



# AI ABUNDANCE

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YEARS TO PREPARE FOR  
THE INEVITABLE BUSINESS  
EXTINCTION EVENT

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## WHY YOU HAVE ONLY FIVE YEARS! TO PREPARE FOR • THE INEVITABLE BUSINESS EXTINCTION EVENT

Despite all the hype, AI has yet to make a transformative impact on most businesses. The technology has produced a few must-haves, so a lot of companies are making minor investments in AI. But at this stage of the technology's development, this cautious approach is a mistake that could prove to be fatal for many businesses.

### AI ABUNDANCE WILL ARRIVE BY 2026

The companies that don't begin transforming into AI-driven organizations in the next five years place themselves at risk of extinction. In 2026 we will reach a phase I call AI Abundance™, a moment when AI's adoption accelerates so quickly that any company not already deploying AI will be unable to catch up.

Because I'm making a bold, specific claim about the future, I'll carefully lay out my reasoning. This essay isn't about AI as a technology but rather about how companies choose to respond to this inevitable and disruptive shift. I hope it helps you convince your executive leadership to take AI more seriously and accelerate your AI transformation investments.

### THREE PHASES OF EXPONENTIAL TECHNOLOGIES

For simplicity I'll use the term exponential technologies to refer to technologies that follow an exponential adoption growth curve. Ray Kurzweil famously calls this growth phenomenon the law of accelerating returns. AI is an exponential technology, as were the internet, electricity, COVID-19, plant-based meats, electric cars, and Bitcoin.

Exponential technologies develop slowly at first. Few people even notice them in the beginning stage. As adoption picks up, more people recognize their potential but only a few take action. These technologies reach a tipping point when everyone sees the new reality, tries to act at once, and kicks themselves for not acting earlier.

Exponential curves are mathematically continuous functions, but we can break our human reaction to them into three distinct phases, as illustrated in Figure 1.

## THREE PHASES OF EXPONENTIAL TECHNOLOGIES

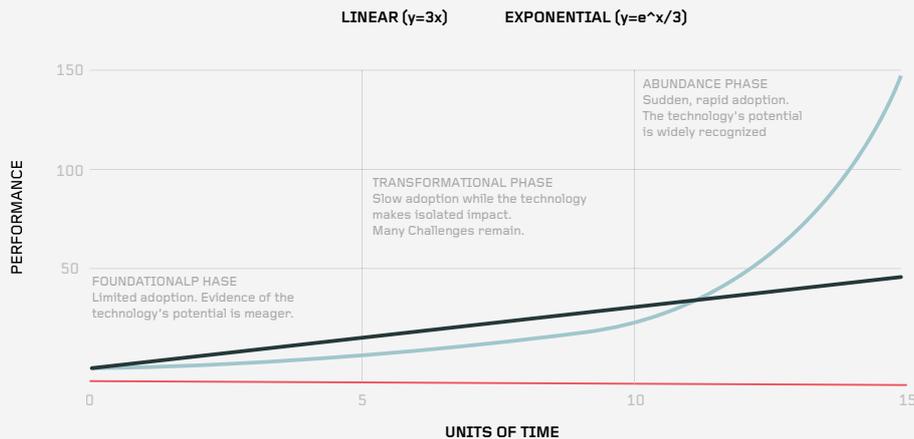


Figure 1: Exponential change events such as AI, the internet, COVID-19, and Bitcoin follow three distinct phases.

## FOUNDATIONAL PHASE

During the foundational phase, only hardcore enthusiasts invest time or money in the technology. These are the people who couldn't stop talking about the internet in 1993, Facebook in 2006, Bitcoin in 2012, AI in 2017, and COVID-19 in January 2020.

The technology doesn't work well in the foundational phase. Most companies get more immediate ROI from other investments. Improvement happens very slowly. Most people who learn anything about these young technologies are skeptical. Often the skeptics are correct about the details, if not about the technology's overall growth capacity.

During the foundational phase, the course of exponential technologies is extremely difficult to predict. Many technologies never bear fruit, despite the hope and hype they sometimes engender. I was once an enthusiast for virtual worlds, nanotechnology, the semantic web, and personalized medicine. None of these ideas achieved exponential growth in the timeframe I expected, and my investments in them amounted to nothing.

But you and I don't need to kick ourselves if we didn't buy Amazon stock in 1997 or Bitcoin in 2013. Hindsight bias causes us to think, "I knew it all along!" But in reality identifying exponential technologies in the earliest phase is often a matter of luck.

Technologies in the foundational phase are the domain of venture capitalists, startup founders, and corporate innovation programs. It just isn't practical (or necessary) for most companies to make significant bets on them.

# TRANSFORMATIONAL PHASE

The battle for dominance and survival happens during the transformational phase. During this phase, the technology's potential starts to take shape as companies report early, narrow success stories. Venture investment in the space accelerates even as new problems emerge. The technology precipitates conferences, new kinds of job descriptions, and news stories.

Leaders begin advocating for more investment in the technology. As early results roll in, they can foresee the opportunities—and the risks—that the technology creates. But skepticism still abounds. The technology doesn't work well yet, and companies that aggressively invest too early produce high-profile failures.

The people who are most educated about the technology are often the most skeptical. They're closest to the problems and see what appears to be only linear progress in the day-to-day struggle for improvement. This reaction is perfectly reasonable. Figure 1 shows that the initial shape of the exponential curve appears linear. The hype of the foundational phase subsides as reality hits home—the transformational phase is a battle against a host of formidable obstacles.

Companies begin taking divergent paths during the transformational phase. Some CEOs and boards accelerate their investment in the technology based on emerging opportunities or threats. Others make minor investments in pilots and marketing to create the perception of innovation. Most take a wait-and-see approach, mistakenly assuming that they can “fast follow” after the leaders pave the way.

Almost everyone expects continued linear progress. Very few recognize the moment when that growth line begins to veer so steeply upward that they risk losing their footing in the market.

# ABUNDANCE PHASE

At some point the exponential technology suddenly and dramatically diverges from linear progress. The moment that everyone realizes what's happening, the game is already over. The cost of entry spikes as the laggards try to catch up. New competitors appear seemingly out of nowhere. Stock prices fall. In some cases, entire industries collapse and society is rocked from the shock. CEOs are fired and the next Elon Musk or Steve Jobs is catapulted from the realm of evangelist to cultural icon.

