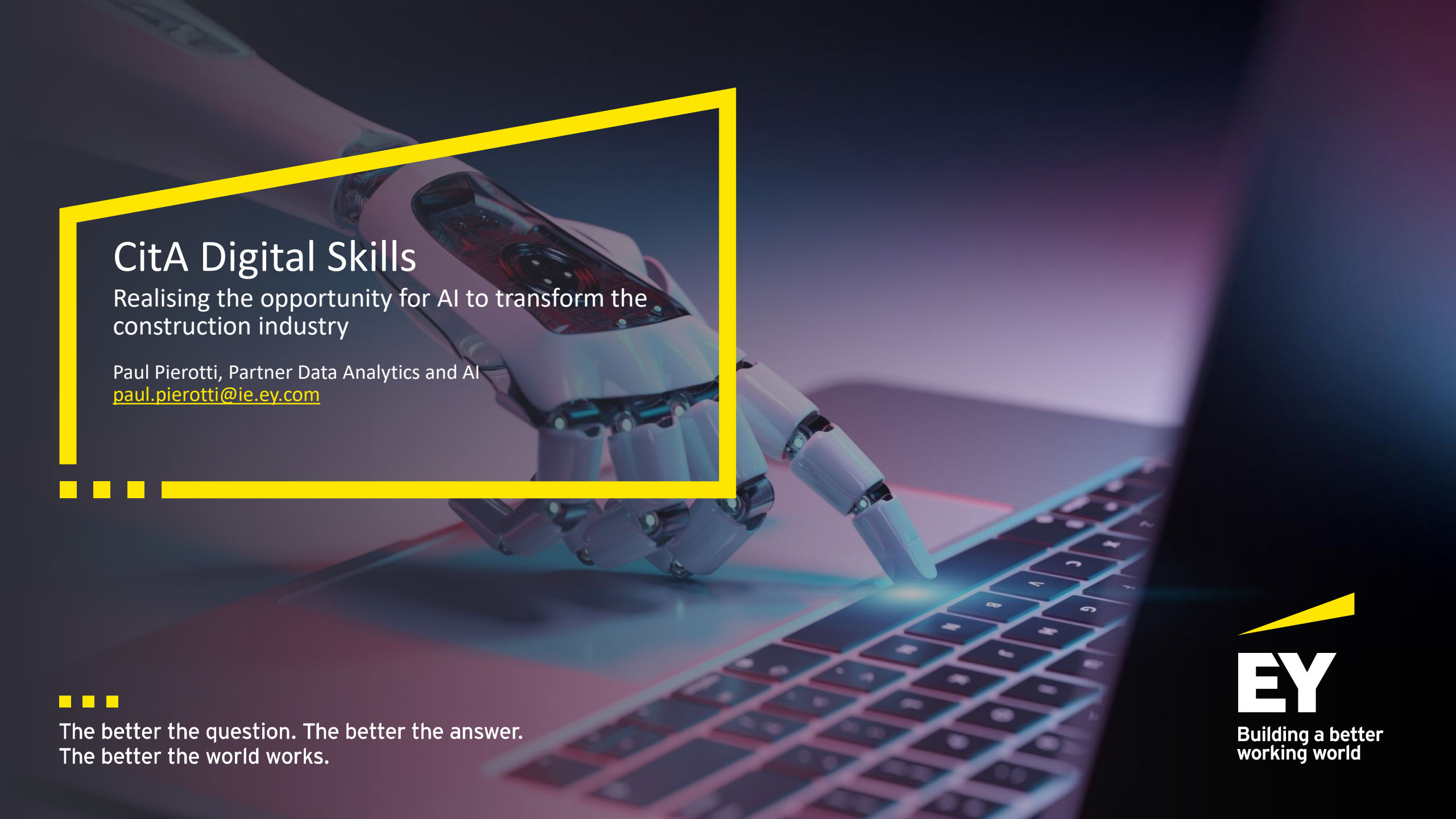


CitA Digital Skills

Realising the opportunity for AI to transform the construction industry

Paul Pierotti, Partner Data Analytics and AI
paul.pierotti@ie.ey.com

The better the question. The better the answer.
The better the world works.

