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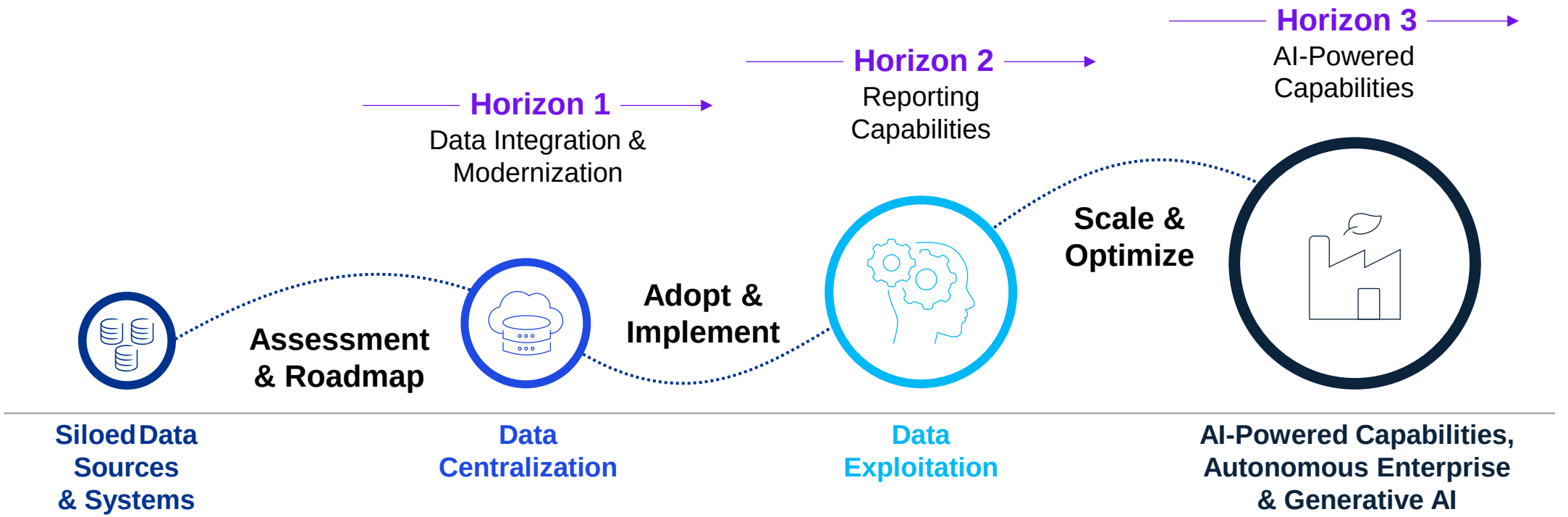
Harnessing the Power of Data and AI: A New Era in Stock Trading

November 2024

Defining the Data Modernization journey

The strategic approach for innovative use, accessibility, governance, operations and value delivery of data in a modern cloud architecture through people, technology and process transformation.



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History of Artificial Intelligence

700 BC

Greek Mythology

Ancient Greek myths were full of stories about humanoids endowered with intelligence.

- Talos – Minos' bronze, giant robot which guarded and protected Crete.
- Pandora – Mythical humanoid designed to punish humankind.

1950s

Turing Test

Alan Turing, English computer scientist and mathematician, proposes a test for machine intelligence. If a machine can trick humans into thinking it is human, then it has intelligence.

Artificial Intelligence

John McCarthy, American computer scientist, coins the term "artificial intelligence" to describe "the science and engineering of making intelligence machines".

1960s

Robotics

The first industrial robot, Unimate, replaces humans on the assembly line at GM and the first electronic person, Shakey, is created at Stanford.

Chatbots

Pioneering chatbot Eliza, which holds conversations with humans, is created at MIT.

AI Winter

1997 – 2015

IBM

IBM's supercomputer, Deep Blue, defeated the world champion chess player in a match. Later, IBM's Watson wins first place on Jeopardy.

Speech Recognition

The first publicly available speech recognition software is developed by Dragon Systems. Later, Google incorporates speech recognition on iPhone's Google application and Amazon launches Alexa, an intelligent virtual assistant.

2015 – Present

Autonomous Vehicles

Tesla Motors ignites the autonomous vehicle race by releasing a software update to equip their vehicles with self driving capability.

Ethical AI Spotlight

Though not a novel topic, Microsoft's chatbot, Tay, brought a renewed spotlight to ethical AI when it began to post inflammatory and offensive tweets, shutting down just 16 hours after its launch.

