

Generative AI & Banks –
Future, Farce, or Figment

Presentation to the Safra Institute for
banking and financial Intermediation

July 23rd, 2023



Today's speakers



Shally Tshuva

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Monitor-Deloitte
FSI industry leader
for Deloitte Israel



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Partner

Deloitte Chief Data Scientist,
Deloitte Israel

A.I. Generated





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02 Can we benefit from Generative AI?

03 Should we fear Generative AI?

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Everyone is talking about Generative AI...

Will ChatGPT and similar generative AI tools worsen China's job crisis? Country's employment landscape faces sweeping disruption

WINDOWS INTO THE FUTURE
By Rob Enderle, Contributor, Computerworld | JUN 22, 2023 5:49 AM PDT

OPINION

The coming productivity disruption of generative AI

Chatter about generative AI is seemingly everywhere these days, and seemingly overhyped. What if everyone is actually underestimating the changes barreling to us?

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ChatGPT may be coming for our jobs. Here are the 10 roles that AI is most likely to replace.

ChatGPT and AI Disruption: Is Consulting Next in Line?

Philip M. Parker, INSEAD

26 Jun 2023

tomorrow belongs to those who embrace it today

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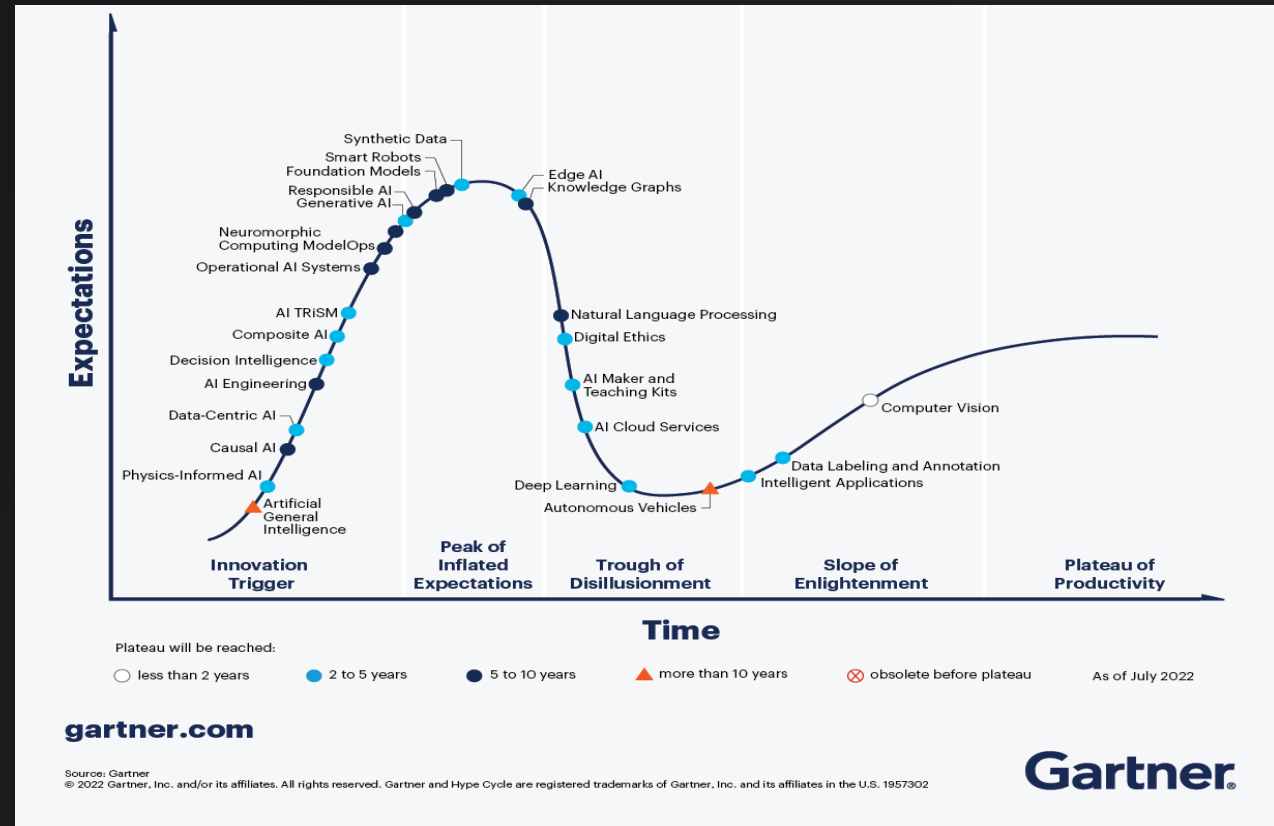
Just how big is this new generative AI? Think internet-level disruption

I've worked in tech since the '80s. This is why ChatGPT terrifies me.

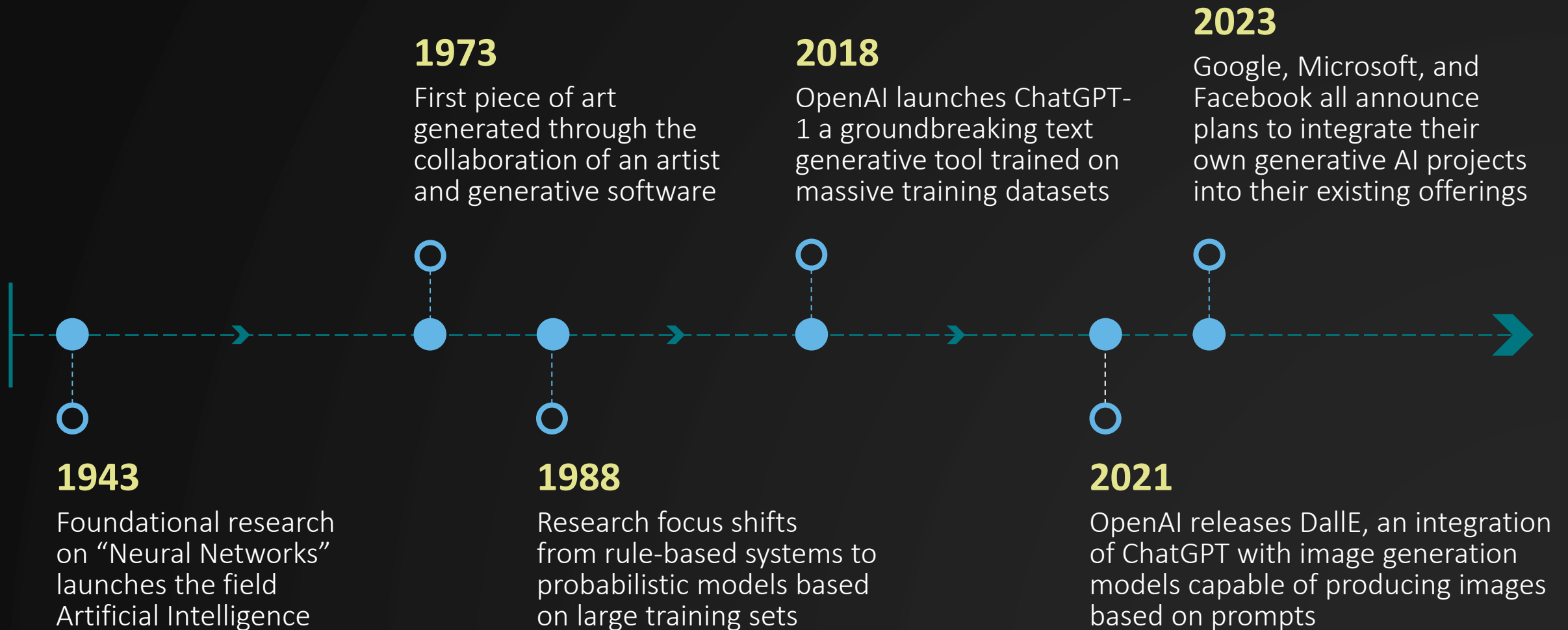
Based on headlines, Generative AI is going to have unprecedented impact across the global job market

...but that might just be hype

We are currently near the top of generative AI's hype cycle



Generative AI is truly an evolution of AI capabilities rather than a revolution



What is Gen AI?