Building a better working world

“

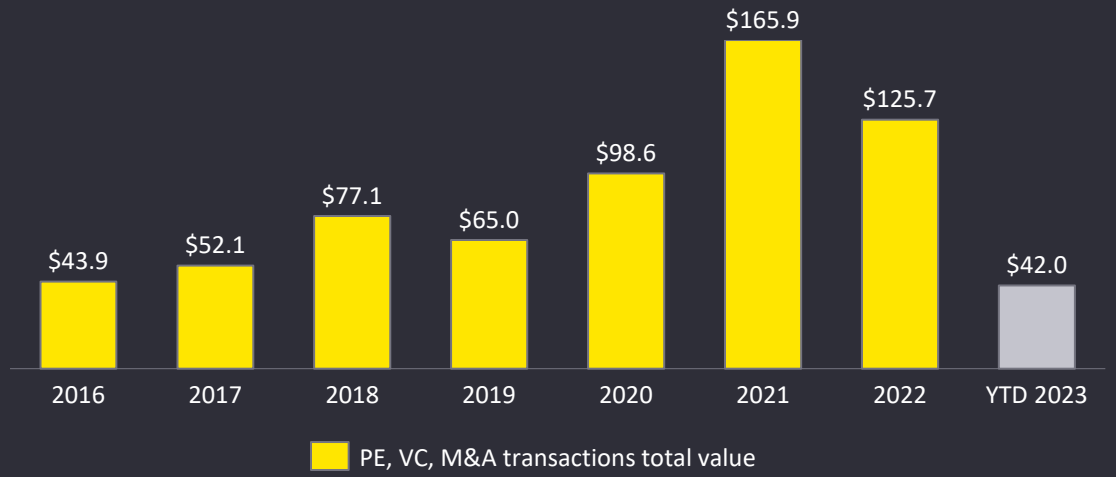
EY’s innovative AI Labs are bringing the EU and US closer, with game changing capabilities for clients in big data, AI, smart automation, VR/AR and advanced analytics.

Paul Pierotti
EY Ireland
Data & Analytics Partner

EY
Building a better working world

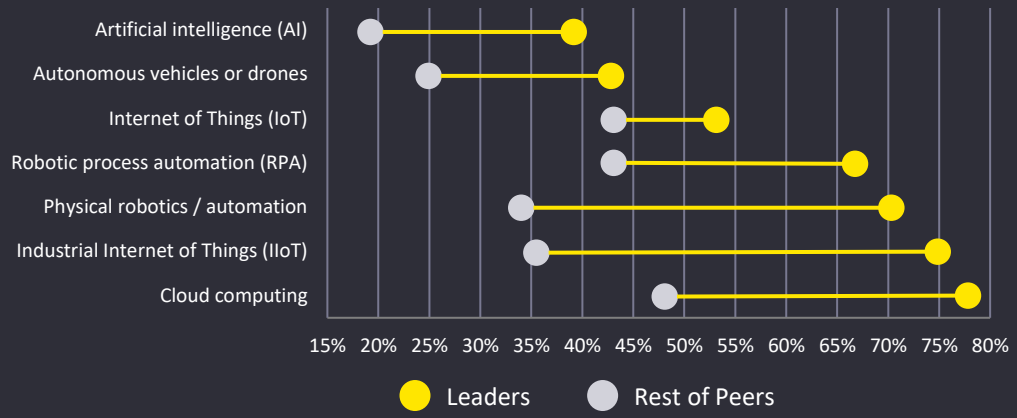
AI provides a unique opportunity for transformation with early adopters positioned for long term gains

AI Investments in millions, 2016-YTD2023



Companies progress of technology investments, 2023

39% of leading companies are reporting full benefit realization of AI, compared to 19% of non-leaders



Key Deals

Mar'22 Microsoft — US$18.8b M&A — NUANCE

Microsoft bought Nuance, a leader in healthcare AI. *"AI is technology's most important priority, and healthcare is its most urgent application,"* said Microsoft CEO Satya Nadella.

Sep'21 Panasonic Group — US$7.1b M&A — BLUE YONDER

Panasonic bought US AI software provider Blue Yonder to combine the company's AI-powered planning, execution and commerce solutions with its sensing technologies and edge devices.

Investment growth drivers

- High adoption of AI (like ChatGPT) by firms & consumers
- Greater focus on data & tech advancement by firms
- A critical component of industries: healthcare, Consumer, automotive, finance
- Process efficiency & cost effectiveness

The potential for using AI for value has accelerated with the introduction of Generative AI

Artificial Intelligence

AI, or artificial intelligence, is a field of computer science that focuses on creating intelligent machines capable of tasks requiring human intelligence.