Outsiders react to the abundance phase predictably: “It happened so fast!” But they're wrong. They just didn't realize that they were following an exponential curve with brains that evolved to predict only linear progress.

# HISTORICAL CASE STUDIES

Before getting into AI, I'm going to use the three-phased framework to talk about historical exponential technologies.

## COVID-19

Referring to a virus that originated in nature as a technology may seem odd at first, but biotechnology most certainly belongs in the same category as other exponential technologies. Regardless, this essay isn't about the technology itself, but how we respond to it. COVID-19 is a particularly good case study because it happened recently and we can all relate to it.

The following figure plots the infection growth rate along with key events within the three phases of exponential technologies.

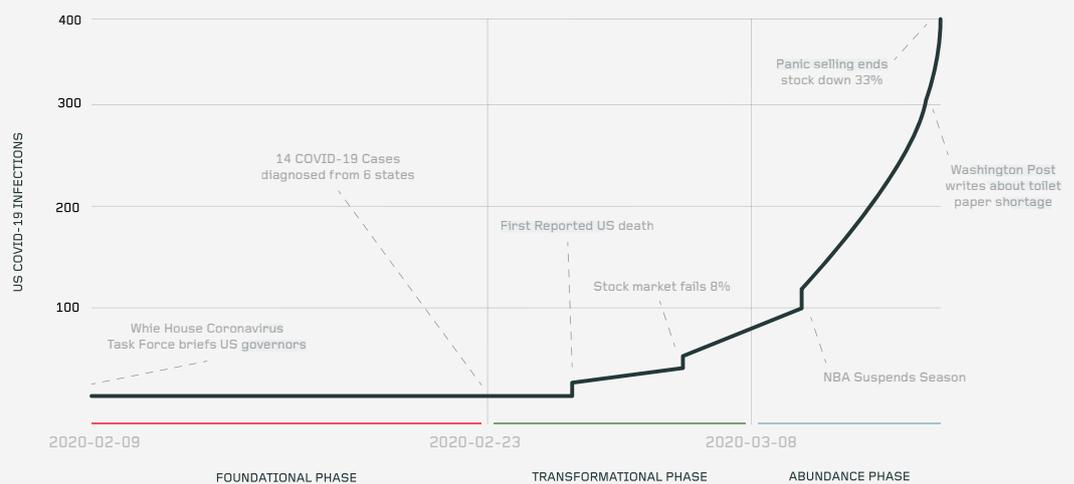


Figure 2: COVID-19 infection rate in the United States from February 9, 2020, to March 15, 2020. Key historical events are plotted within the three phases. Source: Our world in data

I will share my personal experience during this period. I expect yours is similar.

# FOUNDATIONAL PHASE

I don't recall hearing much about COVID-19 until the end of January 2020. When I did, I ignored it, assuming it would follow the same path as Ebola, SARS, H1N1, and Zika: a critical issue for public health but something that wouldn't affect me.

During the early days, I was blissfully ignorant of what would ultimately become one of the most significant events of my life.

# TRANSFORMATIONAL PHASE

On February 19, 2020, I received a rather strange email from a mailing list I joined when I lived in China a few years ago. The US Department of State was warning about a virus outbreak (see Figure 3).

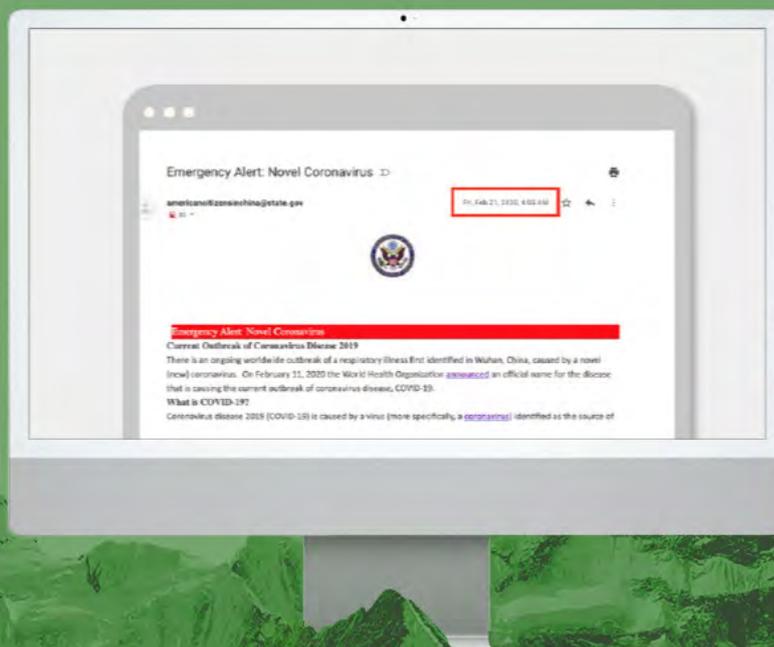


Figure 3: An email I received from the US Department of State in late February signals the beginning of the transformational phase.

I recall thinking to myself, "Good thing I'm no longer in China!" And then I went back to work. Over the next week, I started receiving messages from friends and family. They sent links to blog posts about the end of the world, along with instructions about washing hands regularly and staying safe during travel.

On March 1, I flew to Nashville for a meeting and took a few extra precautions to wipe down my phone and laptop. I even wore a mask for the flight out. On the return flight, I took off the mask when a colleague told me that masks don't do anything.

Friday, March 6, was a day I will never forget. While walking through downtown Savannah, I spoke to a neighbor about steps her company was beginning to take to prepare for a pandemic. When I expressed some skepticism, she described the possibility of a shutdown in commerce and travel. Something clicked in my mind, and I decided to start preparing seriously.

That weekend I started reading about how to prepare. I bought disinfectant, hand sanitizer ingredients, and copper foil in hopes of avoiding the contagion. At the supermarket I stocked up on essentials. And, yes, this included plenty of beer!



## ABUNDANCE PHASE

I planned to continue my preparations the next week. Unfortunately, I was too late. By then, companies had started sending workers home, and grocery stores were emptied of essentials. The NBA canceled its season, and other sports soon followed suit. The stock market started plunging.

And you know the rest.

## COVID-19 LESSONS

Should I have known in January that a global pandemic was about to shut down the planet? Of course not! There wasn't enough evidence to make a reliable prediction during the foundational phase.

