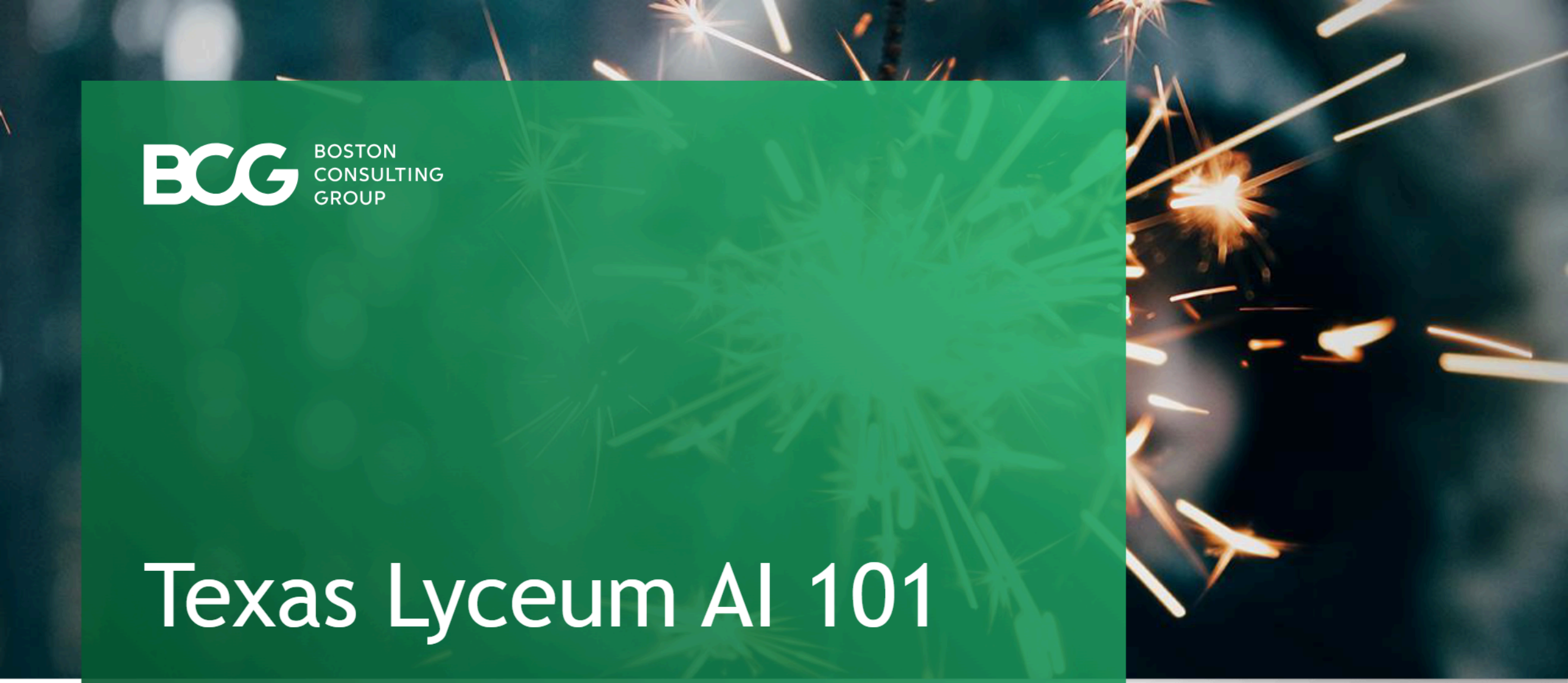


BOSTON CONSULTING GROUP

Texas Lyceum AI 101

JAN 2025

THE TEXAS LYCEUM
ESTABLISHED 1980

Agenda

Welcome (Crayton Webb)

Introduction (Steven Pedigo)

AI 101 and business implications (Scott Wilder)

AI and Texas Policy Overview (John Dickson)

Questions and Closing (Jen Wilder)

