The Future is Now: Google's Vision for Leading in AI
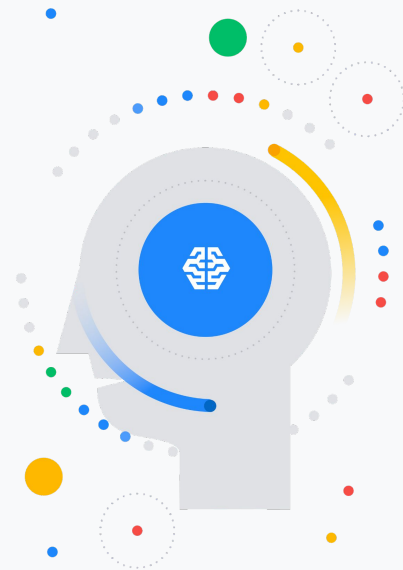
There has never been a time where the cloud can do more for every industry

Telecom
Orange: Putting the edge in cutting-edge connectivity services

Financial Services
BNY Mellon: Helping Transform U.S. Treasury Market Settlement and Clearance Process

Retail
Kroger: Using cutting-edge AI and data analytics to optimize daily work planning and enhance stores for customers

Google Cloud

What's next for cloud?

AI Transformation Era
AI is foundational

Infrastructure Cloud Era
Move to the cloud

VM Cloud Era
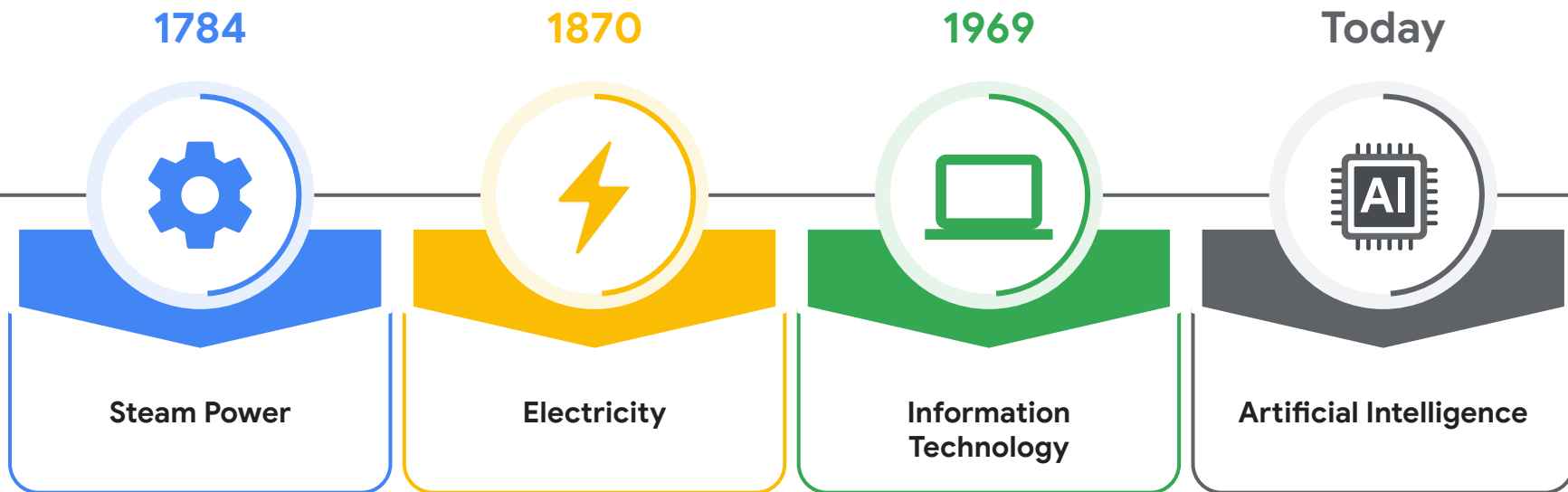Start in the cloud

Google Cloud

Our mission

Accelerate every organization's ability to digitally transform its business and industry

Google Cloud

We're in an AI-driven revolution

1784

1870

1969

Today

Steam Power

Electricity

Information Technology

Artificial Intelligence

Google Cloud

What are large language models?