But during the transformational phase, I could have done better. One question would have changed my course: "What if they're right and we really are at the beginning of a pandemic? What small steps can I take to prepare?" A few simple preparations during this phase would have been cheap and relatively risk-free.

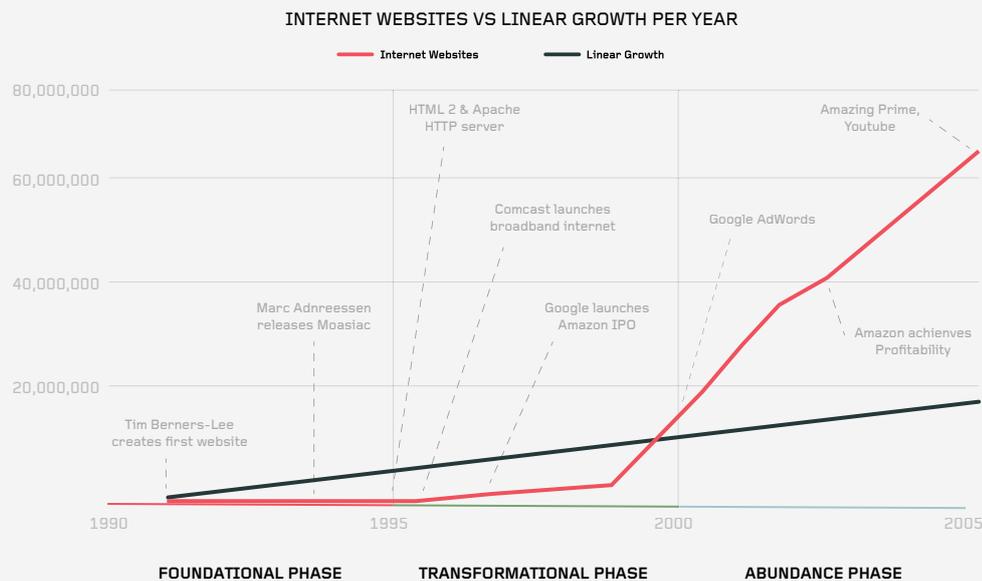
This decision-making period happens for every exponential technology. The transformational phase grants us a window of opportunity to act. I acted only at the last possible moment, so I faced more scarcity and uncertainty than people who acted earlier.

Those who recognized the moment of decision profited from the stock market's collapse and bought the last of the toilet paper. Had they been wrong, they would have lost some money on expiring put options and had a few laughs about their stockpile of toilet paper. But these relatively simple and risk-free moves made all the difference when the abundance phase arrived.

# THE INTERNET

As I discuss in *Become an AI company in 90 days*, AI is a broad, revolutionary technology like electricity, computers, and the internet. The internet provides a great recent case study on what to expect from an exponential technology.

Let's use the number of worldwide websites as a proxy for the internet's early adoption curve. Figure 4 plots the number of websites for the first 15 years of the internet's existence. Nine years passed before the internet grew to 10 million websites. In its first decade, the internet grew at the rate of less than a million websites per year. The exponential growth curve was initially slower than linear growth . . . until it wasn't.



## FOUNDATIONAL PHASE (1991-1995)

Tim Berners-Lee is credited with creating the first website in 1991. I first heard the term the internet in 1993 when I started playing around with FTP, Gopher, and America Online. It was only a curiosity until I first tried Netscape Navigator as a graduate student at Stanford in 1994. I instantly became an internet evangelist and started creating basic static websites.

It was clear to me that the internet was about to change everything. But the technology was hardly useful for most people. I remember people asking me questions like, “Where is the internet?” and “How big is the market for the internet?”

In those early years, web “pages” were hard to build. The internet was difficult to access outside of a college campus. It was painfully slow, and even small images took forever to download. There were no standards for transmitting data fast or doing secure credit card transactions. Almost no one (including me) could have envisioned how much this exponential technology would change the world.

## TRANSFORMATIONAL PHASE (1996-2000)

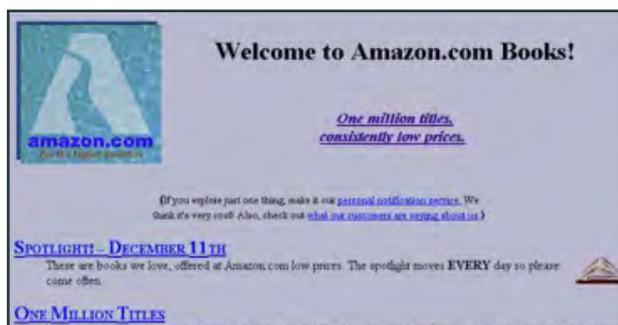
In early 1996, Mary Meeker of Morgan Stanley published the Internet trends report. Although it was designed for investors, the annual report quickly became the bible for anyone interested in tech and its impact on the world.

Meeker’s report was the first widely read publication that explained how the internet would reshape business and society for decades. It signaled the beginning of the transformational phase.

Here is an excerpt from the report’s summary:

Using the Internet as an information distribution vehicle offers companies the ability to reduce distribution costs, support costs, and cost of goods sold—and eventually to target focused customer bases. On the flip side, lower costs and easier distribution open markets for new competitors in publishing, marketing/advertising, commerce, and software development. Dislocations of traditional companies in these areas are likely in time [emphasis added] as new business models based on free trials, subscribers, advertising, and transactions emerge. . . . New companies will emerge and poorly positioned companies will die.

This was written in 1995! Google didn’t exist, and Amazon was only briefly mentioned under the heading “Coolest Commerce,” as shown in Figure 5.



### Amazon.com Books

<http://www.amazon.com>

Offers over one million books/titles, with 30% discounts on bestsellers, 10% off both hardcovers and paperbacks, and more discounts on other titles featured in its Spotlight. Also offers Eyes & Editors, a free personal notification service.

Figure 5: Meeker’s screenshot and description of a fledgling Amazon.com.

The overarching lesson here is that in Internet trends, Meeker put every retailer and addriven media company on notice. This publication was the bellwether that something big was about to happen, and those who didn’t act risked extinction. In hindsight we know that retail and technology companies had a small window of opportunity to act before Google, Amazon, and eventually Facebook would begin driving them out of business.

Unsurprisingly, the report highlights skepticism by some of the most informed industry leaders:

It's likely that development of the Internet won't be as easy as it sometimes appears. Bob Metcalfe, inventor of Ethernet and founder of 3Com, recently offered a list of provoking thoughts about what could crush the Internet, soon. . . .