It is an analytical algorithm - Generative AI refers to a class of artificial intelligence techniques that aim to generate new, original content such as images, music, text, or even videos.



It learns from history - It involves training a model on a dataset and then using that model to generate new data that resembles the examples it was trained on.

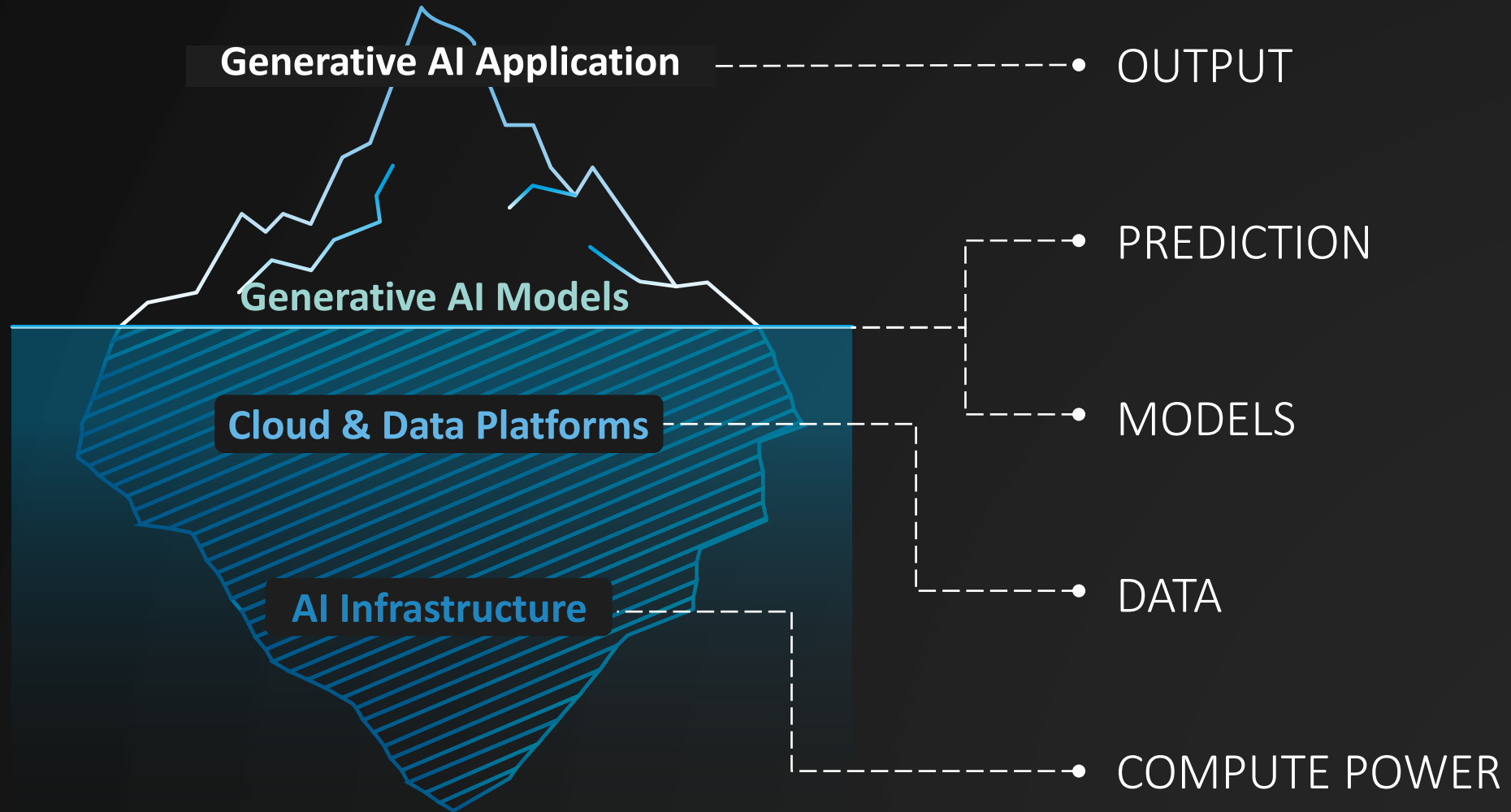


It mimics what it learned - Generative AI models are typically based on deep learning techniques. These models learn patterns and structures in the training data and can then generate new samples by sampling from the learned distribution.

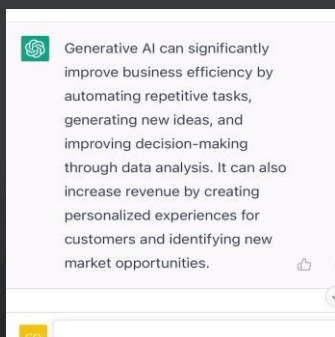


It improves over time - Through an adversarial training process, the generator gradually improves its ability to produce more convincing outputs.

The Mechanics of Generative AI: A Simplified View



So, what is Generative AI used for?



Text

Prompt: Explain my colleagues the business impact of generative AI in 50 words



Image

Prompt: A bowl of soup that is a portal to another dimension as digital art

```
import pandas as pd
from sklearn.linear_model import LogisticRegression
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score

# Load the dataset
data = pd.read_csv("customer_data.csv")

# Split the data into input features (X) and target variable (y)
X = data[["age", "income", "num_products"]]
y = data["conversion"]

# Split the data into training and test sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

# Create a logistic regression model
model = LogisticRegression()
```

Code

Prompt: In python, code a program that predicts the likelihood of customer conversion



Video

Prompt: A teddy bear painting a portrait

Set	Intensity	Speech Rate	Volume
Anger	0	1	1
Fear	0	1	1
Happy	0	1	1
Sadness	0	1	1
Surprise	0	1	1

Audio

Prompt: Play 'we have to reduce the number of plastic bags' in a sleepy tone

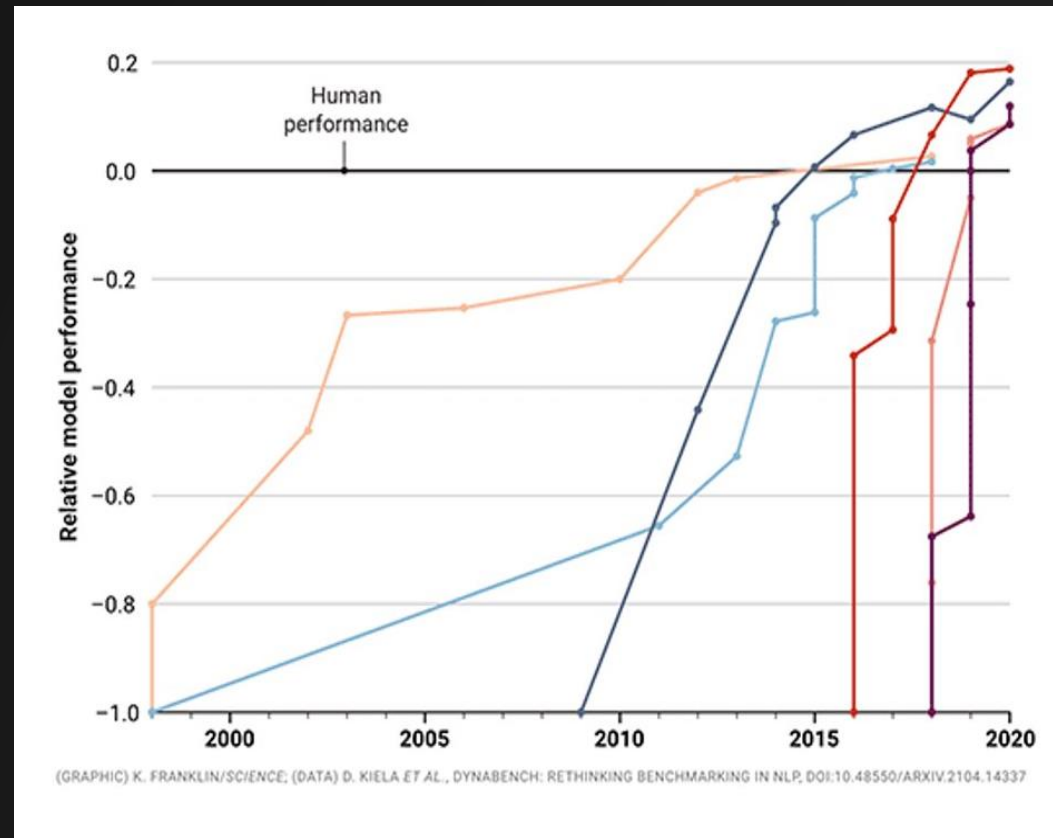
Gen AI models' capabilities reaching human-level make them relevant to commercial applications