Introduction

Scott Wilder

Managing Director & Partner

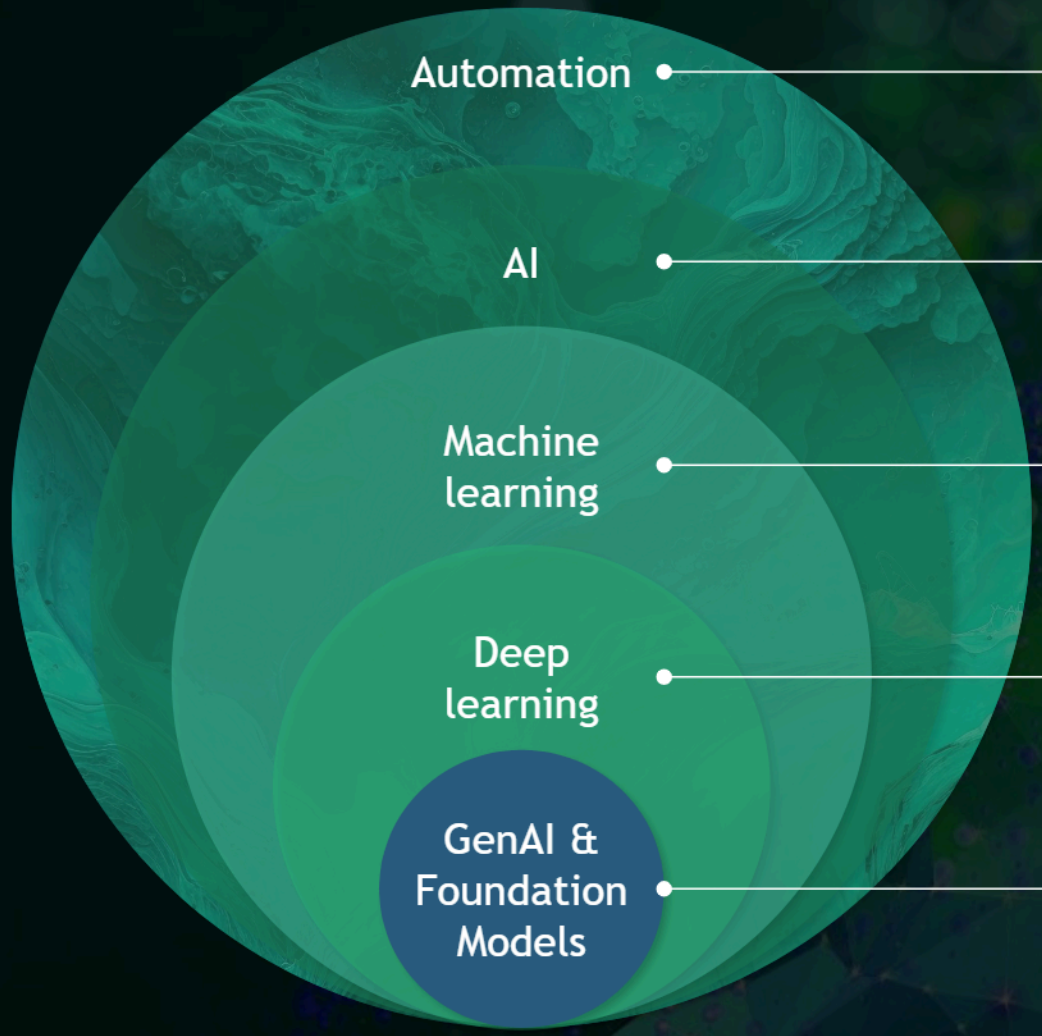
Leading member of the Tech & Digital Advantage practice

Deep experience driving digital transformations, and implementing AI/GenAI applications for clients across industries

Global leader for BCG's internal consulting GenAI transformation

Partnership lead across GenAI partners

GenAI is a type of deep learning within the larger umbrella of AI



Leverages predetermined decision criteria to deliver a process result (e.g., automated workflows)