But evidence that supported Meeker's assertions continued to pile up over the subsequent five years of the transformational phase. Modems and computers got faster. Broadband began to roll out. HTML standards emerged, and the Java programming language was born. Innovative companies like Akamai and Cisco developed ways to transmit TCP/IP data more efficiently.

Still, the internet grew slowly even as dotcom valuations ballooned. Critics pointed to the slow adoption of the internet as evidence that it would never amount to anything. Of course, they were making the classic mistake of misreading the slow rise of the exponential curve as slow linear growth.

Critics were hard to ignore because they bolstered their arguments with indisputable facts. I bought some Amazon stock in 1998, and a colleague advised me to sell it because Walmart's scale would allow it to crush Amazon if it so chose. (And I listened to him!)

As the internet moved through the transformational phase, the cost of entry continued to rise for legacy businesses. Talent was scarce, marketing costs increased, and legacy companies spent tremendous capital trying to catch up in the internet race. In 1999, Disney cut its way into the search space by purchasing Infoseek for \$7 billion—a move they could have made for a pittance three years earlier had they taken Meeker's advice.

## ABUNDANCE PHASE (2000-TODAY)

The transformational phase ended in March 2000 with the collapse of the dotcom bubble. Speculative companies collapsed, and the critics felt vindicated. I shut down my own startup, Soapbox.com, when I couldn't raise additional money for it.

But what felt like the end of the internet was actually the end of opportunity, as Figure 4 illustrates. Amazon, Google, and Facebook would continue riding the internet's exponential growth exactly as Meeker predicted.

By 2000, it was too late for retailers and advertising-driven media platforms to prevail. The pricing power of Amazon Prime allowed it to drive smaller competitors out of business. Google's AdWords platform pulled advertising dollars away from print media and led to the collapse of regional media properties. The traditional players couldn't catch up or muster the capital to buy disruptive new entrants like Instagram, WhatsApp, and YouTube.

# INTERNET LESSONS

Let's consider how a traditional retailer could have responded to the internet. When the internet's foundational phase began, Toys "R" Us was so dominant in the toys sector it was considered a category killer. It drove every competitor out of business.

In 1999—the same year Jeff Bezos was named Time's man of the year—Toys "R" Us attempted to catch up in the e-commerce race. Their rushed and botched execution resulted in a disastrous holiday season.

After failing to deliver gifts on time for Christmas morning, the company entered into a 10-year e-commerce partnership with Amazon. But it was already too late for Toys "R" Us. The company went through a slow, painful decline that ultimately resulted in bankruptcy in 2017.



Presumably, some executives at Toys "R" Us had read Mary Meeker's internet research report in early 1996. But based on the company's slow response, we can assume they didn't take the potential threat seriously. We can assume that no company leaders asked the most important question: What if she's right? Toys "R" Us had a window of opportunity to begin investing in e-commerce for practically nothing. They could have started developing toysrus.com when expectations, costs, and demand were all low. Or they could have invested in an e-commerce startup. Or they could have signed a favorable deal with Amazon.

During the transformational phase, the open window of opportunity allows companies to begin riding the exponential technology curve at relatively low costs. Toys "R" Us is a cautionary example of a company that failed to act until it was too late



## THE TRANSFORMATIONAL PHASE IS KEY

Study any exponential technology and you will see similar patterns. Sometimes a simple glance at stock prices tells the story. Figure 6 reveals the exponential growth of electric vehicles.

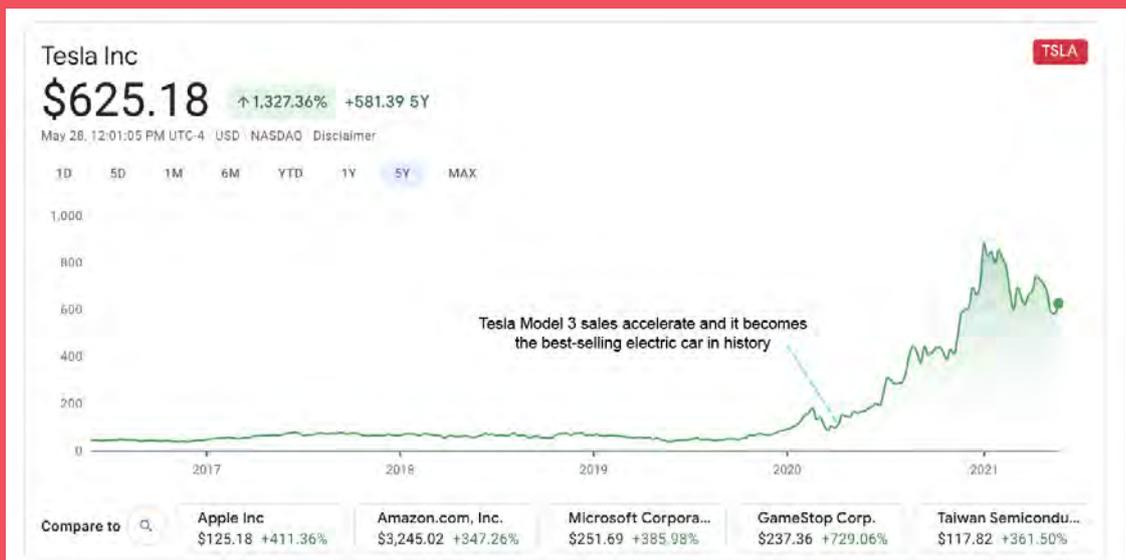


Figure 6: Major automaker stock prices over the past five years. The abundance phase began in early 2020. Source: Google Finance

Electric vehicles were under development for decades, with little adoption outside circles of enthusiasts. The success of Tesla’s Model S and the Nissan LEAF marked the beginning of the transformational phase around 2012. But traditional automakers didn’t begin mounting a serious response until Tesla Model 3 sales accelerated in early 2020—when the abundance phase arrived. In 2021 General Motors announced a plan to transition to all-electric vehicles by 2035, a move it should have made five years earlier during the transformational phase. Now it will try to catch up to Tesla, Revel, and a dozen other startups.

I could continue with additional examples of exponential technologies such as microprocessors, DNA sequencing, and Bitcoin. But in all of these examples, the message is the same. Exponential technologies cause massive economic shifts that both create and destroy wealth. Companies are unlikely to be able to compete if they fail to get in the game before the end of the transformational phase.