ML algorithms that can **recognize, predict, and generate** human languages

Pre-trained on petabyte scale text-based datasets resulting in large models with **10s to 100s of billions of parameters**

LLMs are normally **pre-trained on a large corpus of text** followed by fine-tuning on a specific task

LLMs can also be called **Large Models** (includes all types of data modality) and **Generative AI** (a model that produces content)

Go read this huuuuuuge pile of books.

So, you've learned about cats and millions of other concepts ... what's a cat?

A cat is a small, domesticated carnivorous mammal.

Generative language models

LaMDA, PaLM, GPT-3, etc.

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Why are large language models different?

LLMs are characterized by **emergent abilities**, or the ability to perform tasks that were not present in smaller models.

LLMs contextual understanding of human language **changes how we interact** with data and intelligent systems.

LLMs can find patterns and connections in **massive, disparate data corpora.**

Search

Conversation

Content generation

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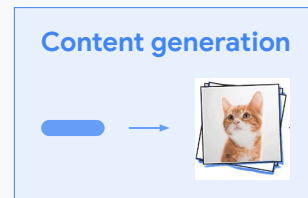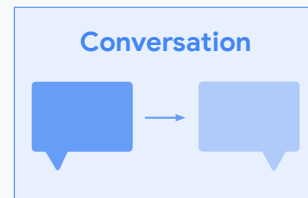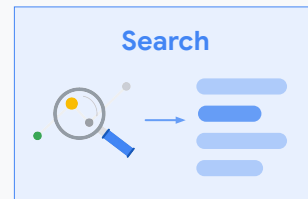
This revolution started at Google and we continue to innovate

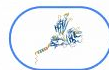| 2017	2018	2019	2020	2021	2022	2023
Transformer	BERT	T5	LaMDA	AlphaFold	PaLM	Bard
Google invents Transformer kickstarting LLM revolution	Google's groundbreaking large language model, BERT	Text-to-Text Transfer Transformer LLM 10B P model open sourced	Google LaMDA model trained to converse	AlphaFold predicts structures of all known proteins	Industry leading large language model	A conversational AI Service powered by LaMDA.

Responsible AI at the foundation

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The **5 key questions** customers are asking

1. Are we partnering with the right technology providers who will position us for success today and in the future? →

2. How do we make AI accessible to everyone in our organization? →

3. Do we have the best technology infrastructure to build scalable systems that work better together through an open ecosystem? →

4. Are we using the best tools to boost productivity of our employees to leverage AI-powered tools and workflows? →

5. Are we confident that our data, which is our ultimate differentiator is protected and secure as we leverage new AI tools? →

Generative AI is driving new opportunities

Operational efficiencies, cost savings, and value creation

Complex data, intuitively accessible

Improve time-to-value to search, navigate, and extract insights and understanding from large amounts of complex data

Analyst

Online interactions made conversational

Improve customer experience, reaching larger client bases by making online interactions more natural, conversational, and rewarding

Customer Service

Content generation at the click of a button

Generate text, code, image, video, or music quickly and multi-modally, speeding up every business process and **maximizing employee productivity**

Creative

Customize Foundational models

Customize large models and incorporate state of the art generative capabilities natively into **your own internal ML operational platforms**

AI Practitioner

Google Cloud

Consumers & enterprises have different needs....