Broad term for machines that do things that look like thinking

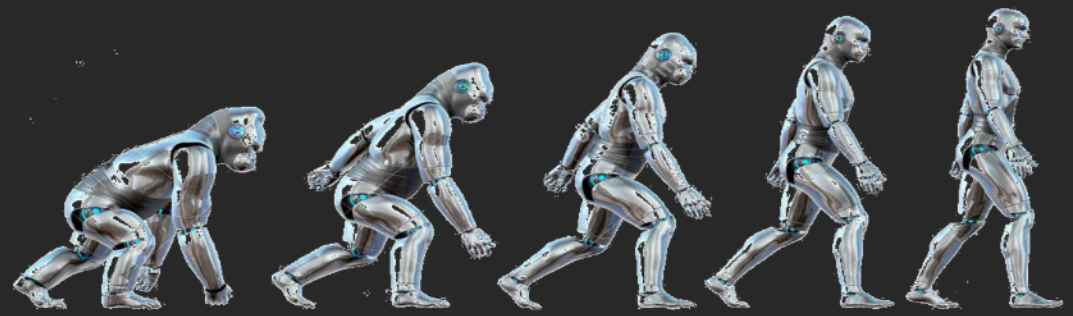
Gives narrow output (e.g., “will repay loan” or “17.6” or “do A then C”) from structured inputs

Gives narrow output (e.g., “dog”) from unstructured inputs (e.g., pictures, sounds)

GenAI gives broad output (poems, prose, pictures, sounds, videos) usually from unstructured inputs
Examples include: ChatGPT, Codex, DALL-E

Evolution of Capabilities

What robotics & AI can bring to the table nowadays



	Process Orchestration	Robotic Process Automation	Artificial Intelligence
Description	**Support to process execution** via automatic integrated workflow manager	**Automation of repetitive tasks** according to rule-based algorithms	**Automation of cognitive tasks** (e.g., inputs recognition, decision-making, & content generation)
Specific Technologies	• **Business Process Orchestration:** Web-services based process management	• **Robot-based application running tasks** on top of traditional IT systems	• **Machine Learning:** Techniques to train a system to "learn" to perform a specific task from given data • **Deep Learning:** ML methods based on multi-layer neural networks inspired by biological brain • **GenAI:** Method of learning from existing data and generating new content using patterns observed in training data

Automation vs AI & GenAI

Solving 2 different problems

RPA

Robotic Process Automation

Taking the Robot out of the Human

Use Cases

- Automated purchase order processing
- Automated invoice processing
- Automated accounts payable processing

