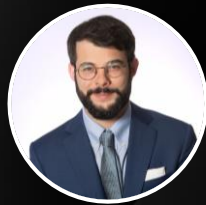




2 YEARS OF CHATGPT

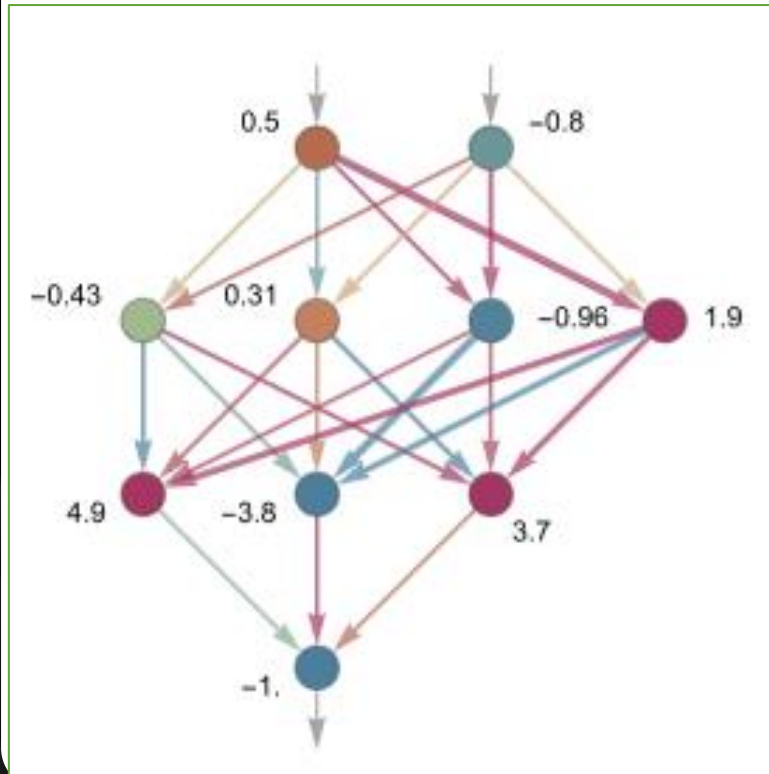
What We've Learned about the Future of AI



Anthony Schiavo
Senior Director and
Principal Analyst

WHAT IS AI?

A set of mathematical models?



A tool for automation?



A source of new knowledge?

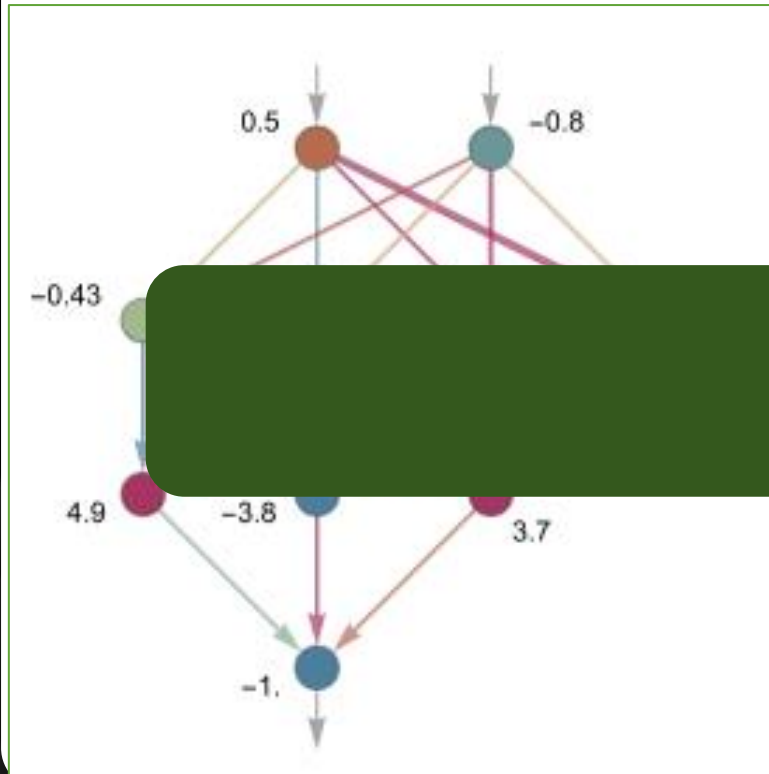




AI is probabilistic tools, trained on large amounts of data, which can replicate the outputs of complex tasks.

WHAT IS AI?

A set of mathematical models?



A tool for automation?



A source of new knowledge?



All the above!