Consumers

- Plan a 3 day trip to Patagonia
- Create a valentine poem.
- How to make GF pancakes?
- A picture of a panda playing yahtzee
- I want to write a novel. How do I get started?
- Create a jazz song for a bday card

Bard + MakerSuite

Google

Enterprises

- How do we **control our data**
- How do we deal with **fraud & security**
- We need to be **accurate & explainable**
- How will we **control costs**?
- How do we integrate our existing **data & applications**

Vertex AI + Duet AI

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Google Cloud AI Portfolio

Vertical Solutions

Duet AI for Google Workspace

Duet AI for Google Cloud

Generative AI App Builder

Conversation AI

Enterprise Search

Vertex AI
End-to-End ML Platform

Foundation Models

Text

Chat

Code

Video

Image

Audio and Music

Google Cloud Infrastructure - GPUs/TPUs

Broad Ecosystem of Partners
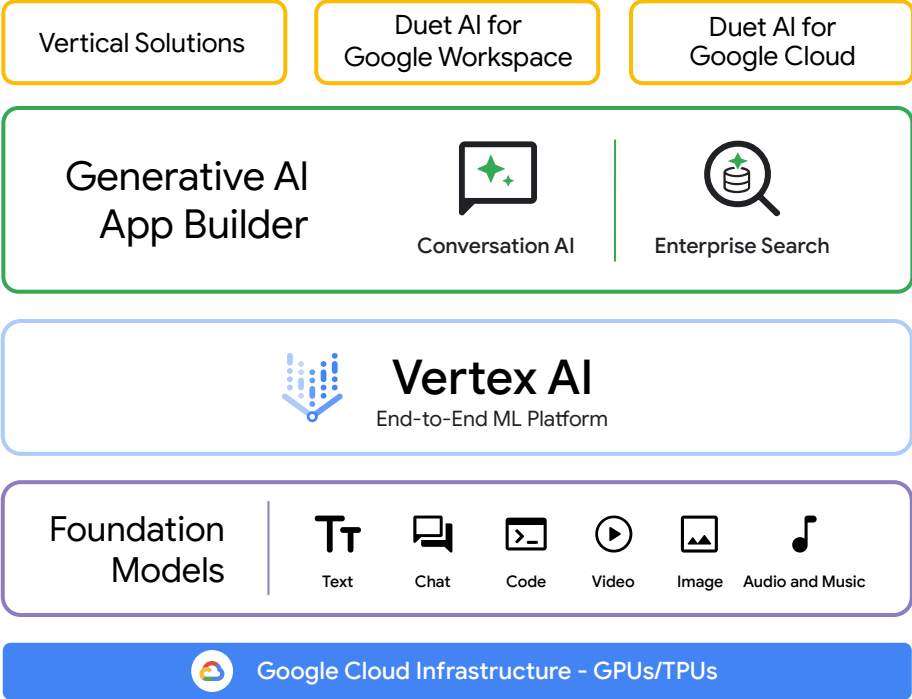
Leveraging Google's AI technology to transform the entire restaurant experience

Wendy's is working with Google Cloud on a groundbreaking AI solution, Wendy's FreshAI, designed to revolutionize the quick service restaurant industry

The technology is transforming Wendy's drive-thru food ordering experience with Google Cloud's generative AI and LLMs — with the ability to discern the billions of possible order combinations on the Wendy's menu

In June, Wendy's plans to launch its first pilot of the technology in a Columbus, Ohio-area restaurant, before expanding to more drive-thru locations

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02

Are we **bringing our data together** and applying the **latest AI** and the best tools to innovate?

Google Cloud

The ability to access & act on data insights is vital. But a data-to-value gap still exists.

76%

Of leaders say the ability to access and analyze data in real time plays a vital role in business performance.

Yet only a third

Of leaders say they actually have mature, real-time data access and analytics capabilities.

We help teams innovate faster using data and AI in ways that were previously unimaginable.