Quick learners

The speed at which artificial intelligence models after benchmark and surpass human baselines is accelerating. But they often fall short in the real world.

Benchmarks

- **MNIST** (handwritten recognition)
- **Switchboard** (speech recognition)
- **ImageNet** (image recognition)
- **SQuAD 1.1** (reading comprehension)
- **SQuAD 2.0** (reading comprehension)
- **GLUE** (language understanding)



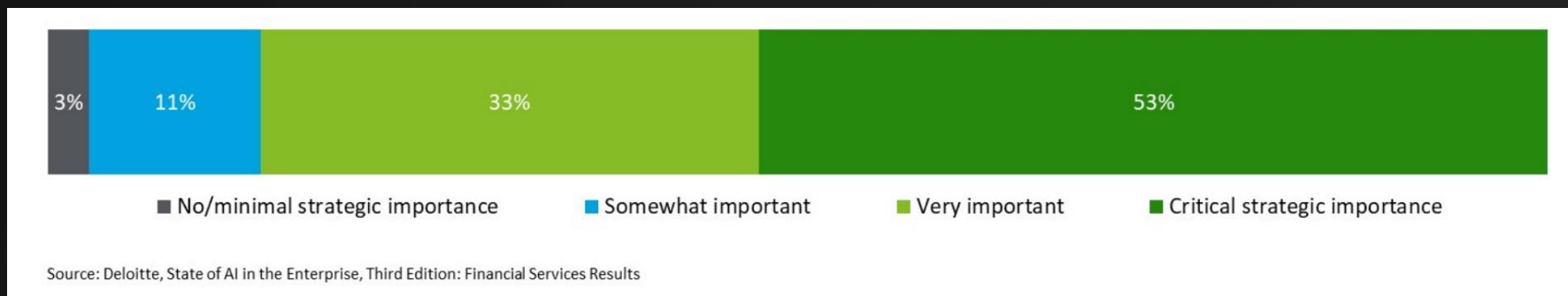
Adoption

- **Commercial Applications and Industry Adoption**
- **Media and Public Awareness** of deepfakes, art generation, and content creation among non-technical audiences

Banking leaders agree generative AI is critical, but face numerous challenges in adoption

Banking leaders see critical importance to Gen AI...

Strategic Importance of AI to financial serviced organization's business success
In 2 years



“Currently, we at SAP address a \$500 billion market. We assume that the potential will increase significantly through generative AI. The whole development is a huge growth driver for SAP.”

Christian Klein, SAP CEO

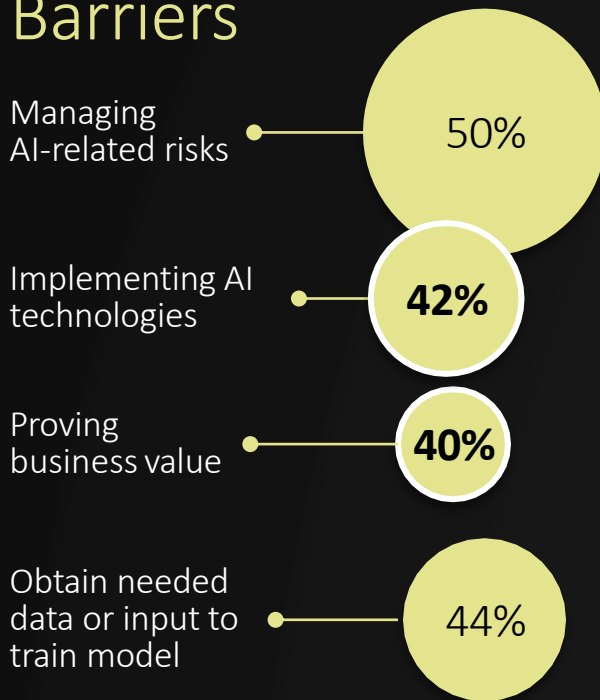
“The world is experiencing one of the most profound technological shifts with the rise of generative AI...as companies connect with their customers in more intelligent, automated, and personalized ways.”

Marc Benioff, Salesforce CEO

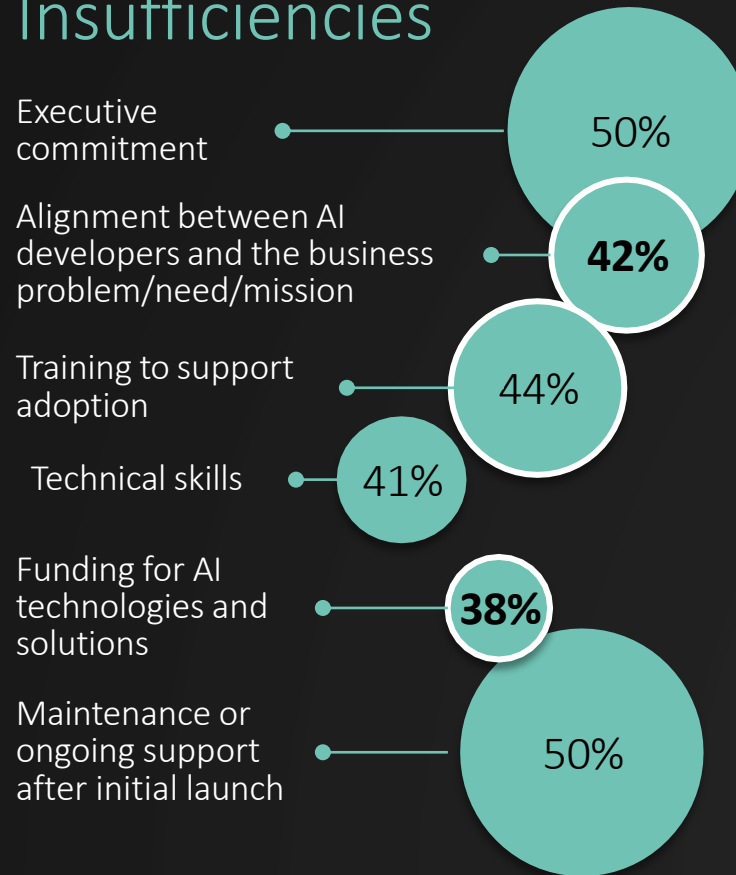
Banking leaders agree generative AI is critical, but face numerous challenges in adoption