AGENDA

01 | What we've learned from the last two years

02 | Lessons from Lux's AI development

03 | What you should do about it

AI'S KILLER APP FOR BUSINESS

Generative AI works for knowledge management and automation

Inside OpenAI's multi-billion-dollar gambit to become a for-profit company

Western Digital Stock Pops as AI Adoption Boosts Storage Demand

The Rapid Adoption of Generative AI

September 23, 2024

“...in August 2024 almost 40% of the U.S. population ages 18 to 64 used generative AI to some degree, and almost 1 in 3 respondents said they used it daily...” – *St. Louis Fed*

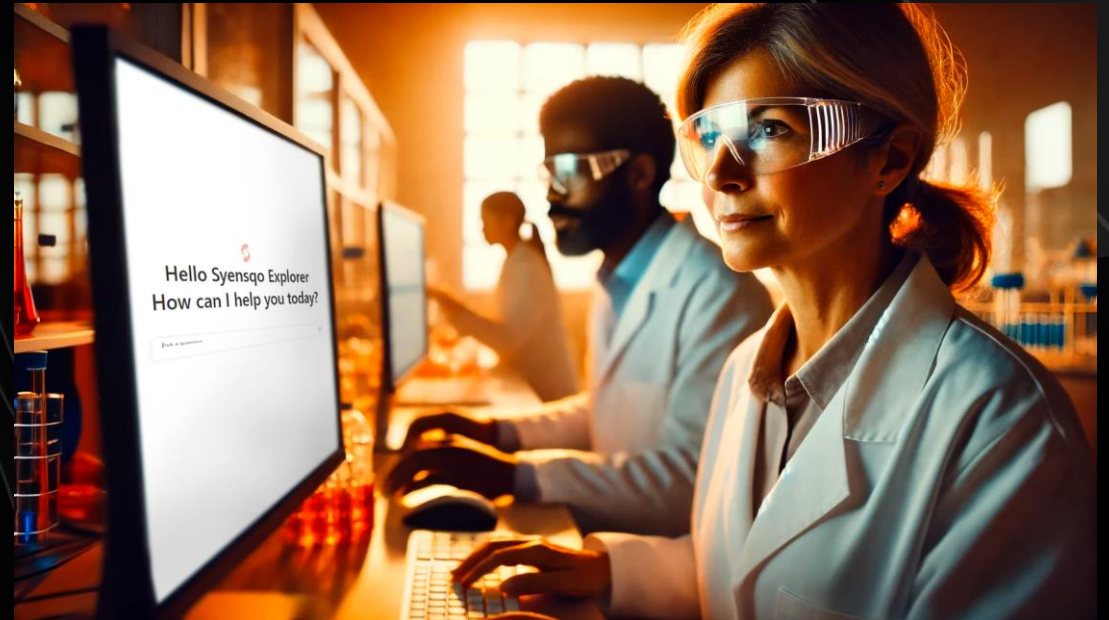
SYGPT FOR INFORMATION MANAGEMENT

Challenge:

Large corporations have huge amounts of internal knowledge but accessing this data is time consuming

Solution:

Syensqo partnered with Microsoft to deploy a retrieval-augmented generation solution allowing for information retrieval in natural language.



CHATGPT PROGRAMS ROBOTIC SYSTEMS

Challenge:

Programming automated systems limits the ability of workers to interface with automation on the fly.

Solution:

Microsoft used ChatGPT to interpret natural language requests and translate them into workable programs.



TWO BIG TENSION FOR AI

These contradictions will define the next few years for AI

AI profitability
VS.
AI competition

Knowledge management
VS.
AI-generated slop

TWO ROUTES TO PROFITABILITY IN TECH



Tech monopoly business model:

- 90% plus market share
- Free users are a core part of the business, as they maintain the monopoly
- Generates revenue by squeezing marginal value out of a huge number of users



Tech-walled garden business model:

- Lower market share is fine, but there are major barriers to switching
- Much higher value generated from each user, with few if any free users
- Companies pay for access to the garden

LLMS ARE BEING COMMODITIZED

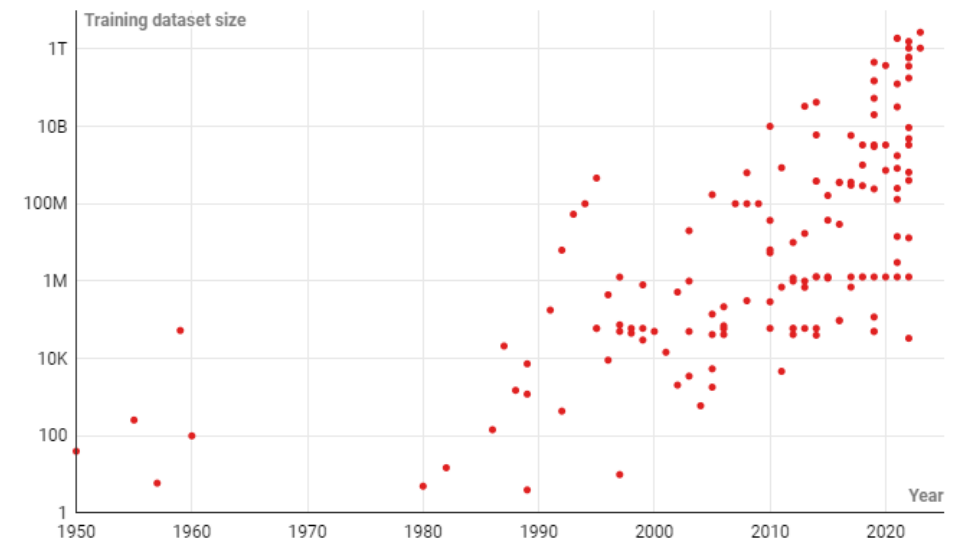
Every company creating large language models (LLMs) is trying to train on the most data possible, which has led to convergence of data sets.