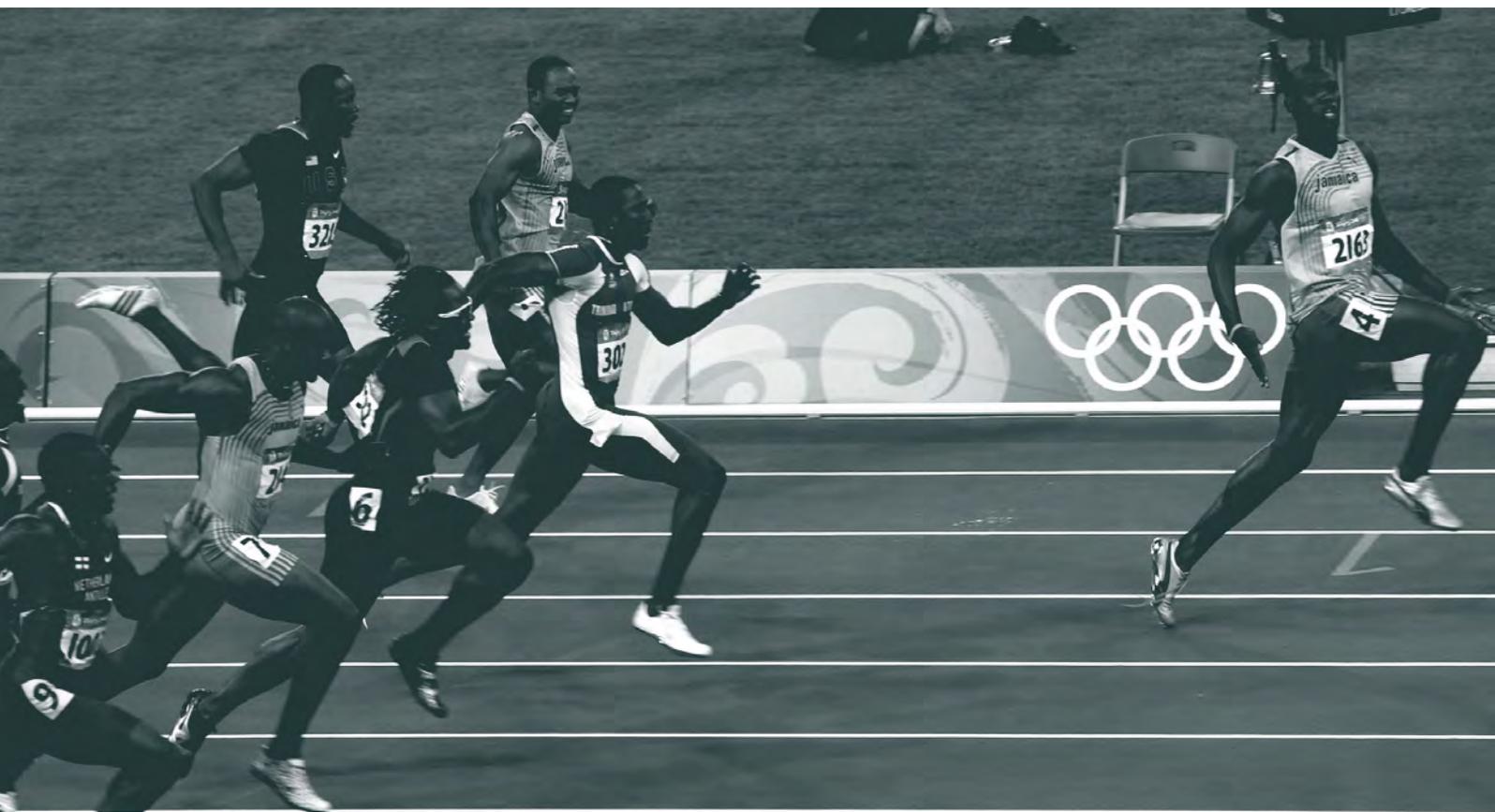
During the transformational phase, the technology slowly improves, but plenty of critics point out the obstacles to its broad adoption. How do most companies respond?

- They listen to the critics who confirm what they want to believe.
- They mistakenly assume the technology will continue a slow, linear path of improvement.
- They decide to wait for more evidence and think they can become a “fast follower” when the technology moves into the abundance phase.

**Here are the questions they don't seriously consider:**

- What if the technology's most passionate advocates are right?
- What if this is an exponential technology?
- What small bets can we make on this technology while the window of opportunity is open?

In the transformational phase, companies should consider the risk of inaction and begin making small investments while they still have the chance to do so. But most companies do nothing until the abundance phase begins. By the time the starting gun goes off and everyone sees that a race is on, it's too late. The laggards simultaneously attempt to “fast follow,” competing for the same resources and customers. But they can't catch up to competitors that are already riding the explosive growth.



# AI IS THE EXPONENTIAL TECHNOLOGY OF THIS DECADE

As I discuss in *Become an AI company in 90 days*, AI is a broad, revolutionary technology like electricity, computers, and the internet. The internet provides a great recent case study on what to expect from an exponential technology.

Because discussions about AI can quickly devolve into academic debates about terminology, let's sort out some definitions we established in our book.

- AI is a general term for "intelligent software."
- Machine learning is a type of AI.
- Deep learning is a type of machine learning and is state-of-the-art AI.
- Natural-language processing (NLP) is an AI product pattern, a practical application of

AI that solves common business problems. Most modern NLP applications are built by using deep learning.

I'll use NLP as an example to show AI's progress through the three phases of exponential technologies. NLP makes a good proxy for AI's evolution for a few reasons:

- People create natural language data for the benefit of people. As a product of AI, illustrates how computers can take over a distinctly human activity.
- Like AI in general, NLP will have a massive impact on most companies. Many companies dedicate a significant portion of their workforce to processing unstructured data in contracts, emails, and customer conversations. Automating this work will shift the operational cost and speed curves of every industry.
- Prolego has deployed a number of cutting-edge NLP applications, so I can speak specifically and authoritatively about how big companies are using it.

# EVIDENCE THAT NLP IS AN EXPONENTIAL TECHNOLOGY

The most direct evidence of NLP adoption would be a dataset of the number of NLP applications deployed each year. Unfortunately, no such dataset exists. So instead I will use correlated data as evidence that NLP is an exponential technology.