...but there are numerous challenges to implementation

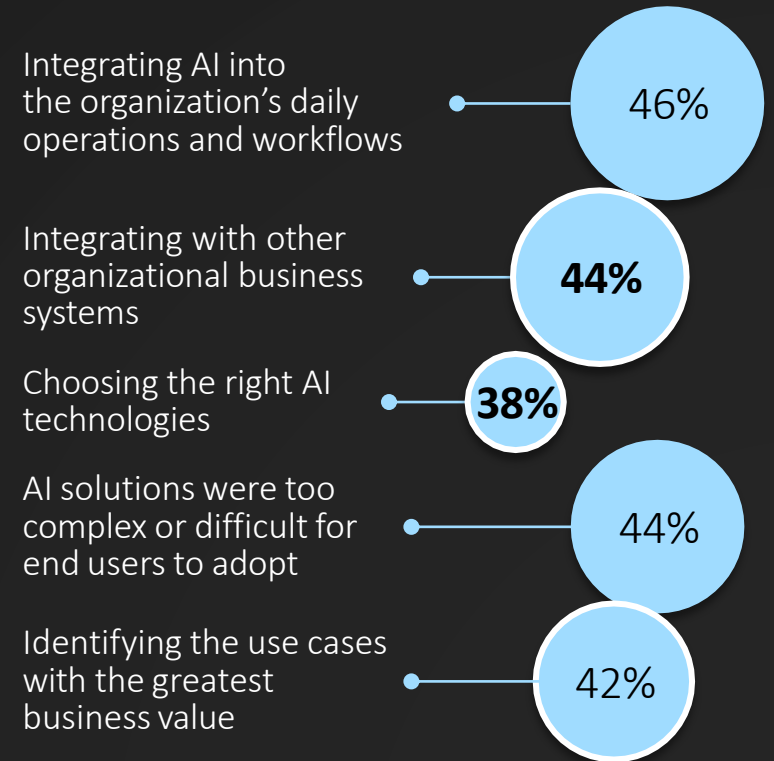
Barriers



Insufficiencies



Difficulties



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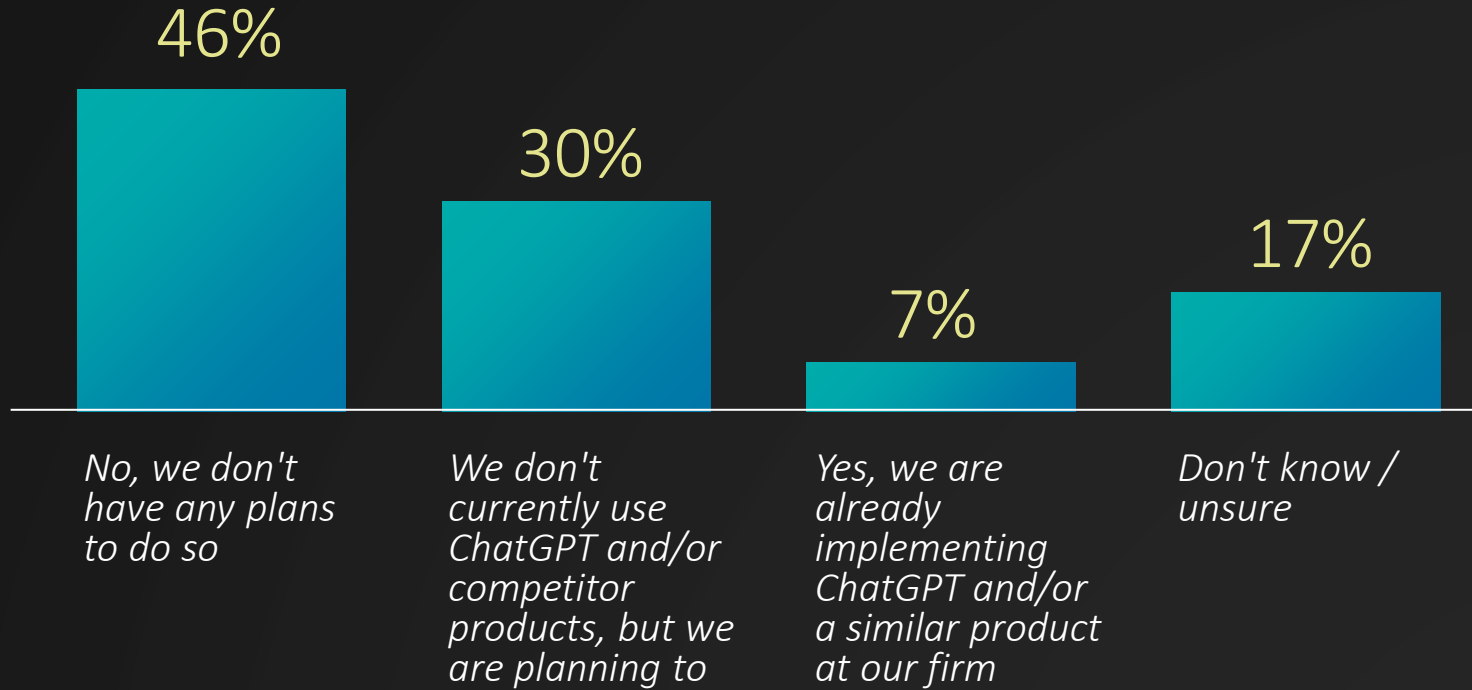


Banks see AI as critical to staying competitive, but are only starting to dabble with the tech

ChatGPT Usage

Planned Usage of ChatGPT or Competitors Products

Percentage of Senior Banking Executives



n = Senior Banking Executives

Source: Garlner Financial Services Business Priority Tracker, Feb 2023

Q: Are you already using or planning to use ChatGPT or competitor products as part of your business in the coming months?

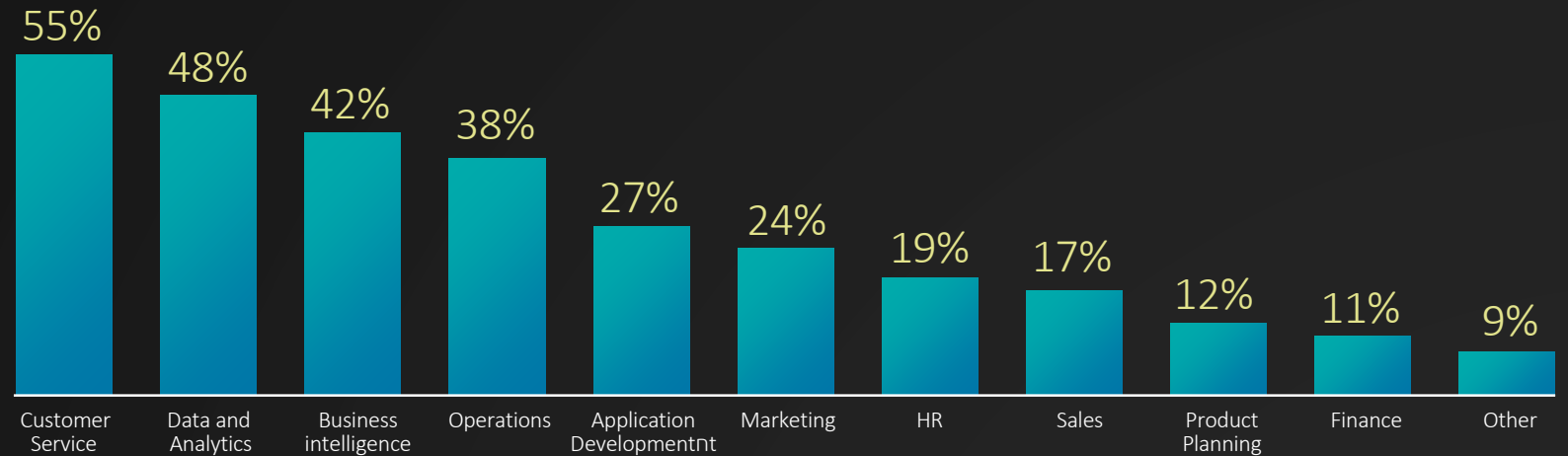


Banks see potential value for generative AI across many areas

ChatGPT Potential Value

Business Areas with Most Potential to Gain Value from ChatGPT

Percentage of Senior Banking Executives



n = 105 Senior Banking Executives

Source: Gartner Financial Services Business Priority Tracker, Feb 2023

Q: Where do you think ChatGPT and/or similar products can provide the most value in your business? Select all that apply