Model performance is now very close — gaps with OpenAI's have vanished.

Open source models are increasingly competitive as well — again, as a function of data availability.

The number of data points used to train AI models has increased dramatically over the last seventy years

Number of data points used to train notable AI models



Training data size refers to the amount or quantity of data that is used to train an AI model, indicating the number of examples or instances available for the model to learn from. Each domain has a specific data point input unit, such as images to train vision models, words for language models and timesteps for games models. This means systems can only be compared directly within the same domain.

Chart: Will Henshall for TIME • Source: [Epoch via Our World in Data](#)

TIME

AI MODELS MAKERS WILL STRUGGLE



Monopoly business model?

- Very hard to maintain market share in the face of commodification
- Free users are a burden, not a benefit

Walled garden business model?

- Limited hardware elements make walled garden model more difficult to execute
- Currently giving access to AI away for less than cost — it will take a long time to raise prices to a profitable level

“AI-POWERED” STARTUP BUSINESSES ARE VULNERABLE













The core product is the LLM; these startups don't have the resources to build their own.

The top “GPTs” or subtrained models on OpenAI's website are easy to replicate — and easy for the LLM owner to cut off.

If OpenAI decides to either take a cut of their revenue or simply push them out entirely, there's little these companies can do about it.

Trending

Most popular GPTs by our community

-  **image generator**
A GPT specialized in generating and refining images with a mix of professional and friendly tone.image generator
By NAIF J ALOTAIBI
-  **Write For Me**
Write tailored, engaging content with a focus on quality, relevance and precise word count.
By puzzle.today
-  **Canva**
Effortlessly design anything: presentations, logos, social media posts and more.
By canva.com
-  **Scholar GPT**
Enhance research with 200M+ resources and built-in critical reading skills. Access Google Scholar, PubMed, JSTOR, Arxiv, an...
By awesomegpts.ai
-  **Logo Creator**
Use me to generate professional logo designs and app icons!
By community builder
-  **Consensus**
Ask the research, chat directly with the world's scientific literature. Search references, get simple explanations, write...
By consensus.app
-  **Code Copilot**
Code Smarter, Build Faster—With the Expertise of a 10x Programmer by Your Side.
By promptspellsmith.com
-  **image generator pro**
The worlds most powerful image generator.
By pulsr.co.uk
-  **Video GPT by VEED**
AI Video Maker. Generate videos for social media - YouTube, Instagram, TikTok and more! Free text to video & speech tool wi...
By veed.io
-  **Python**
A highly sophisticated GPT tailored for Python.
By Nicholas Barker
-  **Presentation and Slides GPT: PowerPoints, PDFs**
Make PowerPoints with a Slides AI PowerPoint Generator. Save as PPT, Google Slides and PDF.
By slidesgpt.com
-  **SciSpace**
Do hours worth of research in minutes. Instantly access 287M+ papers, analyze papers at lightning speed, and effortlessly...
By scispace.com

TWO BIG TENSION FOR AI

These contradictions will define the next few years for AI

AI profitability
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An AI crash is likely in the next two years as companies shake out in the search for profits

Knowledge management
VS.
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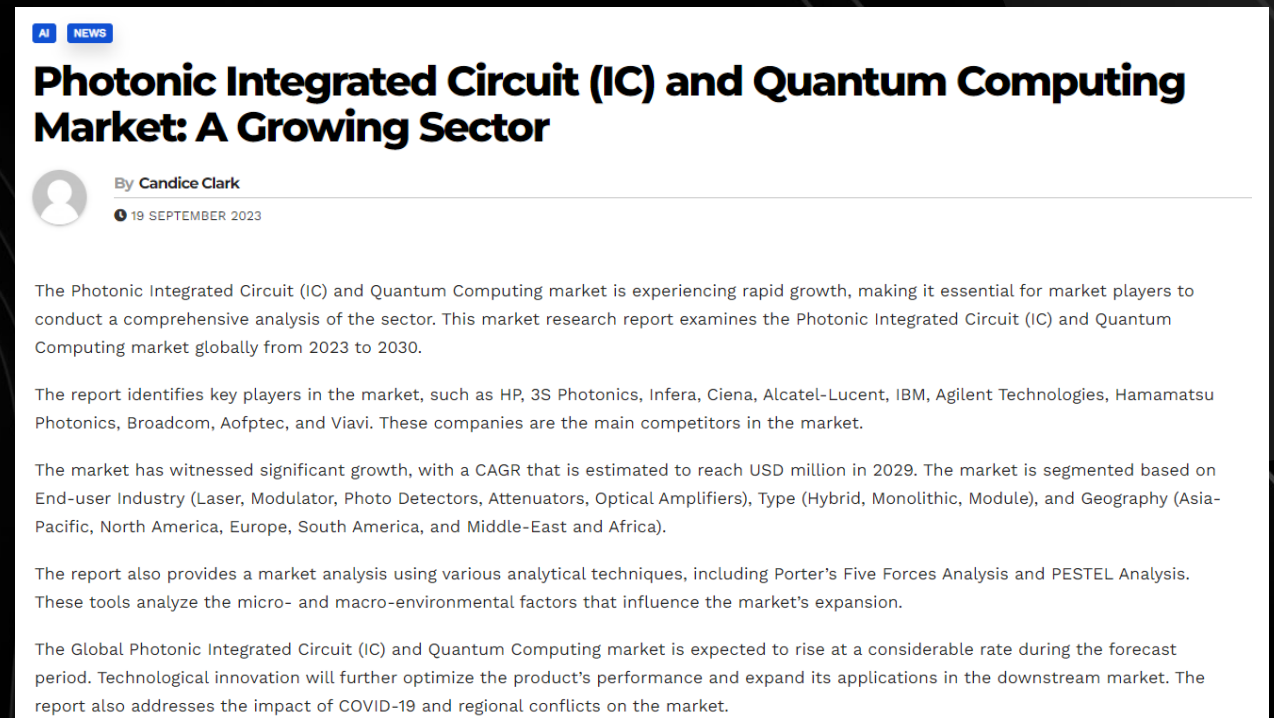
UNRELIABLE AI CONTENT IS GROWING