The Golden Age

OpenAI's release of ChatGPT-3 in late 2022 sparks a race for artificial intelligence dominance among big technology firms.

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Where is AI Trending?

Rapidly accelerating pace of investments and adoption

61%

Nearly two-thirds of executives are implementing AI

94%

of companies are convinced AI is key to competitive advantage

$21Bn 2030

Global explainable AI market size estimated to be

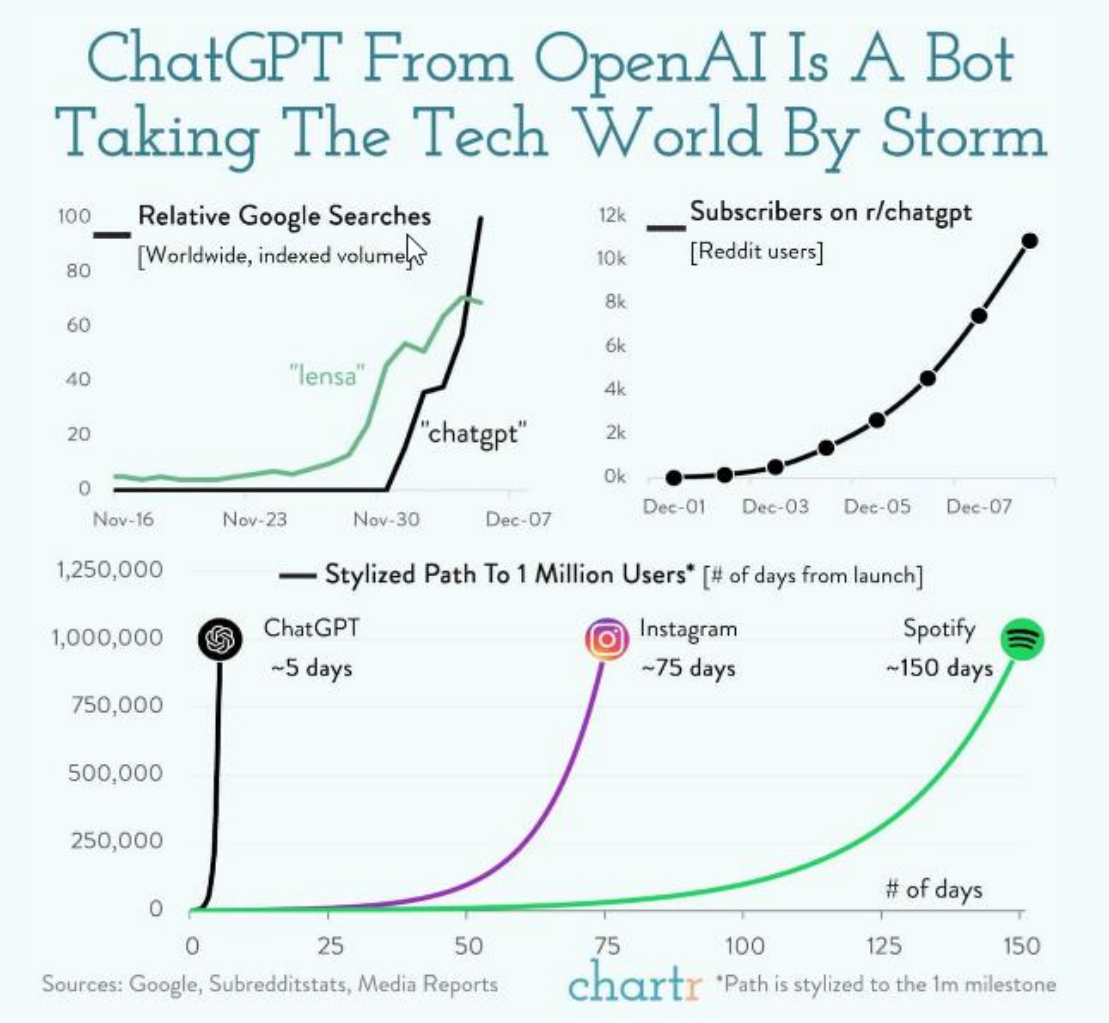
∞+

GenAI's democratization is changing the world as we know it

3x

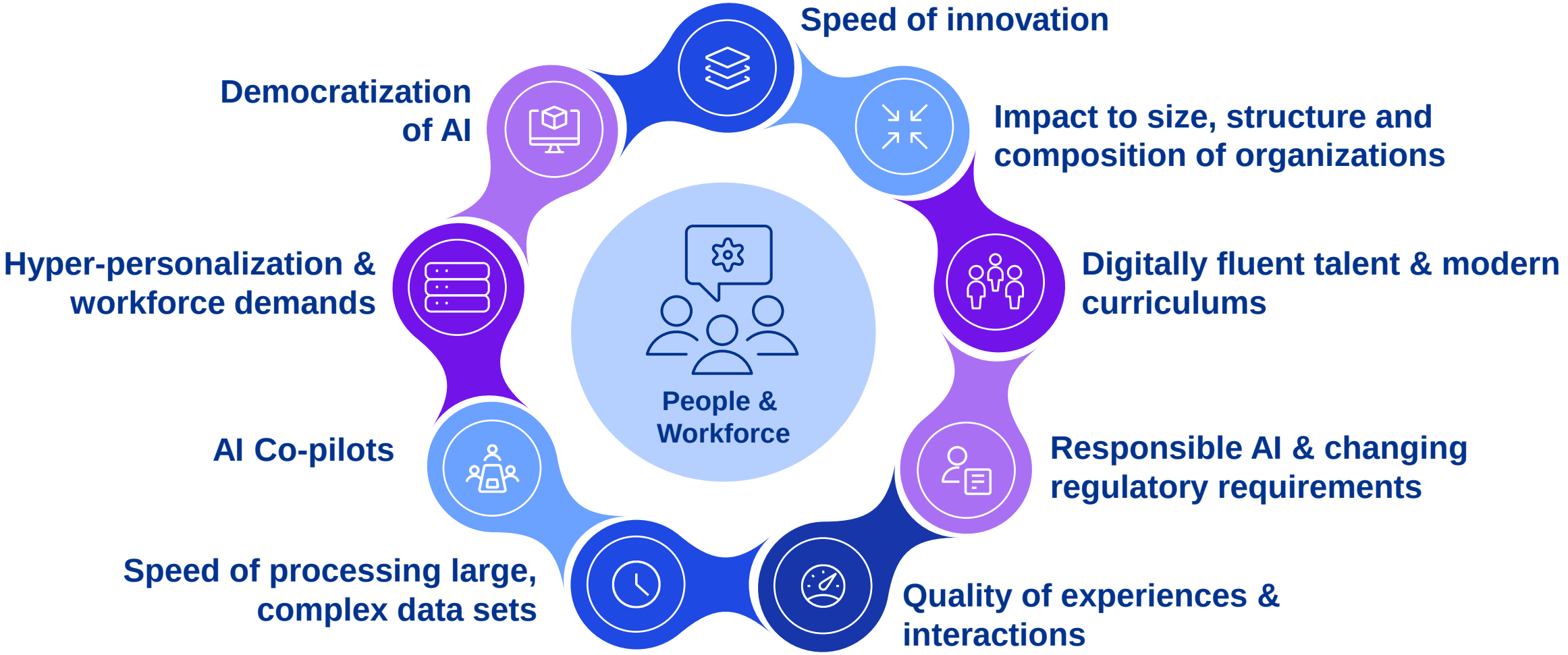
Demand for skilled talent in AI and ML increased in 2022 - 2023

ChatGPT adoption curve



Data Modernization and AI is a major disruption for enterprises

People and the workforce are at the center of it all.



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The ten key Data and AI appliances in Stock Exchange industry

01

Algorithmic Trading

AI-powered algorithms analyze market data in real-time to execute trades automatically, often at speeds that surpass human capabilities.

02

Predictive Analytics

Machine learning models analyze historical data to forecast future market trends and stock price movements, aiding in investment decisions.

03

Sentiment Analysis

Natural Language Processing (NLP) techniques analyze news articles, social media posts, and other textual data to gauge market sentiment, impacting trading strategies.

04

Fraud Detection

AI-powered systems identify and prevent fraudulent activities like insider trading, market manipulation, and cyberattacks, safeguarding market integrity.

05

High-Frequency Trading (HFT)

AI-driven systems execute a large number of trades at extremely high speeds, often leveraging advanced algorithms and sophisticated hardware.

06

Risk Management

AI models assess market risks and help develop strategies to mitigate potential losses, ensuring financial stability.

07

Chatbots and Virtual Assistants

AI-powered chatbots provide customer support, answer queries, and guide users through trading platforms, enhancing user experience.

08

News and Information Analysis

AI tools process news articles, financial reports, and other information sources to extract relevant insights for investment decisions.

09

Portfolio Management

AI algorithms optimize investment portfolios based on risk tolerance, return objectives, and market conditions, tailoring strategies to individual needs.