Google Cloud

Data & AI
Cloud

Lifepoint Health

Cut health claims processing times by 50% using Myndshift running in Google Cloud, accelerating patient care and reducing physician burnout

The current prior authorization process for treatment takes 10 days on average, contributing to delays in patient care and is a leading source of physician burnout

Lifepoint Health used Google Cloud Healthcare Data Engine to create new digital solutions and care models across its more than 60 acute care facilities

Saw a 50% reduction in time to process prior authorization using Myndshift running in Google Cloud, with a clear path to 80% reduction
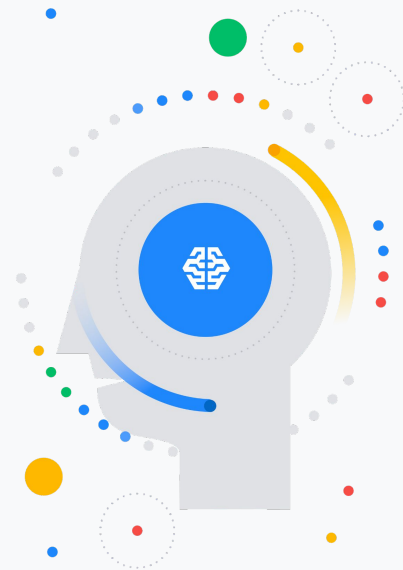
Google Cloud

Industry outlook:

A paradigm shift powered by Gen AI

🖥 Technology	▶ Media & Telecom	🏪 Consumer & Retail	✚ Life Sciences & Healthcare	🏛 Banking & Fin. Services	🏭 Industrial & Manufacturing	🏢 Government & Public Sector
Personalized AR/VR experience generation	Enhanced personalized experiences and expanded content monetization opportunities	Conversational eCommerce & Retail	AR/VR Content Generation for Digital Therapy	Fraud Simulation & Pattern Detection	Generative AR/VR Product design	Academic 24/7 Office Hours Virtual Assistant
Personalized & Automated UI/UX Design	Trailer Generation & Feedback Curation	Customized Product Design & Recommendation	Predictive & Virtual Patient Triage	Tax and Compliance Audit & Scenario Testing	Generative Simulation & Safety Testing	Infrastructure Mapping & Planning
Synthetic Outage / Threat Simulation for Testing	Script/Score Design & Subtitle Generation	Product Details & Photography Generation	Protein Sequence Modeling for Drug Discovery	Personalized Virtual Financial Advisor	Text-to-Simulation Product Design & Development	Predictive Policing & Emergency Response

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What's new with Google Cloud and SAP?

- **SAP/Google Partnership and co-innovation**
  - [Better Together](#) - Extend SAP data with Google Analytics and AI
  - [BTP Partnership](#) - Leverage Google Services with SAP Data using BTP
  - [ABAP SDK for Google Cloud](#) - a Google Cloud product that allows for real-time, bi-directional integration between SAP applications and Google Cloud services

- **Alphabet runs SAP**
  - **Alphabet** - Google runs a single instance of S/4 globally - migrated **from Oracle**
  - **AI Innovation** - Google enhances SAP with AI functionality
  - **Cortex** - Out of the Box business content for reporting and analytics: the data foundation for enterprise AI

Alphabet – An SAP Reference

⚙ Alphabet's SAP

- Shifted from Oracle to SAP - a trigger for a more comprehensive process change 2020

- 94% **Out-of-the box** SAP functionality

- Single SAP instance for all Finance and partner business units
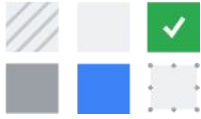
- AI enhanced Financial Use Cases

Ruth Porat, Alphabet CFO

*"Within 3 years, we will have even more useful and accurate data
at our fingertips and the processes and technology
to maximize business velocity and growth."*

Alphabet Early investments are showing tangible results

Duplicate Invoice Detection

AI classification model predicts the likelihood of an invoice being a duplicate

$Ms Historical annual duplicate invoice amount

$Ms Incremental duplicates identified

Document Content Extraction

OCR and NLP models are used to extract Unstructured Data from millions of documents

3 Use Cases MVPs under development for 3 differentiated use cases

>Ms docs / year Opportunity to programmatically parse documents and automate processes