Machine Learning

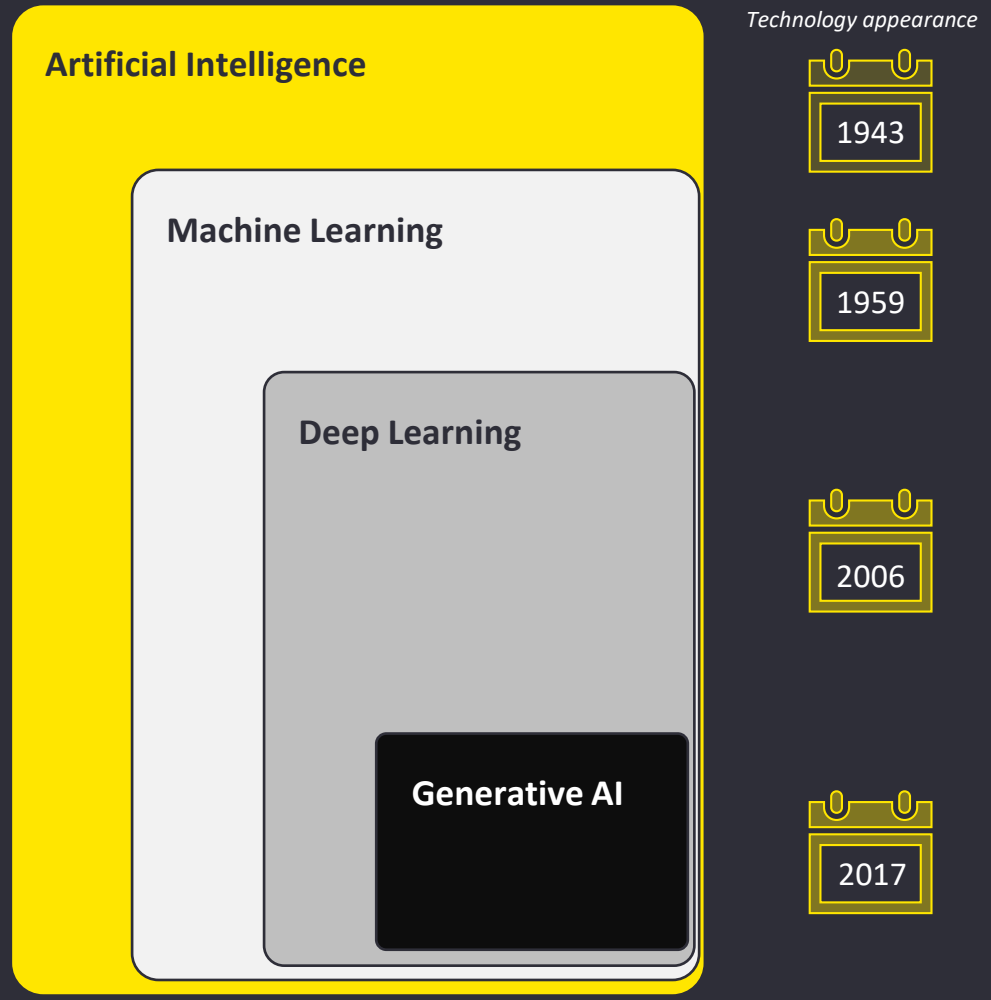
Machine learning is a subfield of artificial intelligence, which is broadly defined as the capability of a machine to imitate intelligent human behaviour.

Deep Learning

Deep learning is a subset of machine learning, which is essentially a neural network with three or more layers.

Generative AI

Generative AI is a type of artificial intelligence that can create new content such as images, text, audio, or video based on the data it has been trained on, using techniques like large language models, transformer neural networks, and generative adversarial networks.



Which are the possibile application domains of GenAI?

IMAGE

Generate photorealistic images based on a text prompt, text-to-face and -sentiment animation

TEXT

Generate human-like conversations, text summaries, slides, spreadsheets and visualisations

SPEECH

Text-to-speech, mimic voice and removal of filler sounds, stuttering, and mouth sounds

VIDEO

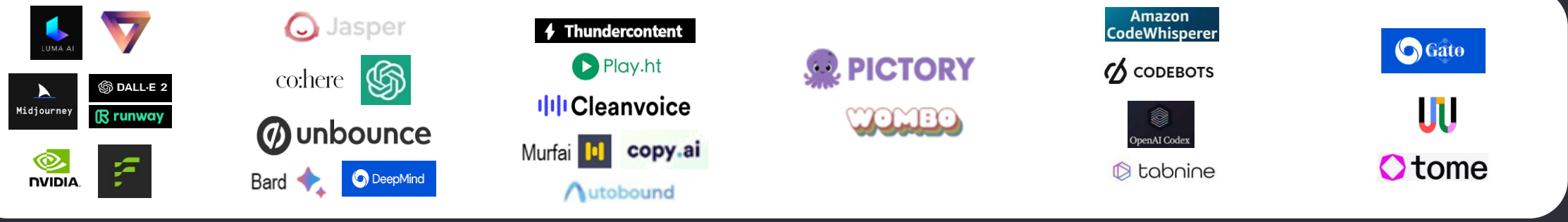
AI-assisted tools can generate videos starting from a photo