vs

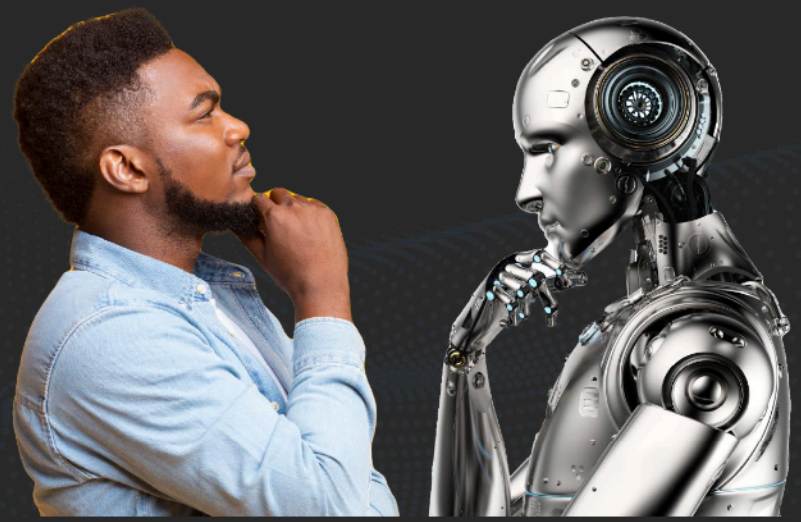
AI & GenAI

Artificial Intelligence

Putting the Human into the Robot

Use Cases

- Product recommendations
- Dynamic customer support
- Demand forecasting



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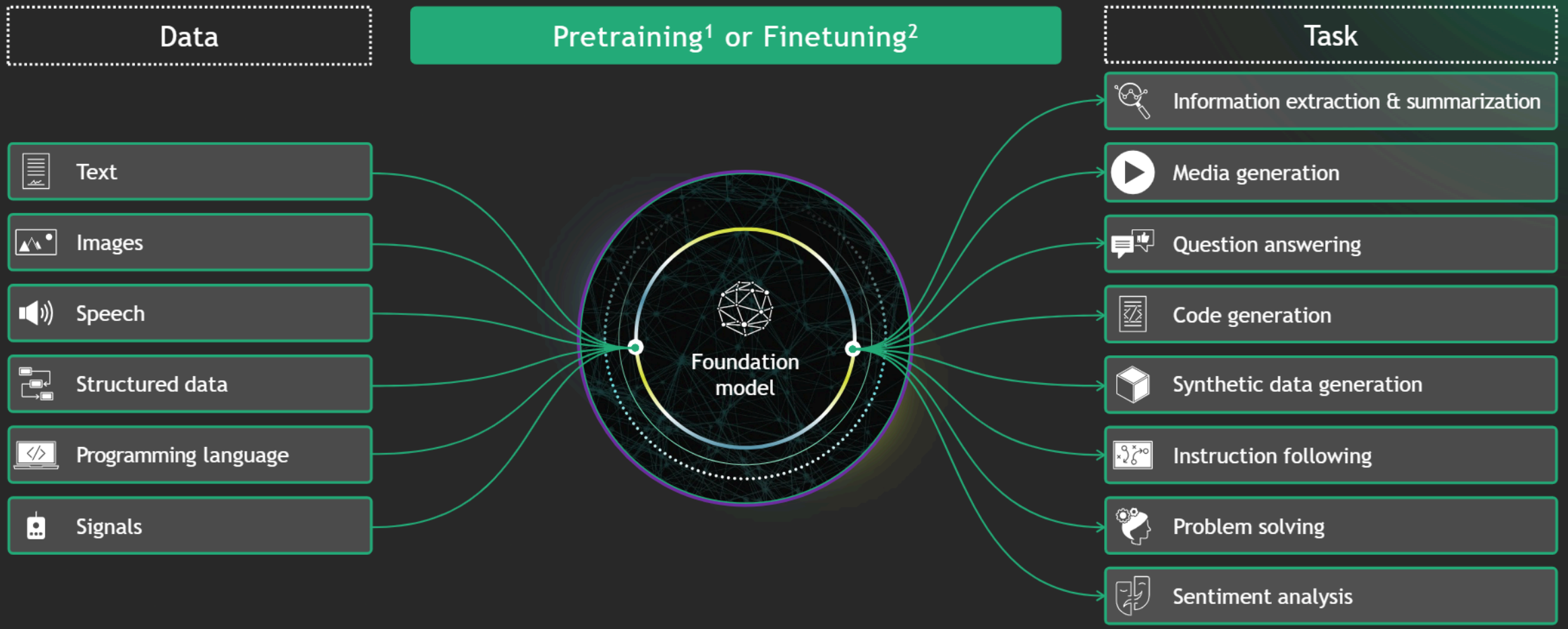
GenAI is a class of algorithms offering multiple opportunities on top of content generation…



1. Several GB or TB of data required; Self-monitored: no annotated data 2. Little data required (100,000 examples); highly specialized data, reasoning will be trained by adapter

