Kong

Powering the API world

API Impact Report 2023

KongHQ.com

Content

Introduction

Unless you're living off the grid and selling handmade goods for cash, you likely interact with hundreds of APIs daily.

APIs form the foundation upon which nearly all modern digital experiences — and Global 2000 businesses — are built. They enable the always-on connections between the systems that drive the global economy. They're essential to the operation of everything from banking sites and navigation apps to the functioning of every corner of Amazon's sprawling trillion-dollar business.

Moreover, APIs represent the backbone of how consumers and businesses access services on the internet today. But they also represent the future of innovation, as APIs are integral to emerging technologies such as generative AI, Web3, and blockchain.

Despite the significance of APIs, few are aware of their importance to the global economy. This research report examines the macro-level contribution of APIs to the economy and how APIs will help drive economic growth. **By 2027, APIs are projected to have a global economic impact of $14.2 trillion.**

However, the explosion of APIs and services brings with it challenges. APIs have become an attractive attack vector and API vulnerabilities create the potential for serious losses. Due to the critical nature of APIs, these security threats have large economic consequences. **We anticipate that API attacks will increase at a rate of 31% annually for the foreseeable future, costing the US economy alone over $506 billion by the end of the decade.**

In this report, we'll take a look at the financial impact of APIs, the rise (and rising cost) of API attacks, and the ways APIs are shaping the present and future of business in an uncertain economy. We'll also highlight the concerns of API developers on current investments in API security and the ways API-related vulnerabilities can be minimized.

# Understanding the importance of APIs today

What are APIs?

APIs (or "application programming interfaces" if you're feeling formal) are the building blocks of modern applications. They enable software and systems to interact and exchange data over the internet.

For an example of how these communications play out for the end-user, consider an online credit card statement including a credit score — or a rideshare app giving a real-time estimate of wait time and driver location. These experiences are made possible by one system communicating with another in a seamless way. Designing applications this way allows software developers to build on top of an existing service rather than starting from scratch.

But these are basic examples. Today, API connectivity is foundational to modern cloud native solutions as software and hardware run on API-centric architecture. APIs are used internally and externally to connect a company with suppliers, customers, employees, and investors.

This fundamental element of the digital world is one that's finally getting more broad media coverage. From security breaches to the New York City transport authority's spat with X (previously known as Twitter) to Reddit communities going dark to protest API changes, APIs are in the spotlight in 2023. But while they may be a more recent addition to the general public's lexicon, API technologies have been forming the backbone of organizations' digital businesses for decades.

To get a greater understanding of the state of APIs, let's briefly explore the role APIs play in 2023 in business innovation and customer experiences.

79%
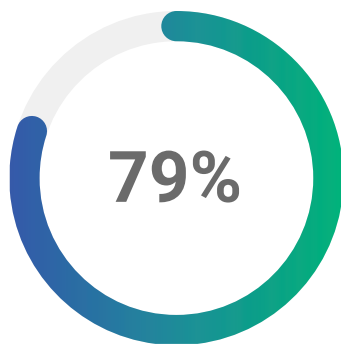
Developer Insights

79% of developers say their organizations have an API-first business strategy.

Source: 2023 Kong User Survey

APIs enable seamless customer experiences

Customer experiences are shaped by interactions with an organization's applications. With access to functionality and data exposed through APIs, developers can deliver experiences that are remarkable (for the right reasons). These can mean the difference between driving revenue or driving customers to the competition.

Consider the retail industry: an estimated 97% of shoppers report backing out of an online retail purchase because it was inconvenient, according to the National Retail Federation.

1%
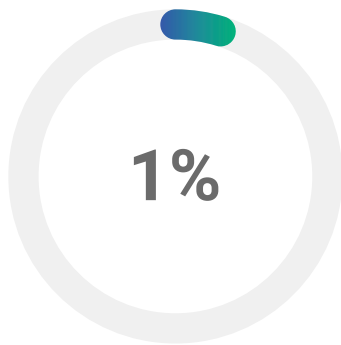
Developer Insights

Only 1% of developers say their API usage has decreased over the past three years.

Source: 2023 Kong User Survey

APIs enable business innovation

Software developers can use APIs to access components of other sites and microservices to quickly build new applications. Take this building block for authentication and connect it to another one to manage inventory and that one to process payments and you've got yourself an application you can build a business on.

APIs make it easier for developers to collaborate and innovate. By building upon existing services rather than reinventing the wheel, organizations can speed up time to market.