Because research is a leading indicator of technology progress, any exponential AI technology should first demonstrate growing traction by research funding. Figures 7 and 8 show how research funding for NLP has grown over the past 10 years. Both scholarly references and papers are showing exponential growth.

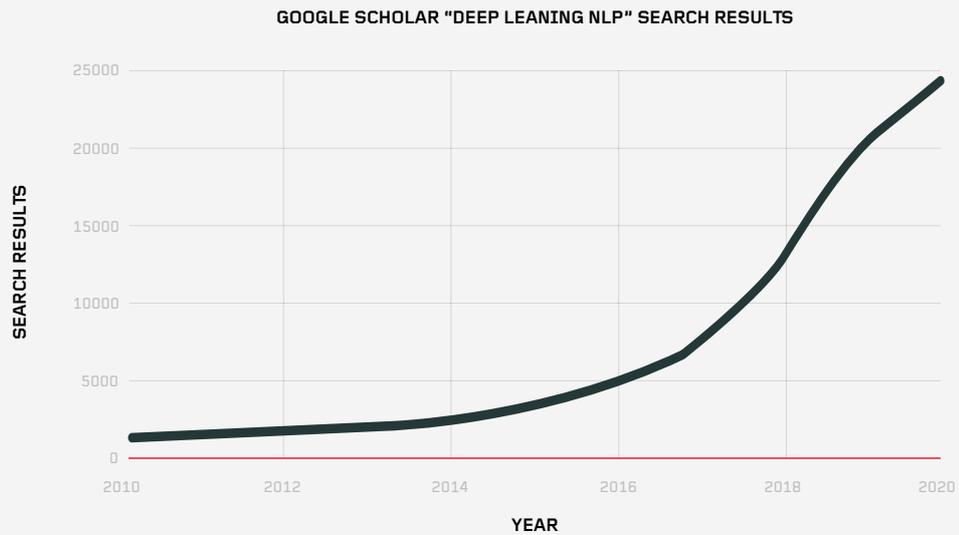


Figure 7: Search results for "deep learning NLP" on Google Scholar. Because academic research is a leading indicator of technology applications, we can assume that NLP applications will follow a similar exponential adoption curve later. Source: Google Scholar

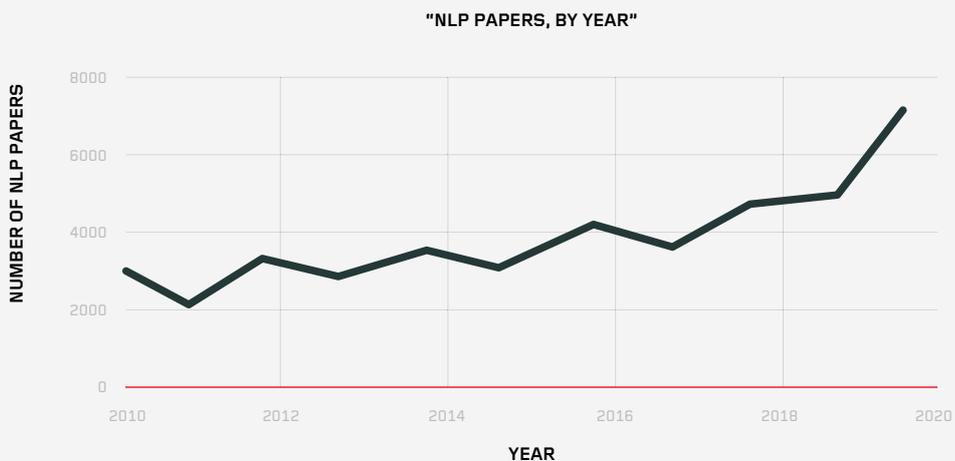


Figure 8: Number of NLP research papers published during the last decade. Publication of research papers is another leading indicator that NLP is an exponential technology. Source: NLPExplorer papers

A more direct measure of AI adoption is the rate at which deep learning NLP models are being used in applications. Hugging Face runs a popular GitHub open-source repository that NLP developers use to build applications fast. We analyzed the rate of model updates in the repository over the past 18 months. Although the survey period is short, the adoption rate shows signs of exponential growth.

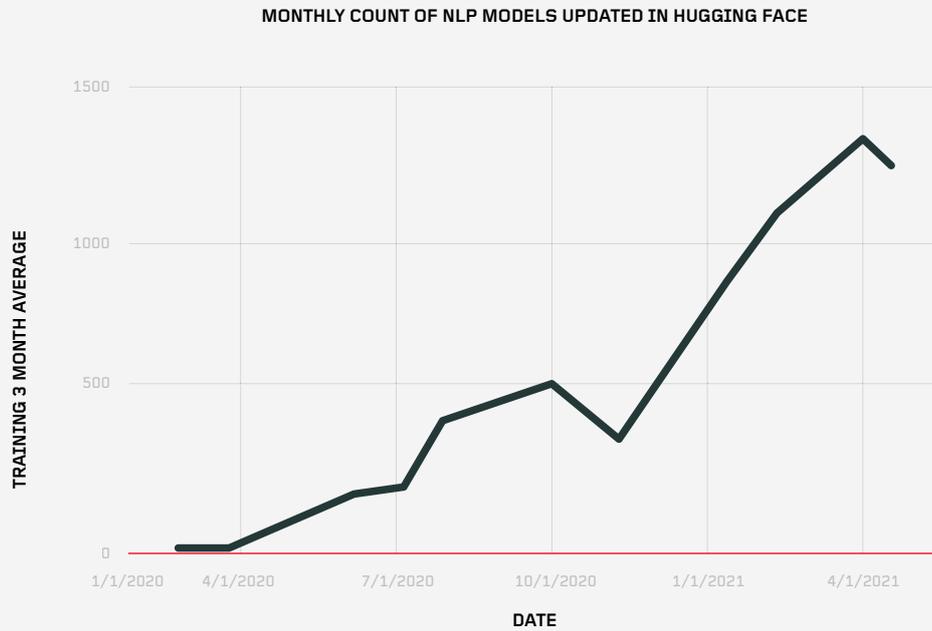


Figure 9: Trailing three-month average of monthly updates to NLP models in Hugging Face's GitHub repository. The rapid growth in updates is a function of more developers using the library, more NLP models, and more frequent software updates. Source: Hugging Face



## FOUNDATIONAL PHASE (2016-2020)

In 2016 Google relaunched Google Translate by using neural networks instead of traditional statistical and rule-based methods. The New York Times Magazine dubbed this event the beginning of “The Great AI Awakening.”