The real power – Traditional AI and GenAI together

Unlocks new use cases

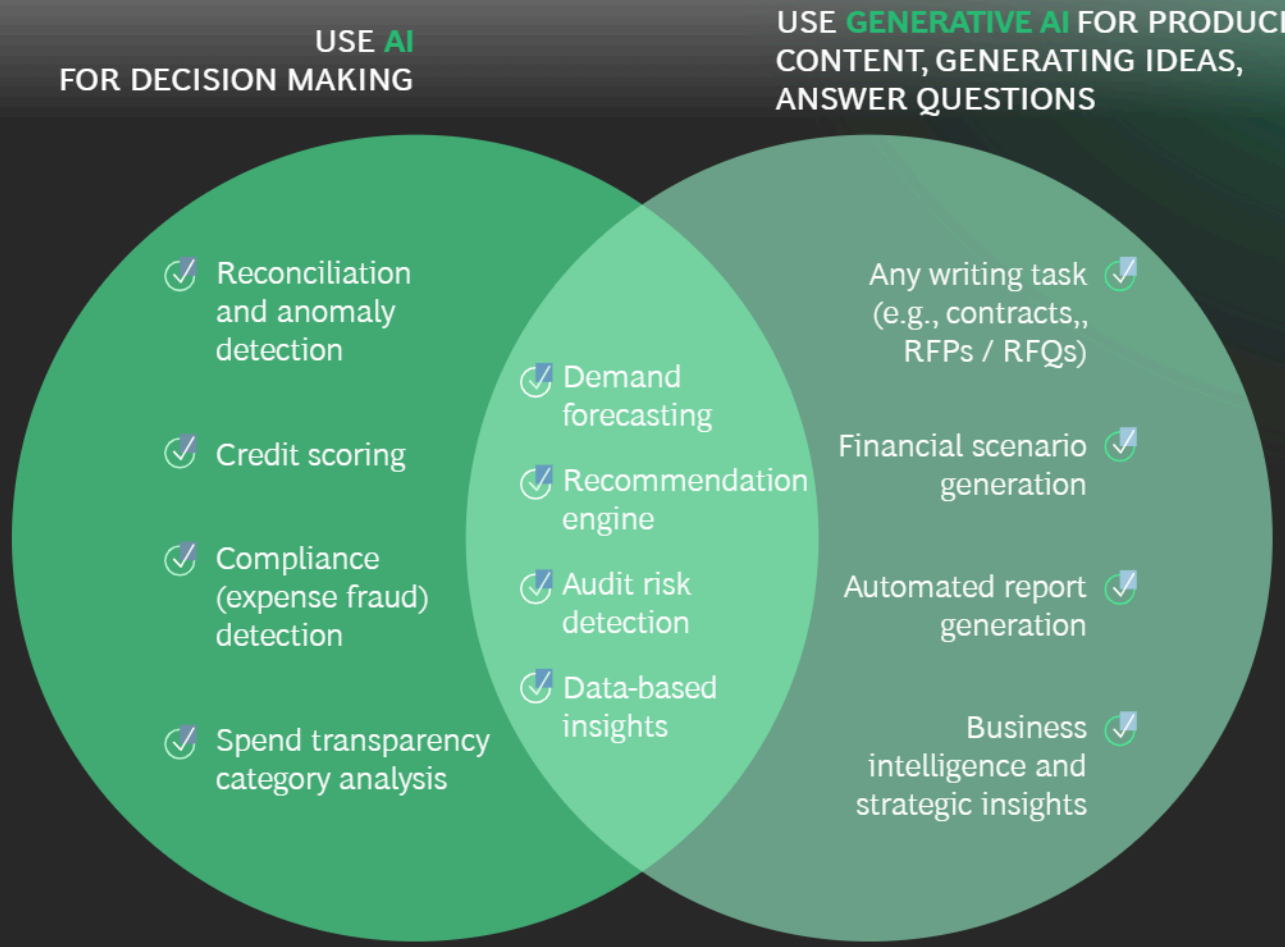
- Ability to generate content and ideas will reshape R&D, workforce productivity and customer engagement

Extends current AI use cases

- Simplifies the user interface, and enables effectiveness of current processes (e.g., demand forecasting)
- Increases accuracy and speed of existing models by generating better synthetic data