79%
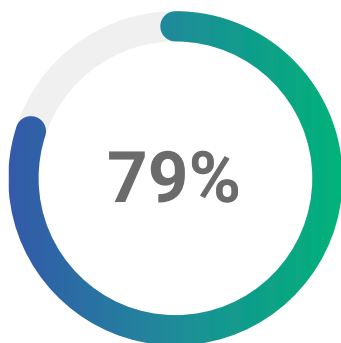
Developer Insights

79% say API usage creates opportunities for new products and services.

Source: 2023 Kong User Survey

The economic impact of APIs

APIs enable agility in a turbulent economic environment

Secular tailwinds are driving the growth of APIs. The connective tissue of API technologies has fueled the software revolution since at least 2002 and the so-called API Mandate. This legendary memo (alleged to have come from Jeff Bezos) declared that Amazon was to function with an API-first approach.

In the years that followed, API usage increased with the shift from on-prem to cloud workloads,

and then again with more recent developments like Web3 and AI tools.

Today, as everything becomes an application, seamless and secure connectivity between platforms and datasets has gone from "nice to have" to a necessity. The result? APIs are essential to modern enterprises — and the economy.

46%
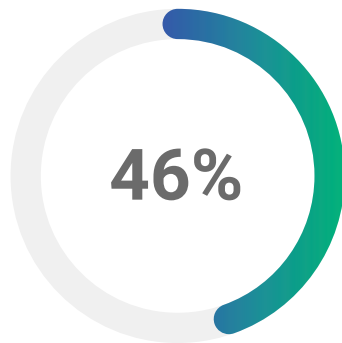
Developer Insights

Despite their clear business value, an API knowledge gap still exists between developers and the C-suite, with 46% of developers saying senior leadership lacks a strong understanding of the value of APIs.

Source: 2023 Kong User Survey

API market size and growth

The global economic impact of APIs is expected to increase from $10.9 trillion in 2023 to $14.2 trillion in 2027. That projected $3.3 trillion growth in market size is greater than the current GDP of the United Kingdom or France.
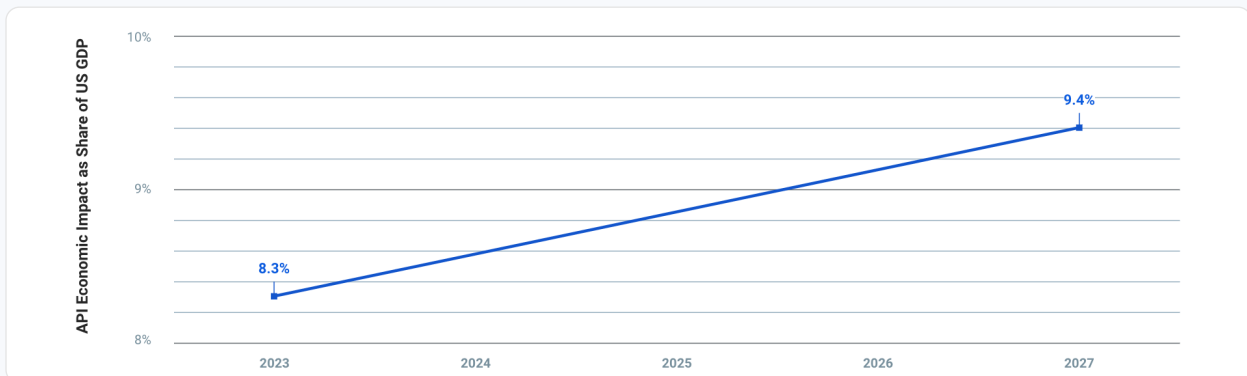
Growth in US Economic Impact of APIs

- US economic impact of APIs will increase from $2.1 trillion in 2023 to $2.8 trillion in 2027
- $640 billion increase in 5 years

- 30% relative growth in economic impact of APIs over 5 years
- $12.2 trillion cumulative over 5 years
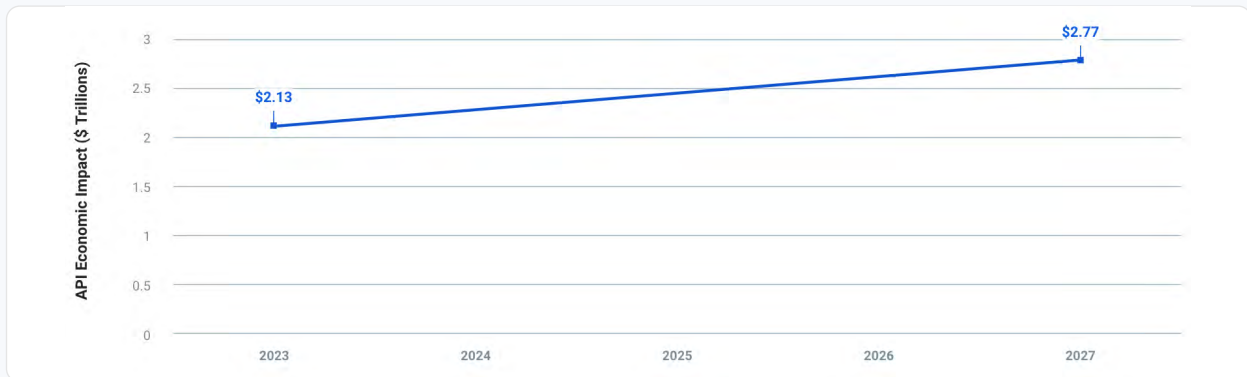
Growth in Economic Impact of APIs as Share of GDP