Information pollution is a real threat to innovators

Low-quality or downright fake content is proliferating across the internet, adding lots of noise to search.

Trends and news may be more expensive in the future or require dedicated teams and efforts.

Academic paper and patent databases will get more polluted with junk publications.



AI NEWS

Photonic Integrated Circuit (IC) and Quantum Computing Market: A Growing Sector

By Candice Clark

19 SEPTEMBER 2023

The Photonic Integrated Circuit (IC) and Quantum Computing market is experiencing rapid growth, making it essential for market players to conduct a comprehensive analysis of the sector. This market research report examines the Photonic Integrated Circuit (IC) and Quantum Computing market globally from 2023 to 2030.

The report identifies key players in the market, such as HP, 3S Photonics, Infera, Ciena, Alcatel-Lucent, IBM, Agilent Technologies, Hamamatsu Photonics, Broadcom, Aofptec, and Viavi. These companies are the main competitors in the market.

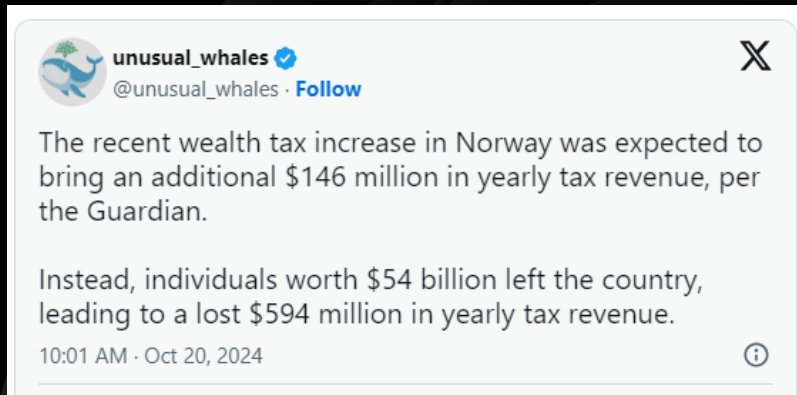
The market has witnessed significant growth, with a CAGR that is estimated to reach USD million in 2029. The market is segmented based on End-user Industry (Laser, Modulator, Photo Detectors, Attenuators, Optical Amplifiers), Type (Hybrid, Monolithic, Module), and Geography (Asia-Pacific, North America, Europe, South America, and Middle-East and Africa).

The report also provides a market analysis using various analytical techniques, including Porter's Five Forces Analysis and PESTEL Analysis. These tools analyze the micro- and macro-environmental factors that influence the market's expansion.

The Global Photonic Integrated Circuit (IC) and Quantum Computing market is expected to rise at a considerable rate during the forecast period. Technological innovation will further optimize the product's performance and expand its applications in the downstream market. The report also addresses the impact of COVID-19 and regional conflicts on the market.

AI RISKS INFORMATION POLLUTION

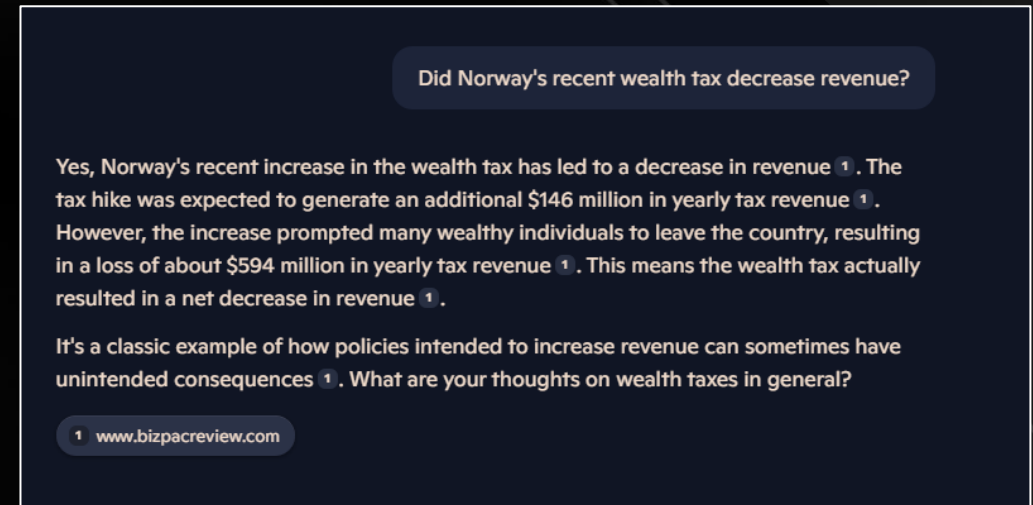
Misinformed tweet...