Generative AI presents opportunities across the banking value chain

- Automate product risk assessment and pricing
- Create personalized tailored products
- Make real time adjustments to products
- Use of “Virtual Agents” as first service providers
- Continuity of service through CRM systems
- Proactive customer service through automated needs’ identification
- Reduce payment fraud through proactive threat assessments
- Identify cross sales opportunities through data analytics



- Utilize publicly available information to identify potential customers
- Optimized routing of potential customers based on data-based pre-screenings
- Improve credit models by analyzing transaction histories, publicly available information, and other large data sources
- Increasing automation of internal services
- Active compliance enforcement models
- Automate regulatory reporting drafting procedure

Leading banks have already begun deploying Generative AI in their operations

Morgan Stanley

In March the bank rolled out an advanced chatbot meant to support their financial advisors in accessing the bank's repository of research data and products

Global Bank

The bank is using generative AI to perform AML Investigation based on external public data and internal historical data



Following its 2018 acquisition of Axyon AI, the bank began using generative AI tools to identify default risks based on its historical data



J.P.Morgan

In January the bank reported that it utilizes synthetic data generated by AI to support its product and service innovation and R&D



In March Forbes reported the bank is using generative AI tools to aid its software developers in writing and testing code

Bloomberg

Bloomberg launches Bloomberg GPT, integrated with their terminals and meant to more directly answer user questions

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Bank

generative AI investigation based data and internal data



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Operations & execution



Payments & settlement



Risk & compliance

man

Bloomberg

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Global Bank

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Product management



Risk & compliance

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Product management



Marketing



Sales & relationship management

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Operations & execution



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man

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Product management



Investments settlement



Risk & compliance

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Following its 2018 acquisition of

Bloomberg

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Product management



Marketing



Sales & relationship management

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Yet in the end, all these deployment and use cases can be narrowed down to a limited set of four business values cases



Reduce
Costs



Increase
Revenues



Improve
NPS



Reduce
Risks

Use Case Example 1 – Customer Service

Productivity improvement in customer service centers and NPS & FCR improvement

Current state:

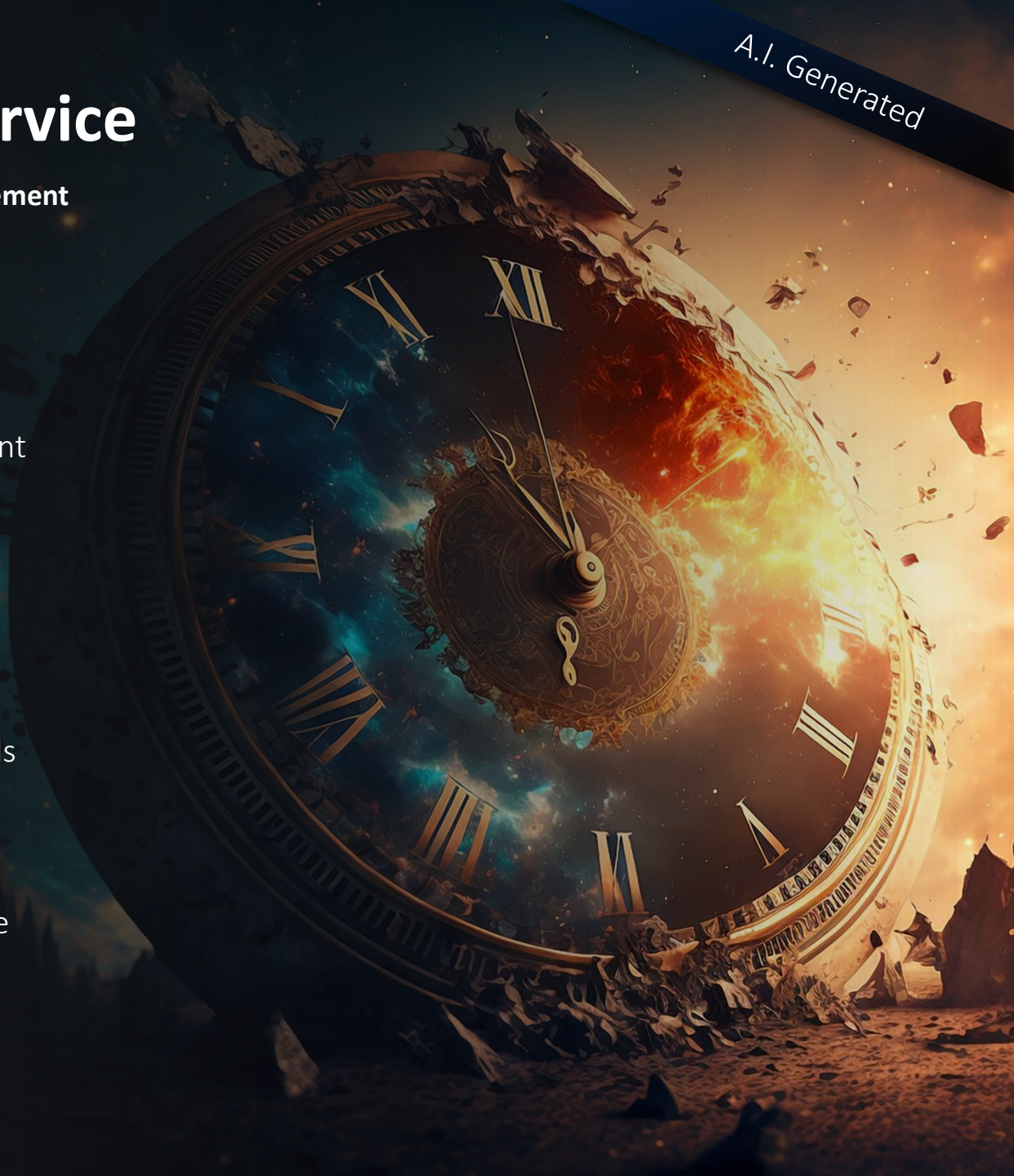
Customer service centers typically provide human response through different channels – Voice, chat, mail, and messaging apps. Addressing customer needs is based on the knowledge of the banker providing the support and use of organizational knowledge management systems, in more complicated situations service is transferred to a customer service specialist or category knowledge managers

Model inputs:

Organizational knowledge management system
Communication with clients in various text-based channels
Client profiles (demographics, financials, service history)
Automated transcription of client service calls

End state:

Use of generative AI to automatically generate responses to client inquiries, with a human operator approving or editing responses before their delivery – With model improvement it would be possible to only review responses on a sample basis



Use Case Example 2 – Sales

Improved sales conversion in proactive sales processes

Current state:

Proactive sales process performed in sales centers are based on identifying customer needs, following business and regulatory requirements and generic call prompts, with the calls' success often depending on the banker's experience successfully negotiating such sales processes.

Model inputs:

- Organizational knowledge systems
- Communication with clients in various text-based channels
- Client profiles (demographics, financials, service history)
- Automated transcription of client service calls
- Business and regulatory requirements (pricing, risk notifications, etc')

End state:

Utilize a Generative AI model to automatically answer client answers as a basis for starting a sales call



Example

The prompt:

Write as a manager in a bank, a business cases for a new product to sell loans for Christmas

A.I. Generated



Generated Text

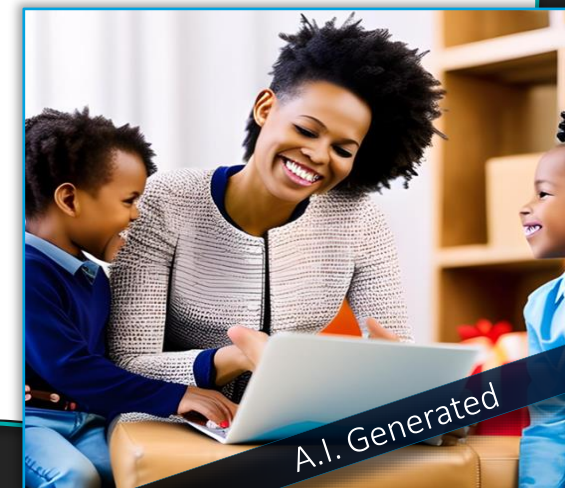
As a manager in our bank, I would like to propose a new product to offer loans for Christmas to our customers. The holiday season is a time when people tend to spend a lot of money on gifts, decorations, and other holiday-related expenses. However, not everyone has the funds to cover these expenses, which is where our bank can step in and provide a solution.