- Using data from Congressional Budget Office on projected GDP growth, economic impact of APIs is expected to increase from 8.3% of GDP in 2023 to 9.4% of GDP in 2027

- 13% relative growth in economic impact of APIs as a share of US economy
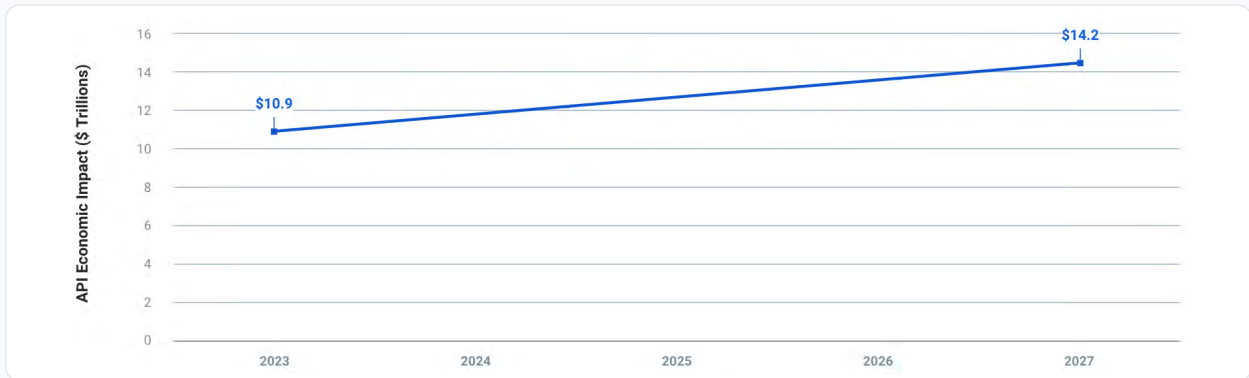

Using data from the International Monetary Fund (IMF) on projected international GDP growth and the global digital economy, the economic impact of APIs is expected to increase from 12.5% of global GDP in 2023 to 13.3% of global GDP in 2027.

In the United States alone, the economic impact of APIs is projected to increase from $2.1 trillion in 2023 to $2.8 trillion in 2027 — a $640 billion increase and 30% relative growth over five years.

To put that into perspective, that's 8.3% of the US GDP in 2023 — and will balloon to 9.4% of the US GDP in 2027.

Economic Impact of APIs (US)

- Global economic impact of APIs is expected to increase from $10.9 trillion in 2023 to $14.2 trillion in 2027

- $3.3 trillion worldwide growth in market size
  Projected increase in market size is greater than current GDP of UK and France

API Economic Impact as Share of US GDP

Using data from the International Monetary Fund on projected international GDP growth and the global digital economy, economic impact of APIs is expected to increase from 12.5% of global GDP in 2023 to 13.3% of global GDP in 2027