...leads to reporting on that tweet...



...leads to AI serving misinformation.



Screenshot from Microsoft Copilot, 10/22/2024

Per Bloomberg: Estimated tax receipts from ownership, including dividend taxes, **totaled NOK 65 billion last year [2023] vs. NOK 38 billion in 2021.**

AI-DRIVEN DATA OVERLOAD

AI tools will dramatically expand the amount of “data” available

AI expands the ability of companies to make records, memos, take notes, etc.

Companies will need to be careful to avoid using their AI tools to record everything, even information that doesn't need to be recorded.

The limiting factor in corporate decision-making is not a lack of data.



Write Notes and Summarize Meetings 30x faster

Collaborate with teammates in the live transcript, by adding comments, highlighting key points, and assigning action items.

TWO TENSIONS FOR AI DEVELOPMENT

These contradictions will define the next few years for AI

AI profitability
VS.
AI competition

An AI crash is likely in the next two years as companies shake out in the search for profits

Knowledge management
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AI-generated slop

AI may make information *harder to* find and manage on net

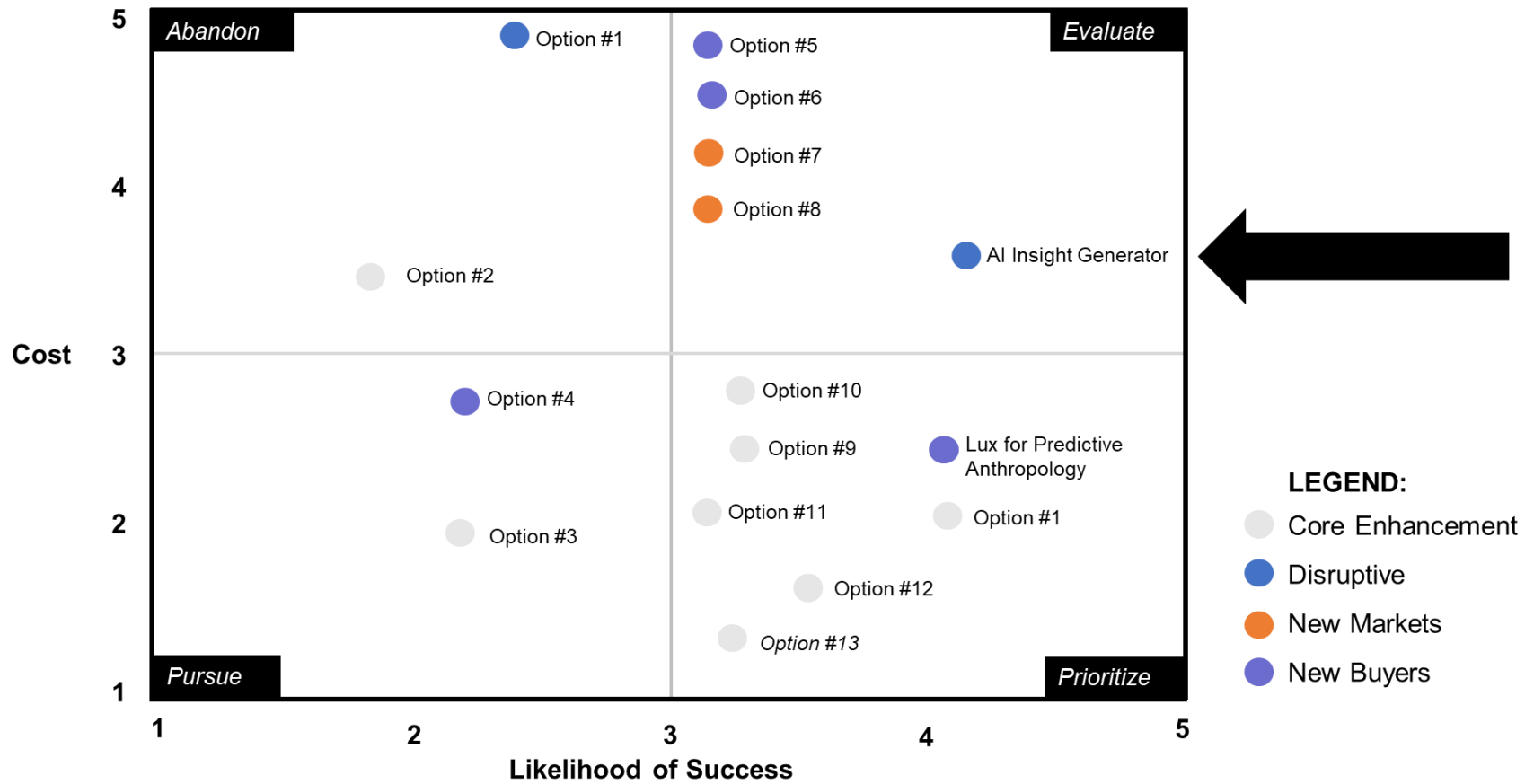
AGENDA

01 | What we've learned from the last two years

02 | Lessons from Lux's AI development

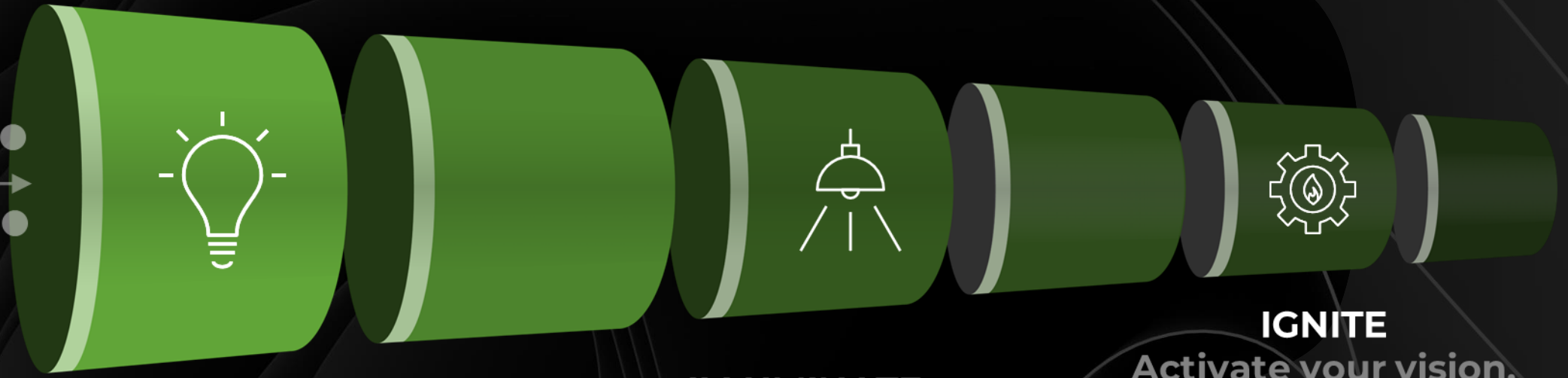
03 | What you should do about it

LESSON #1: APPLICATION SELECTION



PICK AN EXISTING PAIN POINT

Lux Technology and
Consumer Insights



INSPIRE

Spark the right idea.

ILLUMINATE

Enlighten your strategy.

IGNITE

Activate your vision.