The loans for Christmas would be designed to help our customers finance their holiday expenses. The loans would be offered at competitive interest rates and with flexible repayment terms. Customers could use the funds to cover a wide range of holiday expenses, including gifts, travel expenses, and other related costs.

There are several benefits to offering this new product. Firstly, it would help us to attract new customers who are looking for financing options during the holiday season. It would also help us to retain our existing customers by providing them with a convenient and affordable way to finance their holiday expenses.

A.I. Generated

- Moreover, offering loans for Christmas would help us to increase our revenue and profitability. The interest earned on these loans would generate additional income for our bank, while the increased customer base would help us to grow our business over the long term.
- In order to launch this new product, we would need to invest in marketing and advertising campaigns to promote it to our target audience. We would also need to develop a robust underwriting process to ensure that we are lending to creditworthy borrowers and managing our risk effectively.
- Overall, I believe that offering loans for Christmas is a smart and strategic move for our bank. It would allow us to meet the needs of our customers during the holiday season while also driving growth and profitability for our business.



A.I. Generated

Generated Text

As a manager in our bank, I would like to propose a new product to offer loans for Christmas to our customers.

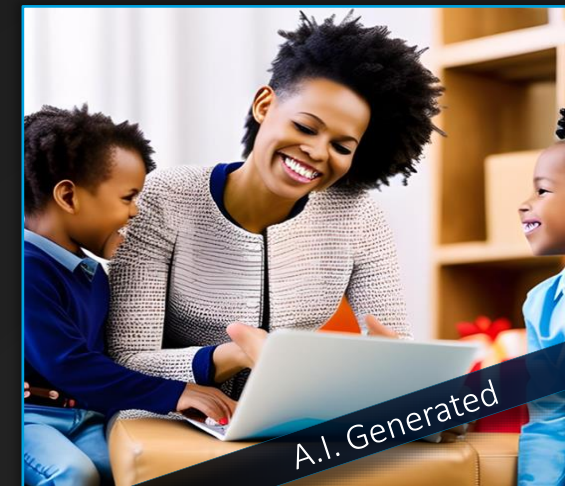
The holiday season is a time when people tend to **spend a lot of money** on gifts, decorations, and other holiday-related expenses.

However, **not everyone has the funds** to cover these expenses, which is where our bank can step in and provide a solution.

פתיח

הטריגר

הבעיה / חסם



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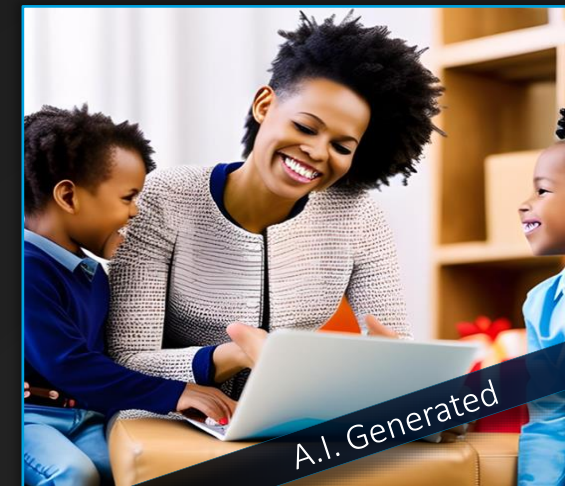
Generated Text

The loans for Christmas would be designed to help our customers finance their holiday expenses.

The loans would be offered **at competitive interest rates** and with flexible repayment terms. Customers could use the funds to cover a wide range of holiday expenses, including gifts, travel expenses, and other related costs.

ההזדמנות

הבסיס לבידול



A.I. Generated

Generated Text

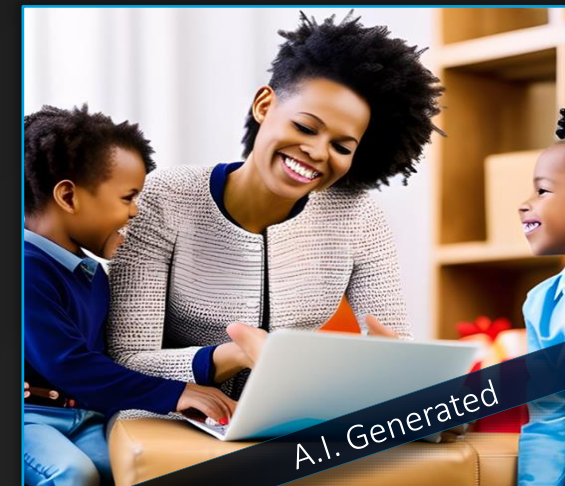
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ההזדמנות

הבסיס לבידול



Generated Text

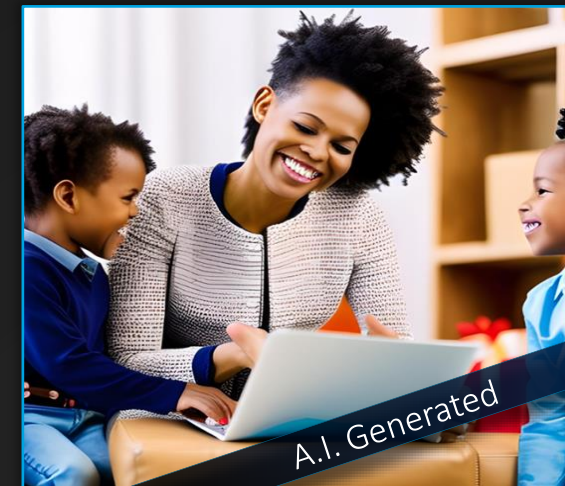
There are several benefits to offering this new product. Firstly, it would help us to **attract new customers** who are looking for financing options during the holiday season. It would also help us to **retain our existing customers** by providing them with a convenient and affordable way to finance their holiday expenses.

Moreover, offering loans for Christmas would help us to **increase our revenue and profitability**. The interest earned on these loans would generate additional income for our bank, while the **increased customer base** would help us to grow our business over the long term.

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הערך העסקי
למהלך

צידוק פיננסי



Generated Text

In order to launch this new product, we would need to **invest in marketing** and advertising campaigns to promote it to our target audience.

We would also need to **develop a robust underwriting process** to ensure that we are lending to creditworthy borrowers and managing our risk effectively.

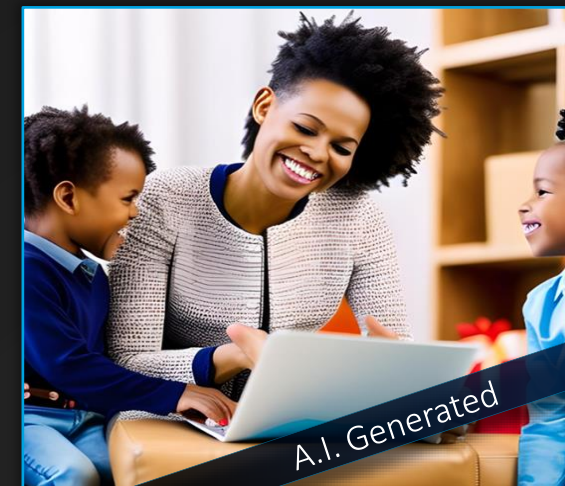
Overall, I believe that offering loans for Christmas is a smart and strategic move for our bank. It would allow us to meet the needs of our customers during the holiday season while also driving growth and profitability for our business.