CODE

AI-assisted tools write code and provide recommendations to development teams

MULTI

The model learns from a variety of data sources, including images, texts, and speeches



Actors listed here are indicative and not exhaustive

The potential benefits of AI in are significant

Marketing	**45%** increase in targeting accuracy	
Digital & IT	**~30%** Cost Savings	
Sales	**20%** Improved sales reate	**25%** sales force reduction
Procurement	**90%** increased efficiency in vendor selection and	**10%** increase in cost savings

Compliance & Legal	**44%** task automation	
Manufacturing	**10%** Increase in product yield and	**15%** Regulatory cost reduction
Supply Chain	**10%-20%** cost savings	**15%** improved supply chain reliability
Customer Operations	**+30%** cost savings	**0%** Change in customer satisfaction

AI, and especially Generative AI, is transforming the construction value chain

Large infrastructure owners are leveraging AI …

… to address congestion and avoid blockers to decarbonization

PLAN BETTER

Efficient long-term planning

Visibility on future loads in varying decarbonization scenarios to tailor network investment planning

Factoring in EVs impact

Understand the EV charging load on the grid to inform network planning.

BUILD BETTER

Capital project optimization

Predict delays and define best mitigation strategies to reduce costs and revenue loss

Worker safety and productivity

Equip field workers with digital tools and Ai image recognition to enhance safety

OPERATE BETTER

Grid capacity optimization

Increase use of the existing grid infrastructure

Explore grid-tiered storage

Stack value pools and grid services for capacity and frequency regulation

Dynamic Operations Planning

Forecast loads and grid constraints, and simulate operational scenarios for swifter reactions

COLLABORATE BETTER

Shape supply & demand

Provide signals to the ecosystem to enable loads to be located where can best use grid capacity

Enable flexibility Services

Grow availability of flexibility loads in marketplaces and automate congestion management processes to scale

… to improve service levels, reduce opex and capex

MANAGE ASSETS BETTER

Asset maintenance strategies

Detect anomalies, predict asset health index for preventive maintenance, predict maintenance needs of expensive assets and automate work order creation

- Remote line inspection
- Vegetation management

MANAGE OUTAGES BETTER

Outage prediction

Predict weather-inflicted outages and network damages for timely mitigation measures and customer notification

LV Asset data Mapping

Improve data quality on assets and connections to realize the value of infusing forecasts into processes and support real-time grid operations