Unfortunately Google’s approach required Google-scale data and Google-scale budgets. Like all exponential technologies in the foundational phase, AI was too difficult and too expensive for broader applications.

But researchers slowly chipped away at the biggest obstacles. In 2017 Google developed a new NLP algorithm called transformers. This algorithm was based on the concept of attention. Researchers began using attention to set new performance records on almost every NLP task. Open-source machine learning libraries like PyTorch and TensorFlow made model training easier on NVIDIA’s graphical processing units.

In 2018 two innovations instantly lowered the cost of using transformers to build state-of-the-art NLP applications:

- Jeremy Howard and Sebastian Ruder developed a transfer learning approach called Universal Language Model Fine-tuning (ULMFiT).
- Google released Bidirectional Encoder Representations from Transformers (BERT) as a free, open-source language model based on transformers.
- Developers could now download a free pretrained transformer model and customize it for specific business problems.

Facebook, OpenAI, and other tech leaders soon produced improved language models. Hugging Face developed an open-source library that made it easier to build and train these models. Snorkel began releasing tools that developers could use to efficiently build NLP training data through weak supervision.

## TRANSFORMATIONAL PHASE (2021-2025)

By the beginning of 2021, all major technical obstacles to cost-effectively building deep learning NLP applications were resolved. The NLP-based pilot projects that Prolego has built are demonstrating clear business impact for our clients. Other AI companies report similar results. These successes are evidence that the transformational phase of AI has begun.

Of course many challenges remain before we reach AI Abundance. Building and deploying AI applications that solve business problems is still incredibly hard. Here are the major problems that the technology will resolve over the next five years:

- NLP requires specialized tools and teams.
- Deploying NLP at scale is prohibitively difficult.
- Important data is inaccessible.

### **NLP requires specialized tools and teams**

The overwhelming majority of corporate NLP projects fail because the engineering teams don’t know how to build training data. Most online resources and tutorials about building NLP applications start with the assumption that the data scientist is working with labeled training data. Many companies attempt to label documents by using computer-vision techniques. But labeling documents is much harder than labeling images. Currently the most efficient approach relies on weak supervision.

A few teams know how to use weak supervision to label their training data. As those teams make breakthroughs and begin sharing results, best practices and better tools will soon be available.

## **Deploying and scaling AI is difficult**

Deploying and scaling AI is difficult One of the biggest challenges for AI companies is machine learning at scale, often referred to as machine learning operations (MLOps). No best practices or tools exist for using NLP transformers to do MLOps. NLP adoption will happen slowly until tools and approaches mature.

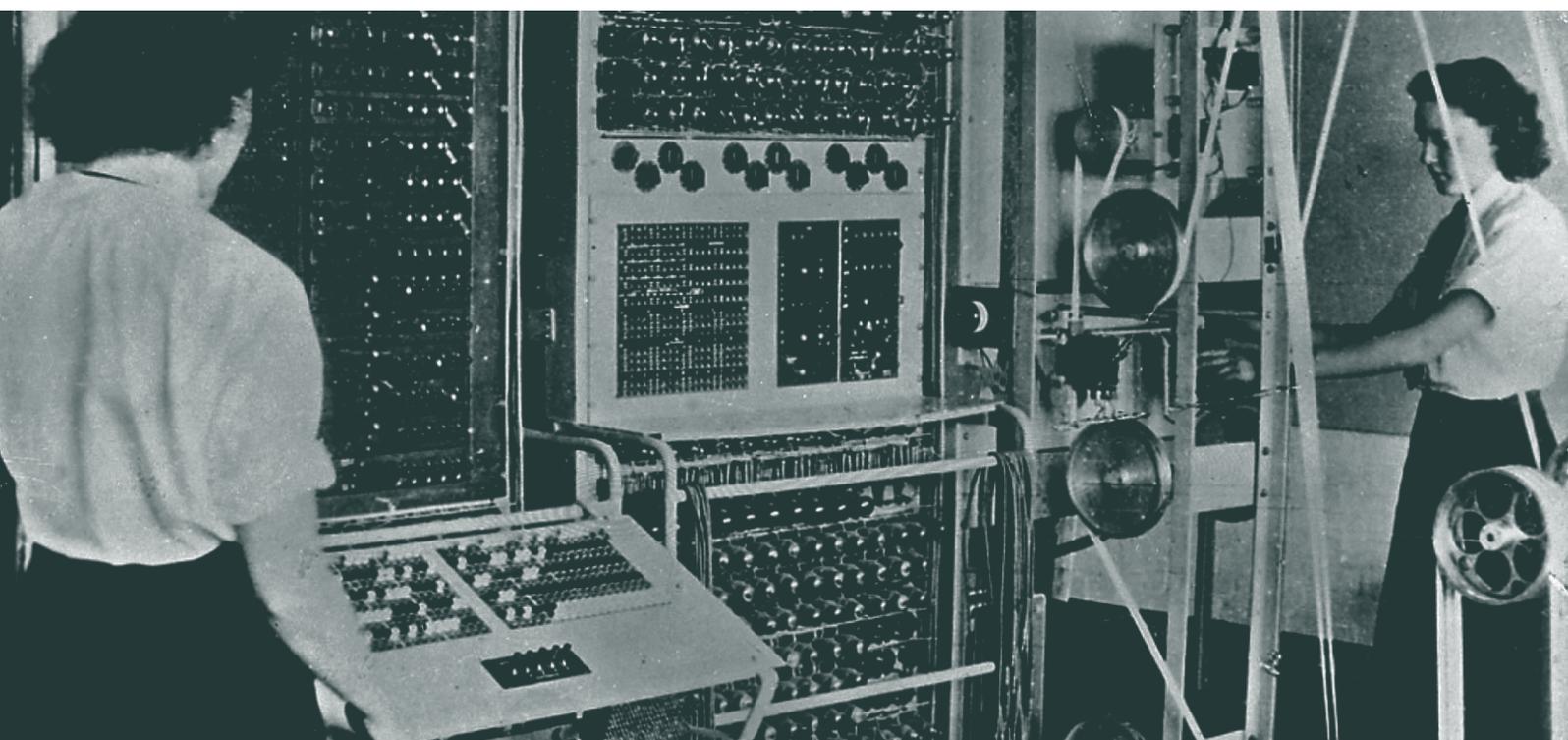
## **Important data is inaccessible**

Many companies—especially those that have been in business for decades—have a substantial amount of contracts, policies, and correspondence on paper rather than in digital files. Few companies capture and convert customer conversations and other spoken data into digital formats. The data in these resources is effectively inaccessible because companies can't efficiently analyze it at scale without making large investments to digitize, store, and label it.