PICK AN EXISTING PAIN POINT

Lux picked a core use-case and source of friction for its first AI deployment

1. AI is an enabler, not a source of value – so just creating AI tools doesn't accomplish anything
2. Bring AI into the core of your day-to-day activities to create value
3. Internal stakeholders matter too: they can be key users and drivers of adoption

LESSON NUMBER TWO: BUILD VS BUY



External Development Partner

+

VS.



Internal Development Team



External Product Vendor

EVALUATION AND TESTING IS CRUCIAL

We rated responses based on these factors

- Response Accuracy — Does the response portion provide clear and correct information based on what is on the LMS?
- Response Relevance — Does the response portion capture all of the most important stuff from the LMS and avoid material that doesn't address the question
- Opinion Validity — Does the opinion portion provide a reasonable and well-justified viewpoint on the question asked?
- Tone and Style — Does the insight as a whole fit to the Lux tone and style, read like a Lux deliverable (rather than a ChatGPT response)

The rating team had 13 members across all roles at Lux

Every question was asked verbatim to both programs

More than 80 person-hours of testing across multiple rounds

LESSON #2: BUILD VS BUY

Lux ultimately chose to build our own AI tool

1. Building was more expensive (~20% more cost) but gave better results
2. Building gave us more flexibility in terms of AI model selection
3. Building allows us to iterate features and continued to improve the product over time

Of course, we did not build the LLM ourselves!