AI use cases will persist

- Scheduling, process optimization and control, forecasting



APPLICATIONS CAN OVERLAP AND LEVERAGE THE BEST OF BOTH TECHNOLOGIES

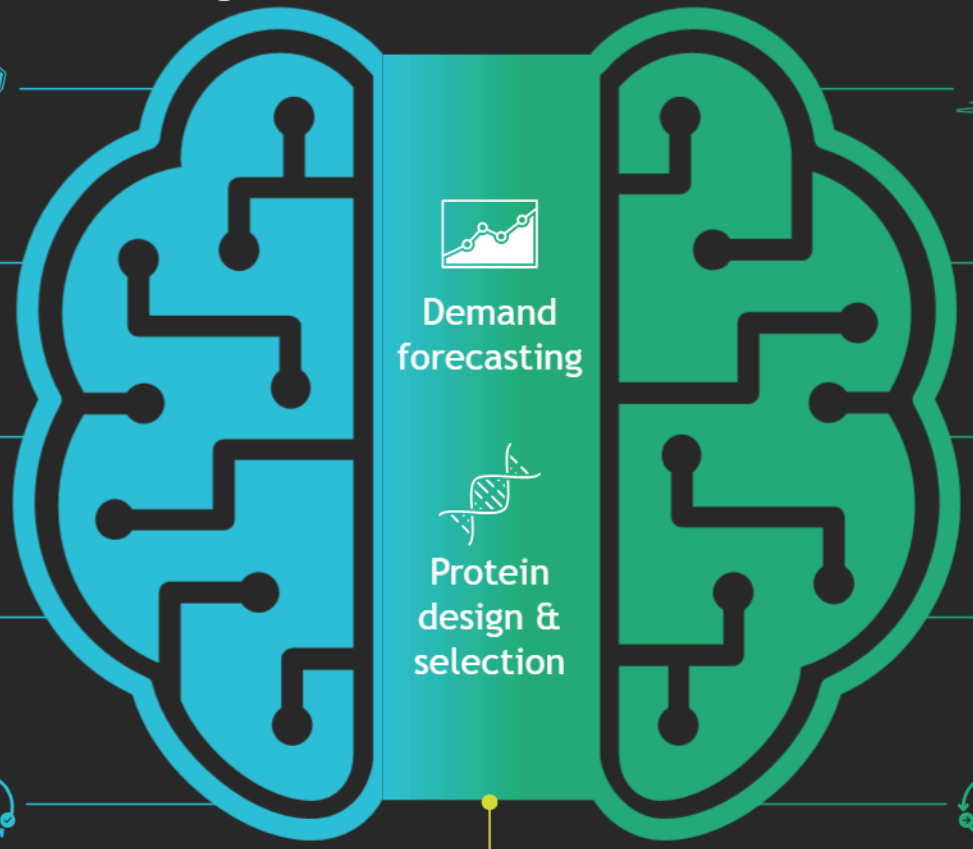
GenAI will co-exist with traditional AI to drive new frontiers and accelerate existing applications

Not exhaustive

AI/ML

Use AI for decision-making

- Dynamic pricing engines
- Ad spend optimization
- Fraud detection
- Staff churn prevention
- Other AI/ML use cases



Generative AI

Use Generative AI for content generation

- Creative content generation
- Synthesize findings in large datasets
- Write and debug code
- Conversational experiences
- Other GenAI use cases