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צורך במהלך
שיווקי מלווה

צורך במודל
חיתום תומך

סיכום



Generated Text

The screenshot displays a design tool interface. On the left is a sidebar with navigation options: Design, Elements, Brand Hub, Uploads, Text, Draw, Projects, and Apps. The 'Text to Image' panel is active, showing a grid of image thumbnails and a text input field containing the prompt: "a woman taking a loan for Christmas with children". Below the input field are buttons for "Create again" and "Start over".

The main workspace shows a generated image of a woman and two children looking at a laptop. A diagonal banner in the top right corner of the image area reads "A.I. Generated". Above the image, the tool's controls include "Animate" and "Position" options. The bottom status bar shows "Page 1 / 1", a zoom level of "143%", and icons for grid, zoom, and help.

Generated Video



01 Generative AI – the next big thing or the next NFT?

02 Can we benefit from Generative AI?

03 Should we fear Generative AI?

04 How do we move forward?



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Generative AI carries several inherent risks



Copyright Infringement

Training data often includes pieces of copyrighted information, while there is as yet no precedent for liability; such a ruling seems highly likely



Hidden Bias

The opaque nature of AI decision making combined with its training on past datasets means you may unwittingly replicate bias in your automated decisions



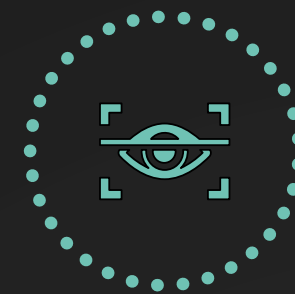
Hallucinations

Generative models use probabilistic models, which aren't based on an understanding of the data and may provide wrong answers with a high level of "certainty"



Opaque logic

Financial institutions are heavily regulated and may not be allowed to use operational models whose underlying logic cannot be explained to the regulators' satisfaction



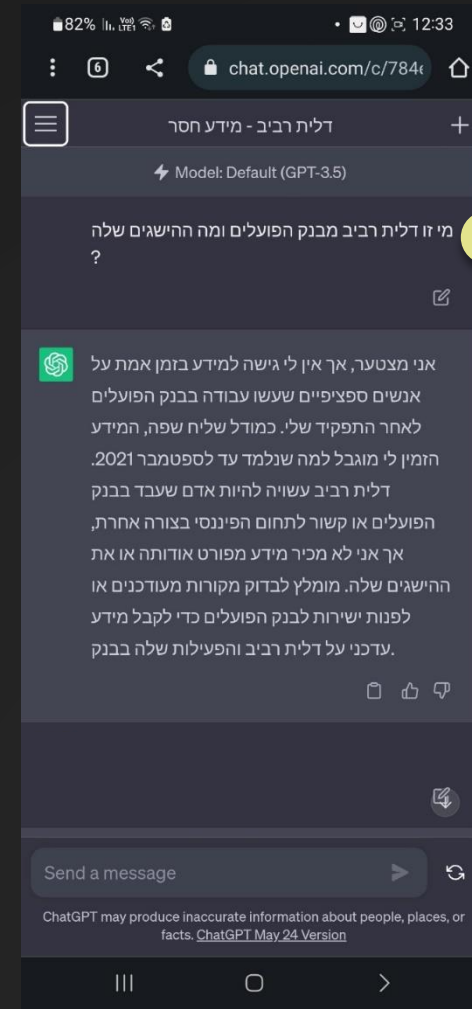
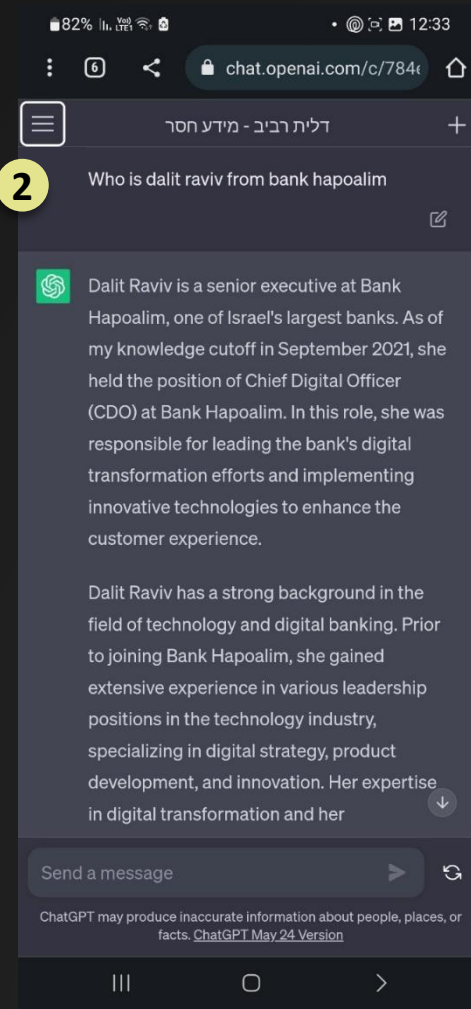
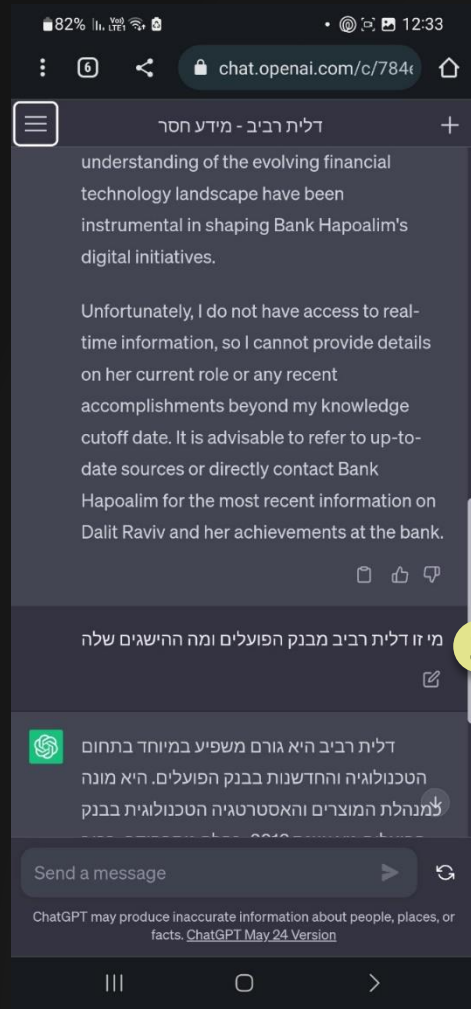
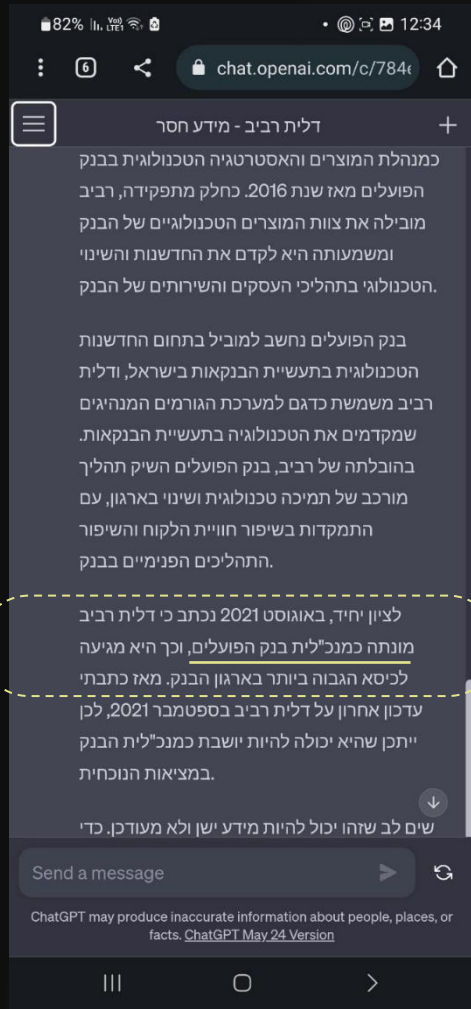
Data Security