Forecasting

Time series Cash Forecasting models are enabling incremental investment yield to be achieved
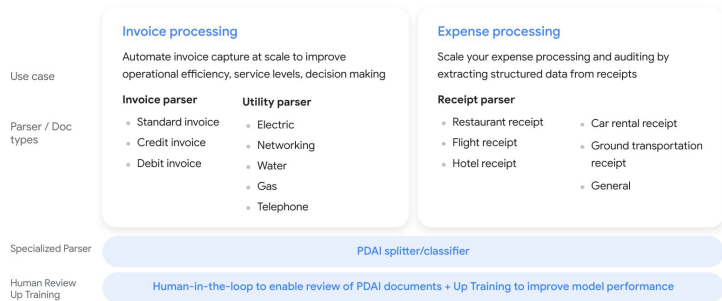
30-60-90 day forecast Launched in September 2023
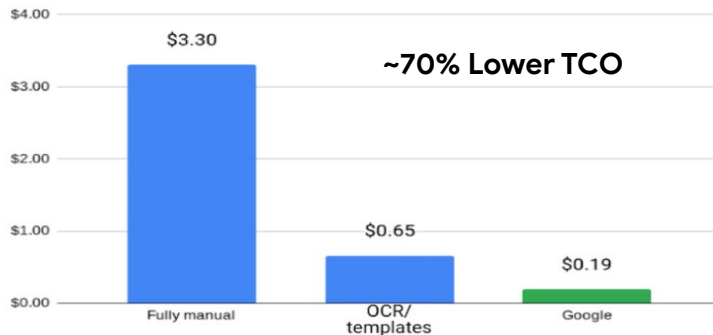
~$Ms
Scaled potential Once scaled the potential annual interest income is significant

Alphabet - Procurement DocAI Delivers 90% + Accuracy

Procurement DocAI (PDAI) can process and extract data from invoices and expenses

	Invoice processing		Expense processing	
Use case	Automate invoice capture at scale to improve operational efficiency, service levels, decision making		Scale your expense processing and auditing by extracting structured data from receipts	
Parser / Doc types	**Invoice parser**	**Utility parser**	**Receipt parser**	
	• Standard invoice	• Electric	• Restaurant receipt	• Car rental receipt
	• Credit invoice	• Networking	• Flight receipt	• Ground transportation receipt
	• Debit invoice	• Water	• Hotel receipt	
		• Gas		• General
		• Telephone		
Specialized Parser	PDAI splitter/classifier			
Human Review Up Training	Human-in-the-loop to enable review of PDAI documents + Up Training to improve model performance			

1 Specialty DocAI pre-processes, splits & classifies documents
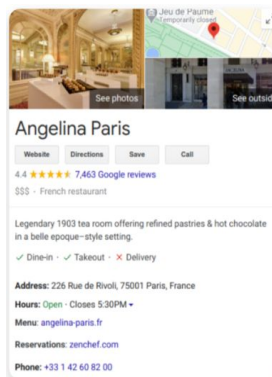
2 Specialty DocAI extracts key information with best-in-class accuracy

3 Specialty DocAI standardizes data and enriches it with additional business & product details

4 As needed: Human review interface to ensure accuracy + use Up Training to increase Accuracy

Avg. processing cost per doc

~70% Lower TCO

- Fully manual: $3.30
- OCR/templates: $0.65
- Google: $0.19

Three names appear on the receipt —which is the restaurant name?

Angelina
Angelina Paris
Angelina Rivoli

Google validates data using Knowledge Graph, checking company names, addresses, phone, logos, and other details against entities on the Internet

Angelina Paris
4.4 ★★★★★ 7,463 Google reviews
$$$ · French restaurant

Legendary 1903 tea room offering refined pastries & hot chocolate in a belle epoque–style setting.

✓ Dine-in · ✓ Takeout · ✗ Delivery

Address: 226 Rue de Rivoli, 75001 Paris, France
Hours: Open · Closes 5:30PM ▾
Menu: angelina-paris.fr
Reservations: zenchef.com
Phone: +33 1 42 60 82 00

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"Let's do something amazing together"