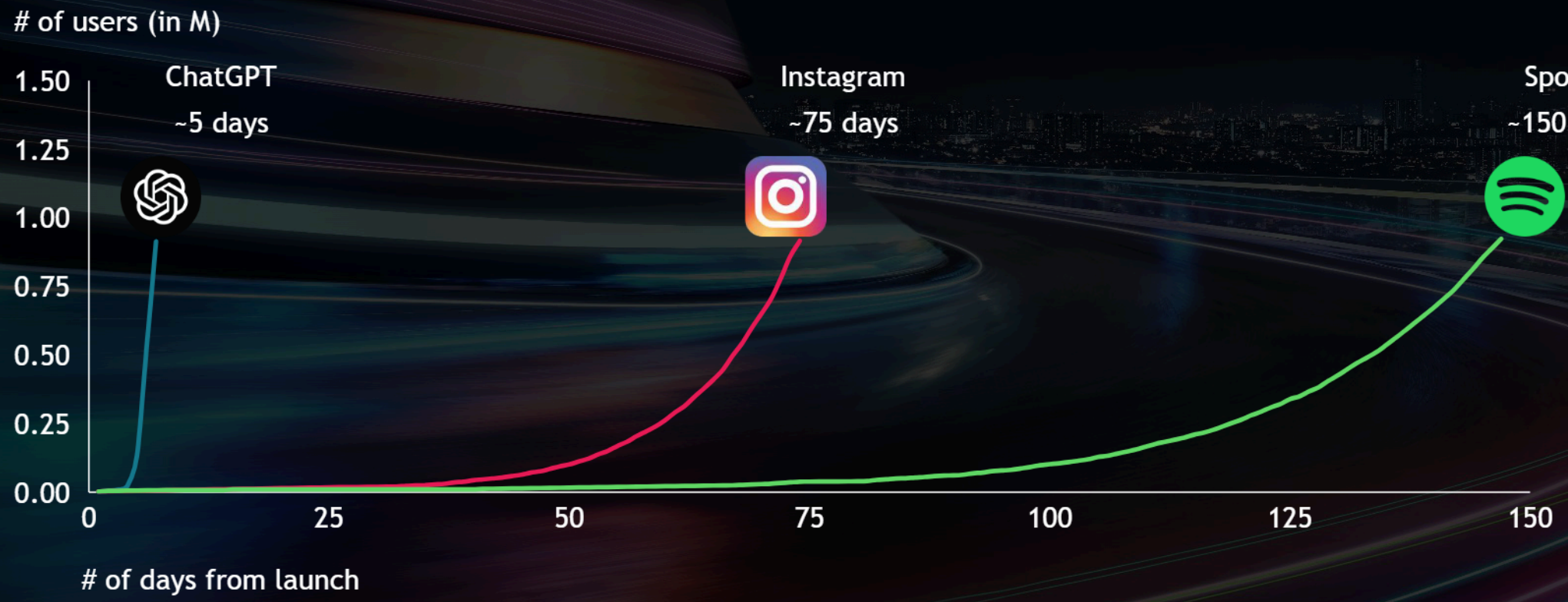
Demand forecasting

Protein design & selection

Use the combination of AI & GenAI to maximize impact generation

GenAI is not just a hype, but transformative with real traction

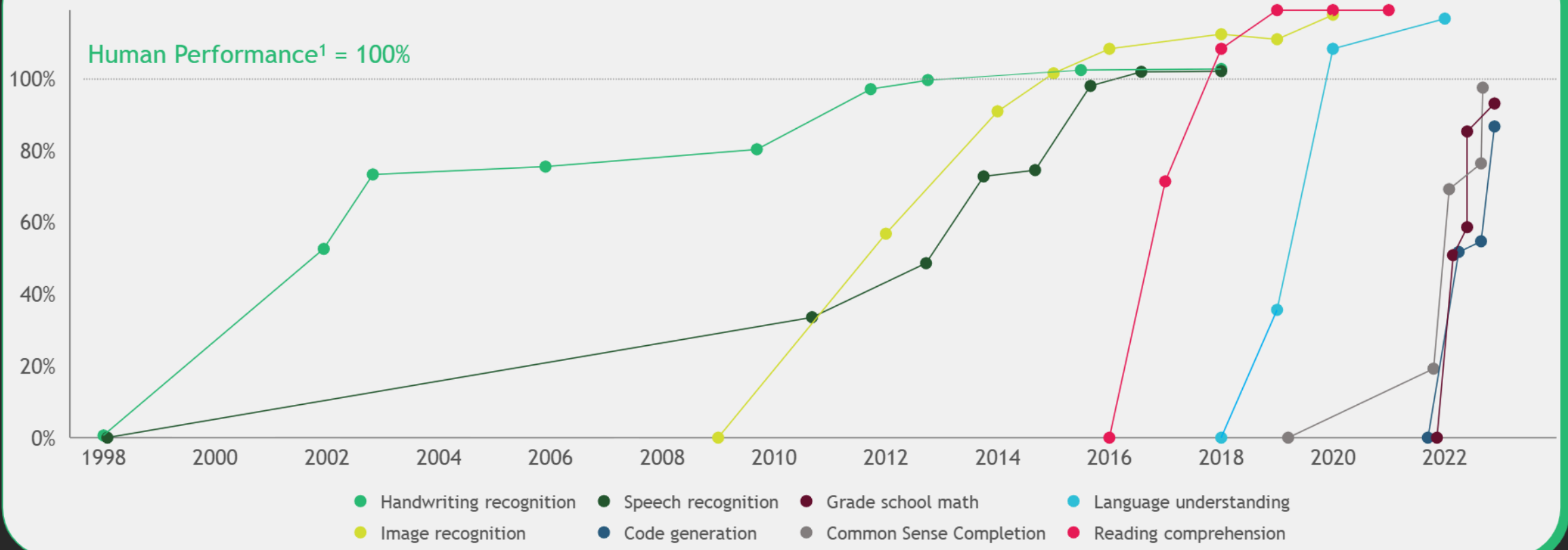
ChatGPT reached 1M users in 5 days, a fraction of the time it took previous viral hits