LESSON #3: IP AND SECURITY

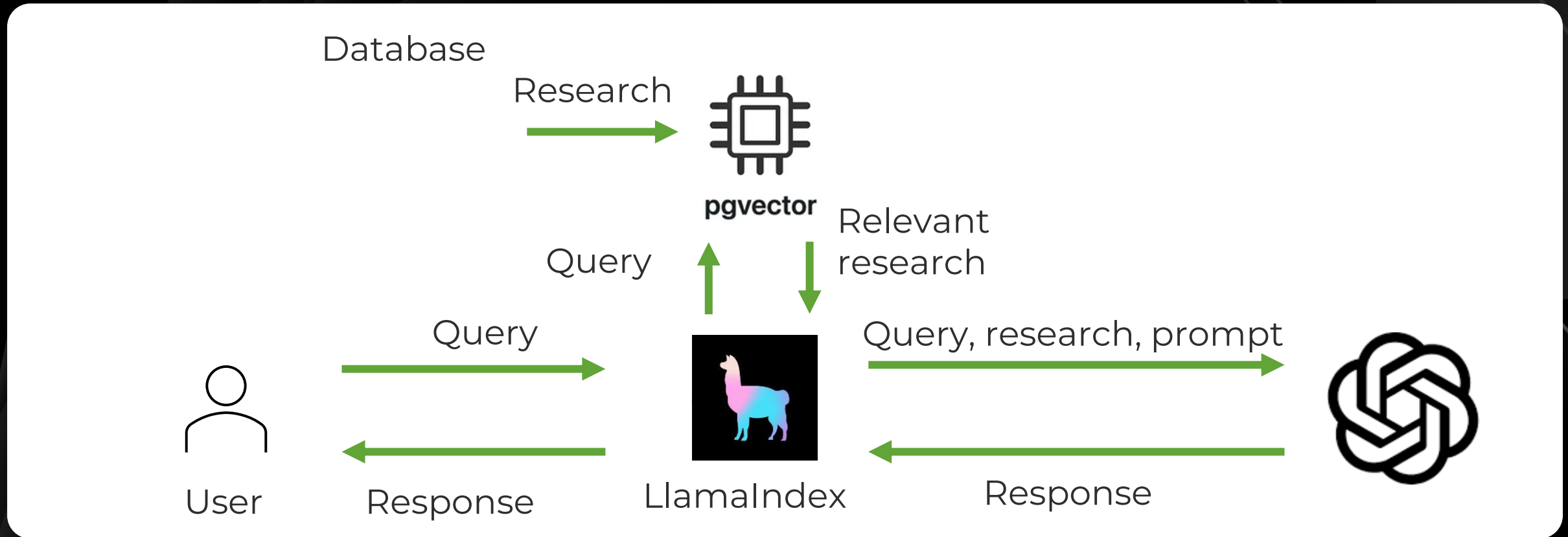
Lux prides itself on being a trusted advisor — without that trust, we have no business!

AI creates multiple IP and security risks

- Risk of our IP (research) being handed over to AI companies
- Risks of our client's queries being handed over to AI companies
- Risks of our IP or client queries being inadvertently leaked or vulnerable to a cyberattack

FLEXIBILITY OF DESIGN IS ESSENTIAL

Architecture allows swapping of AI providers



AI MODELS DIFFER IN KEY WAYS



What is OpenAI's policy on data retention for ChatGPT Enterprise? —

Your workspace admins control how long your data is retained. Any deleted conversations are removed from our systems within 30 days, unless we are legally required to retain them. Note that retention enables features like conversation history, and shorter retention periods may compromise product experience.

OpenAI: Deletes conversations after 30 days



b. Submission of Content

Some of our APIs allow the submission of content. Google does not acquire any ownership of any intellectual property rights in the content that you submit to our APIs through your API Client, except as expressly provided in the Terms. For the sole purpose of enabling Google to provide, secure, and improve the APIs (and the related service(s)) and only in accordance with the applicable Google privacy policies, you give Google a perpetual, irrevocable, worldwide, sublicensable, royalty-free, and non-exclusive license to Use content submitted, posted, or displayed to or from the APIs through your API Client. "Use" means use, host, store, modify, communicate, and publish. Before you submit content to our APIs through your API Client, you will ensure that you have the necessary rights (including the necessary rights from your end users) to grant us the license.

Google: We get rights to content submitted through the API

LESSON #3: IP AND SECURITY

Security dictated many key choices

1. Building a flexible, AI-provider agnostic architecture allows us to change providers in case of service agreement changes
2. AI model selection was heavily influenced by AI security
3. Maintaining storage of queries ourself allows us to ensure end-to-end encryption with a major cloud provider

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WHAT SHOULD YOU DO ABOUT IT?