10

Regulatory Compliance

AI tools help financial institutions adhere to complex regulations by automating compliance checks and identifying potential violations.

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Taking the organizations on a journey through four key phases

Vision & Foundation

1

Setting the vision, defining the target value from Data Modernization and AI, and establishing foundational requirements

ENTERPRISE

PORTFOLIO

INITIATIVE

Validation & Use Case Management

2

Capturing the benefit from Data Modernization and AI initiatives through disciplined value management practices

Construct & Deploy

3

Executing individual transformation initiatives through Data & AI solutions that deliver value on an iterative basis

Example deployment strategies

Product | Function | Value stream

Orchestrate & Evolve

4

Enable the enterprise through technology, workforce planning, governance, and deployment

- Support
- Analysis
- Adoption
- Trusted AI
- Transition
- Closure

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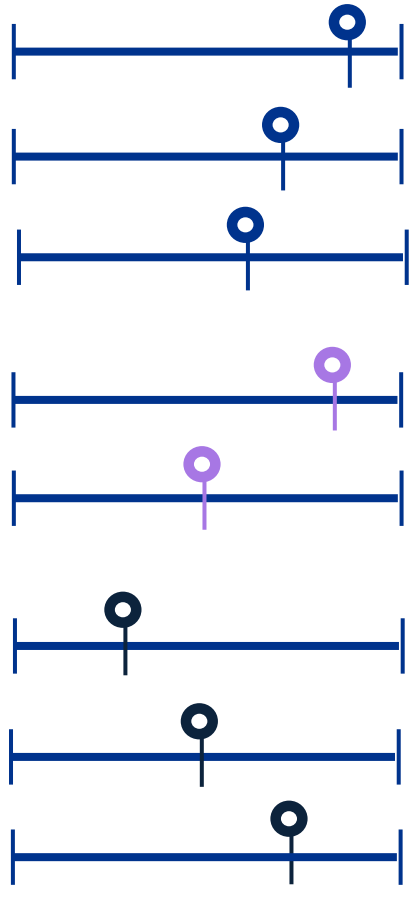
Use case qualification/prioritization criteria

Prioritization Approach

	Dimensions	Lower Rank	Higher Rank
Complexity	**Data Quality** What is the quality of your data sources?	Data gaps, discrepancies, with many reconciliation efforts	Data complete, mastered, with contextual metadata
	Data Access How easily accessible is the data you need?	Need new methods to source the data or buy it elsewhere	Data owned, accessible ready for training, validation, testing
	Model Usability To what extent is there are there models ready for use in your industry?	Need to build a model from scratch, in house	Pre-built inhouse or vendor accessible/useable with APIs
Impact	**Economic Value** What benefits are realized by this use case?	No clear business case tied to this use case	High efficiencies gains and/or revenue growth opportunities
	Business Impact How scalable is the impact to the business?	Low employee productivity impact or customer experience	Augments many people, streamlines multiple processes
Risk	**Data Privacy** How sensitive is the data landscape in your industry?	Highly sensitive	No PII or CII
	Generative Accuracy How accurate to the results need to be?	Highly accurate, one hallucination and we'll be sued	A few errors won't negatively impact the business
	Generative Security How secure does the information need to be?	None of the information generated can leak	It's ok if the generative content gets out to the public



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What skills will the new workforce need to succeed?

For a company looking to expand its AI capabilities, the workforce of the future will need to have several key skills including:

Technical skills

Knowledge and proficiency in data science, deep learning, natural language processing, and other relevant AI technologies.

Critical thinking

Capacity to evaluate and interpret AI-generated insights and make informed business decisions.

Analytical skills

Ability to analyze and interpret data using AI-powered tools and platforms to gain insights into customer behavior and preferences.

Interpersonal skills

Strong communication skills to collaborate with AI experts and effectively communicate complex information to internal and external stakeholders.

Creativity and innovation

Capacity to identify and develop new AI-based products and services that meet evolving customer needs and preferences.

Lifelong learning

A willingness and interest in continually updating skills and knowledge to keep up with rapidly evolving AI technologies.

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AI in Control

Key risk:*
Gaps in corporate governance: e.g. is this in line with ethics & values?

Key risk:*
Lack of explainability: e.g. how to explain this to the customer (or regulator)?

Key risk:*
AI getting decisions wrong: e.g. risk of approving/rejecting the wrong mortgage applications

Key risk:*
AI getting out of control: e.g. can we stay in control of decisions it makes?

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Thank you

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