We innovate SDLC using Advanced AI and smart integration

Azure Devops

GIT

Jira

Confluence

Code Review on your Pull Requests

Optimize Code

Write Unit Tests

Cross-Language Code Conversion

AI Assisted Design & Architecture

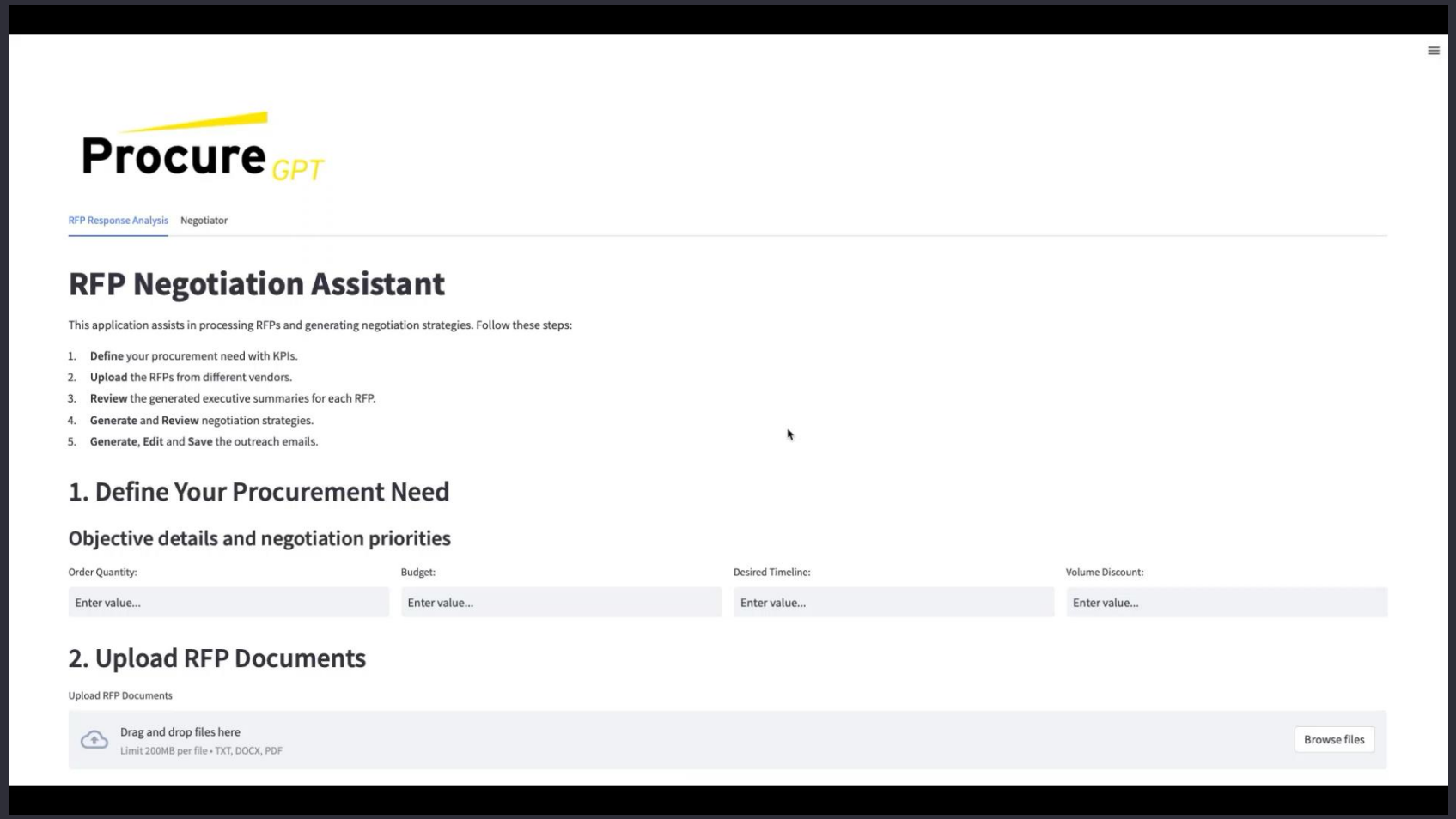
Instant Sequence Diagram Generation

Create User stories on your Favourite Tools,

Real Time AI Interaction

Minutes Of meeting from recordings/transcripts

ProcureGPT | Procurement of the Future



Often more than **60%** of **work effort** in the procurement process is within *Assess & Select* and *Negotiate Price/Terms*.

The Challenge

- Assessing and selecting the right vendor in the procurement process is the most labour extensive task as part of the procurement process and requires organisational knowledge to be efficient.
- Specialist skills which are scarce are key to making the negotiation of prices and terms efficient and get the best possible price and security throughout the rest of the procurement process.

The Solution

- ProcureGPT reads, understands and summarizes RFP responses.
- It develops negotiation strategies for individual vendors to optimise each offer.
- Communications are drafted to execute the negotiation strategies for each vendor.
- ProcureGPT can participate in live negotiation conversations to reach the strategic objectives for each negotiation.

Deploy

Select a Product Category:

Self-Clinching Pins - Type FH, F...

Hole Size in Sheet

0.10

0.09 0.31

P - Nominal Pin Diameter ± .002

0.09

0.07 0.28

L - Length ± .015

0.29

0.25 1.50

H - Height ± .015

0.16

0.15 0.38

Fastener Material

0

Standard Finish

0

Optional Finish

0

Price Prediction for Bespoke Metal Fasteners

Product: Self-Clinching Pins - Type FH, FHS, FHA - Unified

	Fastener Material	Standard Finish	Optional Finish
0	300 Series Stainless Steel	No Finish	Zinc plated per ASTM B633, SC1 (5µm), Type II, yellow
1	Aluminum (Plain Finish)	Passivated and/or tested per ASTM A380	None
2	Heat-Treated Carbon Steel	Zinc plated per ASTM B633, SC1 (5µm), Type III, colorless	None
3	None	None	None

Enter User Inquiry:

Predict

AI Content Review: Control / Quality Assurance Generative AI Demo

Creating an Enterprise AI Strategy - *Developing Strategy and Innovation simultaneously*

Exploratory pathway

Use-case Selection and Technology Roadmap

Technology Analysis

2-6 Focused Short-, Medium-, and Long-term use-cases

Models and acquisition plan, infrastructure, estimated costs and timelines

Strategic pathway

Risk, Governance and Compliance

Organizational Transformation

Policies and procedures, risk report and governance recommendations

GenAI internal adoption strategy and organizational transformation roadmap

Approach built from the learning of delivering actual PoVs