1. Google search interest on GenAI (100 = max interest)
Source: Google Trends; BCG analysis

State-of-the-art AI is surpassing human performance at new tasks at an increasing pace, opening up new potential applications

State-of-the-art AI performance on benchmarks, relative to human performance



1: Human performance defined as average performance of medium skilled worker
Note: Handwriting recognition = MINIST, Language understanding = GLUE, Imagine recognition = ImageNet, Reading comprehension = SQuAD 1.1 and 2.0, Speech recognition = Switchboard, Grade school math = GSK8k, Common sense completion = HellaSwag, Code generation = HumanEval
Source: Contextual AI; TIME

Examples of how GenAI is transforming 5 key functions within organizations

	Marketing	Customer Support	Support functions	R&D	Software development
Illustrative example	Create **hyper-personalized marketing materials** across medias (e.g., text, image, video)	Enable customer support agents with a Gen AI-based **conversational assistant**	**Review and markup contracts** and negotiations automatically	Identify previously undetectable patterns and trends to **sequence proteins** in a much shorter time	Develop **original code** in response to **natural language prompts** and identify / correct coding errors
Advertised impact	**5-10x** faster content generation[1]	**14%** increase in agent productivity and effectiveness[2]	**70%** productivity increase for the legal team[3]	**60%** decrease in drug discovery time[4]	**55%** increase in productivity[5]

1. Jasper website 2. National Bureau of Economic Research; measured by issues resolved per hour 3. BlackBoiler website 4. Venture Beat (Absci) 5. Github blog

Advanced generative AI is progressing extremely quickly and is is expected to continue

Native Voice & Vision Capabilities

GPT-4o can reason across voice, vision & text in real time

Represents step towards a more natural human-computer interaction & AGI more broadly

Faster and cheaper

Likely to see continued acceleration of cost reduction, speed increases

GPT-4o is 2x faster than previous models, costs have lowered 240x over 18-months

Larger 'memory' and 'input window'

More advanced models retain context over a longer series of interactions, enhancing relevance

More “memory” will reduce needs for awkward workarounds

Scaling laws are continuing

Scaling laws demonstrate predictable improvements in AI performance as model size, data, and compute increase

No sign of upper limits

Moving from "Pre-Training" to reasoning

Transition from static pre-trained models to systems capable of adaptive reasoning and dynamic learning

Emphasis on real-time problem-solving and context-driven adaptability

These breakthroughs have the potential to revolutionize the world. Imagine moving from scarcity to abundance which will drastically change unit-economics

1. GPT-4o accepts ~16x more tokens than GPT-4 and Gemini Pro leads with 1M token "context windows” i.e., ~8,000 to 128,000 tokens 2. https://www.mdpi.com/2078-2489/15/9/543 3. IMO Health, Aksana, Corti, Others
Sources: ResearchGate, OpenAI, BCG analysis

Some lessons we've learned for driving GenAI at our clients

GEN AI CAPABILITIES

Gen AI is coming at light speed
Advances & funding outpacing expectations

Gen AI does not equal AI
Think of GenAI as a complement, not a replacement

Gen AI is more than content generation
It can be used to write code, solve problems, control systems

Dialogue is more powerful than question answering
Gen AI enables next gen of conversational solutions

GENERATING VALUE

3 key paths to value with Gen AI
Productivity boosters, function reinvention, "unicorn" solutions

Experimenting relevance is more than testing accuracy
Build experimentation muscle for long-term value

Function reinvention goes beyond the use cases
Don't automate current processes, reimagine them for E2E solutions

Workforce planning is needed before upskilling
Gen AI changes work across the org, requiring org & op model redesign

DEPLOYMENT

Platform & Model choice matters
Select platforms and models to fit business and data security needs

Protect IP
Ensure data security to protect IP

Data strategy matters
High quality data is critical for bias prevention, domain-specific adaptation (garbage in, garbage out)

Invest in getting the "rules layer" right: what are guardrails for early use cases, how to refine over time

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Thank you