Most companies haven't been able to justify the cost of converting analog data into digital formats. This dilemma will disappear as NLP projects demonstrate initial value. Companies will recognize the value of their data and begin broadly deploying optical character recognition and automated speech recognition to digitize it.

By 2024 most data-access problems will be solved, and we will start seeing high-profile successes in the business press. Companies that currently dedicate large amounts of human labor to reading and extracting information from text documents will begin realizing cost savings from automating 80 percent of this work. For example, financial services companies can begin to unlock the value of large-scale unstructured data in contracts, policies, claims, applications, and forms.

The early adopters will begin to realize data-access efficiencies by 2025. Budgets will shift to AI from other initiatives. As they do, the pace of AI development will increase. The companies that have invested well will be able to evolve their product offerings because they can make better-informed decisions faster and at a fraction of the former cost.



# ABUNDANCE PHASE (2026 AND BEYOND)

By 2026 all financial services companies will realize that AI is fundamentally changing the competitive landscape. Late starters will scramble to respond. After years of painfully slow growth, venture-backed startups will leverage their AI investments to steal market share from incumbents. Google, Apple, Amazon, Facebook, and Microsoft will acquire the financial-services leaders and begin offering direct-to-consumer insurance, banking, and financial services.

As the growth curve swings upward, the incumbents that invested in AI during the transformational phase will accelerate their investments to stay competitive. Funding will come from layoffs, spinoffs, mergers, and reorganizations that shift resources from human-driven business processes to AI.

What about companies that make little effort to prepare during the transformational phase? Unfortunately they won't be able to catch up. When the abundance phase begins, their executives will rush to develop their AI strategy. The CEO and other officers will be fired. Their successors will begin making desperate moves to survive. Some will attempt to build in-house AI capabilities. Others will try to buy AI from third parties. Still others will invest in AI startups at insane valuations or sign one-sided partnerships just to regain their footing. But these efforts will be too expensive, too little, and too late, just as they were for Toys "R" Us in 2000.

After the AI wave hits financial services, the same pattern will repeat in the retail, manufacturing, hospitality and recreation, telecommunications, and media sectors. Healthcare, energy, and the public sector will follow. The leaders will ride the exponential adoption wave, and the laggards will never catch up.



# OBJECTIONS

While reading through this essay, you might have raised a skeptical eyebrow at some of my predictions. Maybe you think the AI timeline isn't comparable to that of the internet or other exponential technologies. Or perhaps you believe the AI foundational phase began in 2013 with computer vision. Or maybe you don't expect AI to reach the abundance phase until 2029.

Even if you agree with every point and prediction in this essay, chances are you have colleagues who don't. So here is my response to every objection: it doesn't matter.

This essay isn't about technology. It's about how companies respond to the threats and opportunities created by exponential growth. Put aside the academic debates about the why, where, and when. Focus on the what that looms ahead of us: AI Abundance.

## AI ABUNDANCE IS INEVITABLE AND WILL ARRIVE SUDDENLY

AI is inevitable because computers can process data faster and less expensively than people can. Although it might take decades (or longer) before AI can write a bestselling novel or give you a haircut, it will ultimately win the competition on tasks traditionally done by people. AI is the next step in the human-technology evolution.

Customers and investment capital will flow to the first companies that gain a competitive advantage with AI. These companies will use their resources to press their advantage and improve their AI. Their efforts will result in even more customers and capital, which they'll reinvest into AI.

AI Abundance will suddenly arrive as every company realizes how fast the market is shifting. The cost of entry will skyrocket. Companies that waited to enter the game will be forced into desperate moves. They will be as successful as Toys "R" Us, Blockbuster Video, and your local newspaper were after waiting too long to invest in the internet.

## WHAT IF I'M RIGHT?

AI Abundance is inevitable. The only uncertain variable is time. In this essay I present a reasonable timeline based on comparable historical examples and AI's current progress. I believe you have only five years to prepare.

I challenge you to look hard at your corporate priorities and how you're investing your resources. Is AI the top priority? Is it even in the top five? For the majority of companies, the answer is no. If I'm right about the AI timeline, your company is taking a huge risk.

You need to start investing in AI while it's still relatively inexpensive and you have time to make the organizational changes necessary for success. Your window of opportunity might be five years, three years, or seven years. But have no doubt: AI-driven startups and tech companies want your customers, and they'll do everything they can to slam your window shut as fast as possible. History teaches us that you have far less time than you realize.

## START TRANSFORMING YOUR COMPANY TODAY

I hope this essay provides you with tools to create a sense of urgency within your leadership team. For the most part, you already know what to do. But I will continue sharing best practices as we all get smarter.

If you're frustrated by your leadership's apathy toward AI, don't despair. You're not doomed. You're not among the companies that overinvested in AI during the foundational phase. IBM Watson's healthcare initiatives and Element AI are cautionary tales of attempting to scale when the technology was too immature. Moreover, every current and potential competitor has its own daunting challenges. Getting to AI Abundance will be tough for everyone.

### **You have some time, but you need to act. Today.**

Your biggest challenges are organizational, not technical. Here are some suggestions to overcome organizational challenges:

- Create an AI strategy, make it one of your CEO's top priorities, and use stories to evangelize your AI strategy.
- Redefine your business processes and reorganize to optimize for AI where appropriate.
- Push your engineering teams to modernize their development processes for AI and get their initial models into production faster.
- Develop AI governance policies and start using them.
- Take a hard look at your data scientists to evaluate whether they have the skills to learn and apply cutting-edge methodologies such as weak supervision and transformers. Upskill or recruit new talent as needed.
- Incorporate machine learning automation where appropriate, and maintain healthy skepticism about your expectations.

None of these steps require a massive investment. But they'll go a long way toward helping you prepare for AI Abundance. Your company's survival depends on it.



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