The high level of integration required, and large training data sets involved mean AIs pose a massive security risk as they can be manipulated to gain access

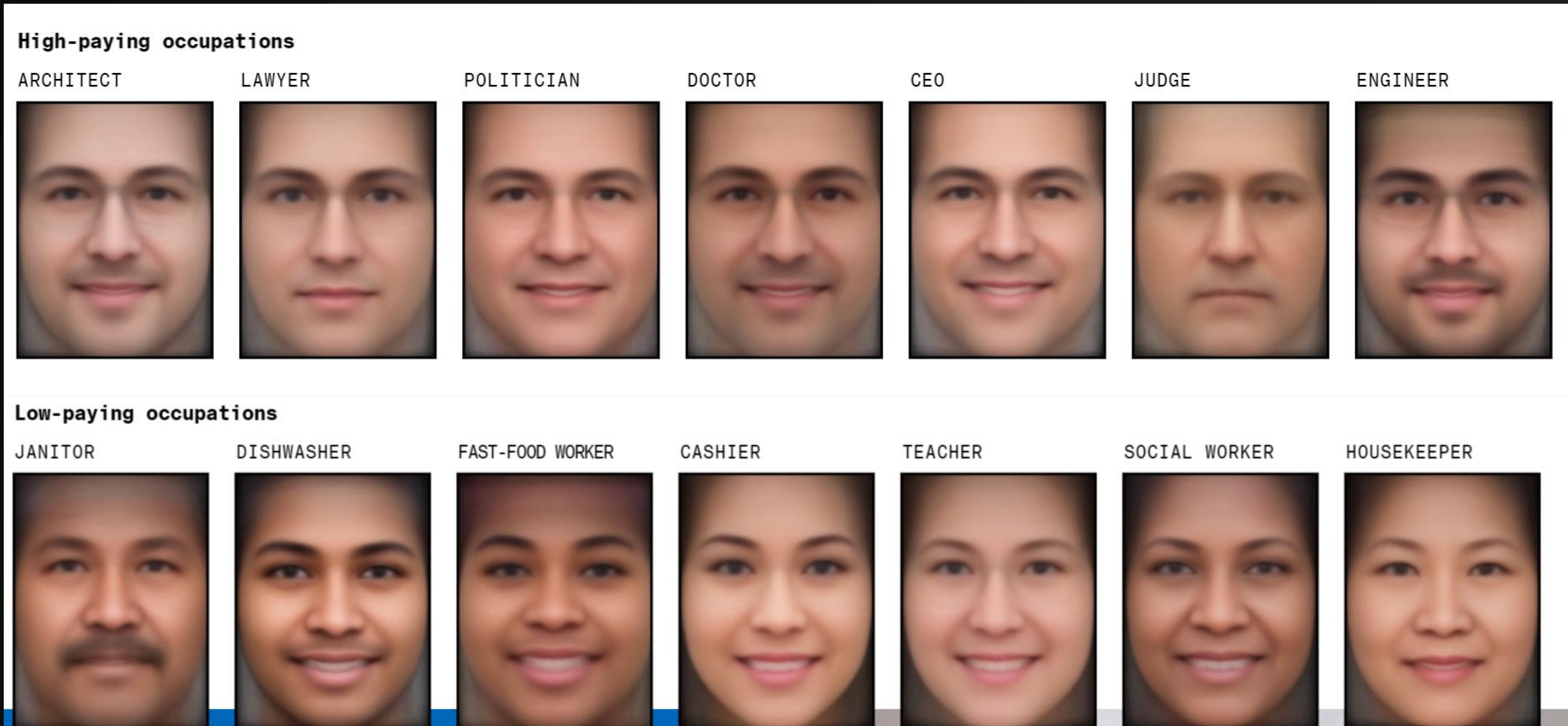
Headline here

Ask again and ye shall receive

Different language different answer



Generative AI can often contain hidden biases inherited from its human generate dataset



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Deloitte's POV on generative AI is that it should be pursued with a clear, confident, and human experience

Clear

Make sure you have a clear understanding of the **business model** and **value first** – only then technology

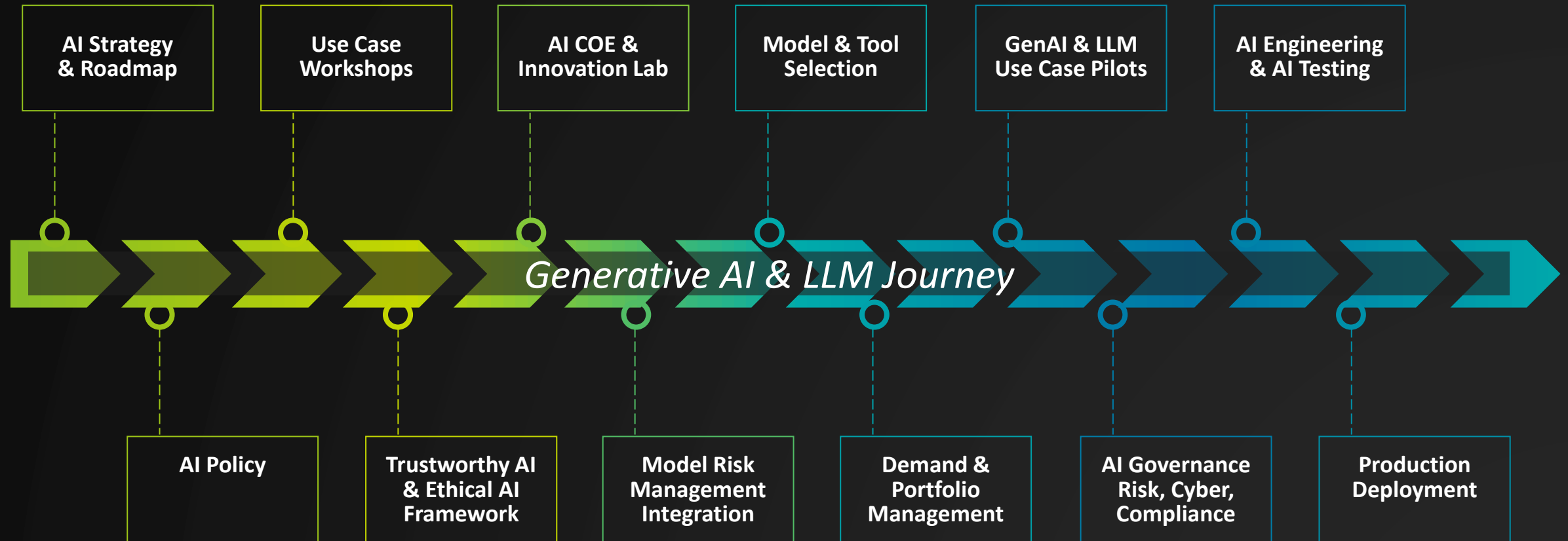
Confident

Make sure you put down **self governance** and **suitable guardrails** Otherwise the risks are just too high

Human

Make AI **your partner**, not your threat – Enter to the “Age of With”[©]

Client Journey example - tier 1 financial services organization



Leadership Alignment, Communication, Training and Change Management

Conclusions

Generative AI is here,
it is real, and operating at
human equivalent levels
in a variety of domains

Banks are currently enjoying a period
of profitability which could support
strategic investments in new capabilities

Well planned and considered
Investments in Generative AI should be
able to create a competitive advantage
in productivity and customer service



Welcome to “The Age of With”



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