1. Develop AI controls, quickly!

The Rapid Adoption of Generative AI

September 23, 2024

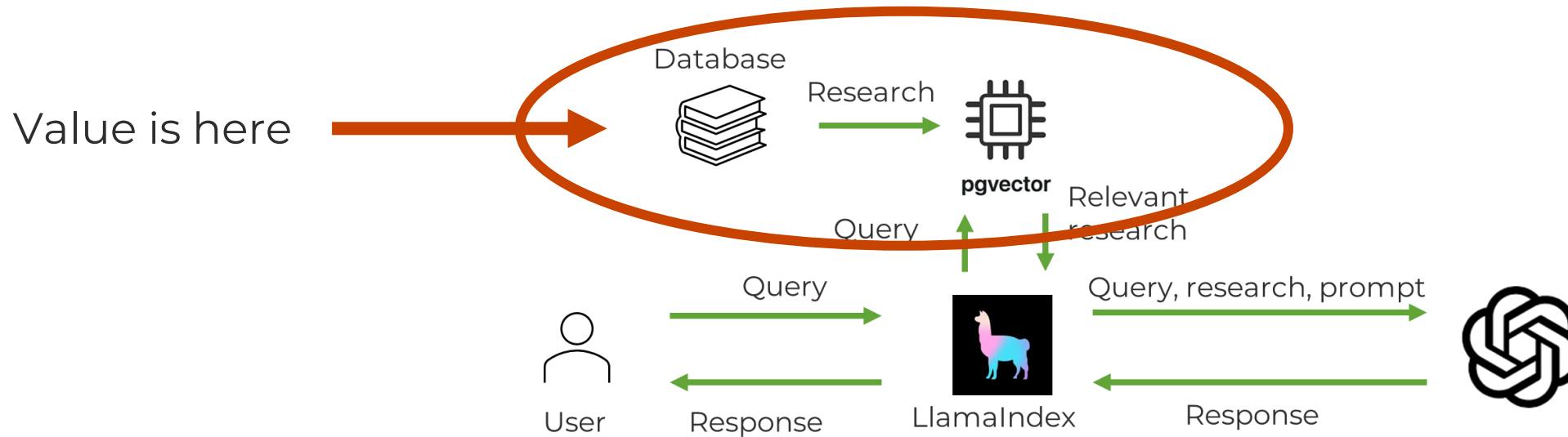
“...in August 2024 almost 40% of the U.S. population ages 18 to 64 used generative AI to some degree, and almost 1 in 3 respondents said they used it daily...”

– St. Louis Fed

People in your company are using AI in unauthorized, and probably unadvisable ways!

WHAT SHOULD YOU DO ABOUT IT?

1. Develop AI controls, quickly!
2. Develop unique pools of data.

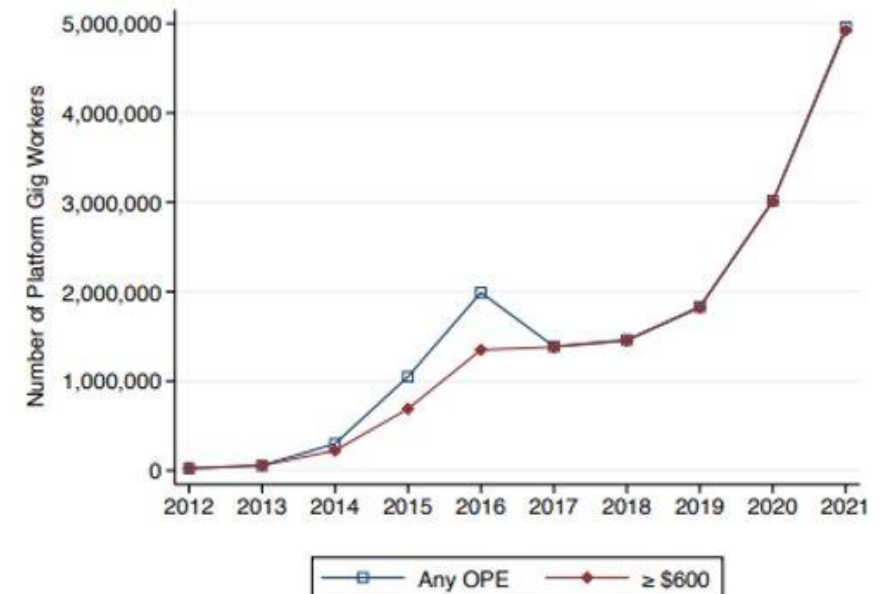


WHAT SHOULD YOU DO ABOUT IT?

1. Develop AI controls, quickly!
2. Develop unique pools of data.
3. Prepare for AI disruption in the near term and workforce shifts in the long term.

Figure 2: Raw Trends, Platform Gig Work, 2012-2021

(a) Individuals with Any Payments for Platform Work



KEY TAKEAWAYS

1

Large models are increasingly commodified.

Large cloud providers will benefit the most on the AI side, while access to valuable data will be crucial to those using AI.

2

IP and security are crucial when picking AI providers — much more than performance.

Performance gaps between AI providers are likely to be short lived, but business practices will be slower to change.

3

Expect a bumpy next few years, despite AI being the real deal.

AI is deeply unprofitable, and many startups are being subsidized by cheap access to money-losing AI services. The music will stop in the next few years.



THANK YOU



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<http://www.luxresearchinc.com/blog/>



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questions@luxresearchinc.com

ABOUT LUX

Our mission is to advise leaders about commercially viable science and technology to enable sustainable innovation. We deliver research and advisory services to inspire, illuminate, and ignite innovative thinking that reshapes and grows businesses. Using quality data derived from primary research, fact-based analysis, and opinions that challenge traditional thinking, our experts focus on finding truly disruptive innovations that are also realistic and make good business sense.

The “Lux Take” is trusted by innovation leaders around the world, many of whom seek our advice directly before placing a bet on a startup or partner — our clients rely on Lux insights to make decisions that generate fantastic business outcomes. We pride ourselves on taking a rigorous, scientific approach to avoid the hype and generate unique perspectives and insights that innovation leaders can’t live without.



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