50%
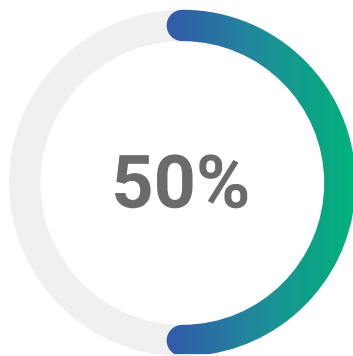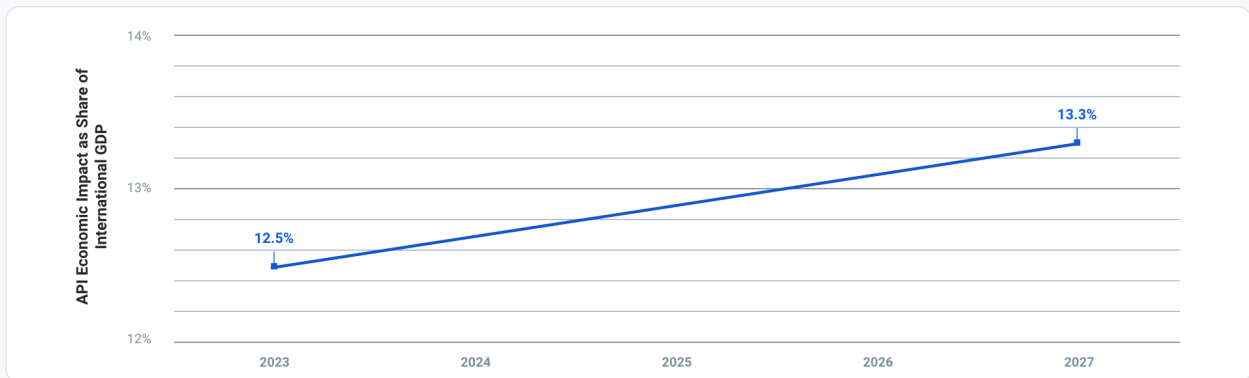
Developer Insights

50% of developers believe leaders need to be more aware of the business impact of APIs.

Source: 2023 Kong User Survey

Growth in API attacks

Gartner projected that in 2022 APIs would become the most common attack vector resulting in data breaches for enterprise web applications. A passing glance at the headlines over the past year shows this prediction was spot on, with API-related breaches impacting the likes of Toyota, T-Mobile, and Optus.

In 2023, API attacks are on the rise and show no sign of slowing down.

Growth in API Attacks

- 156% growth in forecasted annual number of API attacks over five years
- Increasing from 1,899 in 2023 to 7,302 in 2027

- Total of 24,087 US-based API attacks over 5-year period
- Internationally, 68,819 API attacks over 5-year period
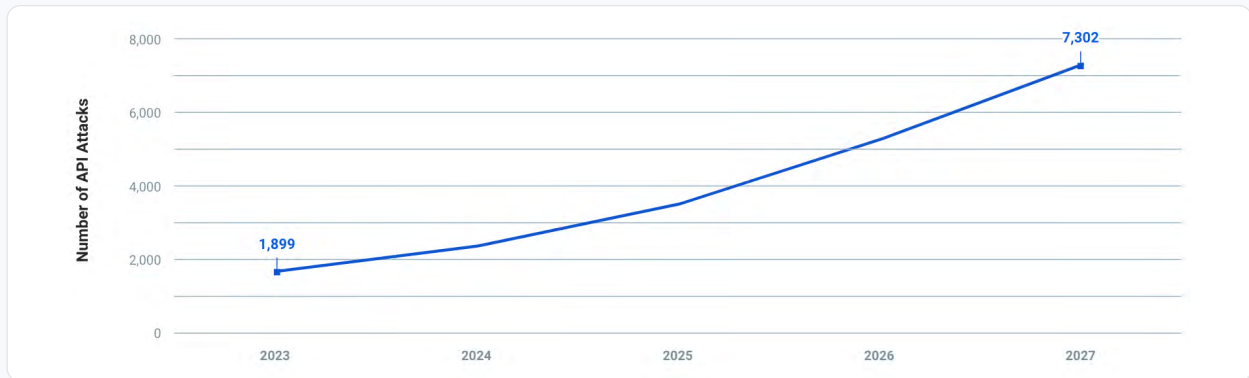
Over the next five years, the number of API attacks globally is forecasted to increase 156%, from 1,899 in 2023 to 7,302 in 2027. This means an estimated 24,087 US-based attacks and 68,819 attacks internationally over the next five years.
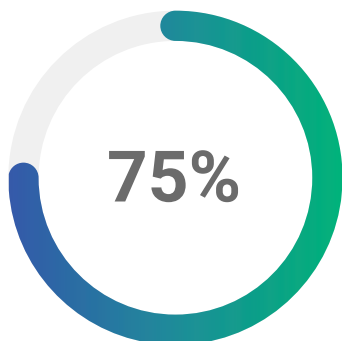
Developer Insights

75% of respondents said security is the aspect of API management that will be most critical to their business within the next two years.

Source: 2023 Kong User Survey

The increasing cost of API attacks

Not only is the number of API attacks expected to rise, but the estimated cost of these attacks will also increase — with a projected 275% growth in the economic cost of API attacks over five years. This is projected to reach a total of $40 billion by 2027 for a total cost of $115 billion over the next five years.

Growth in Economic Costs of API Attacks

- 275% growth in forecasted economic cost of API attacks over five years

- Reaching $40 billion in five years, with a total of $115 billion over five years
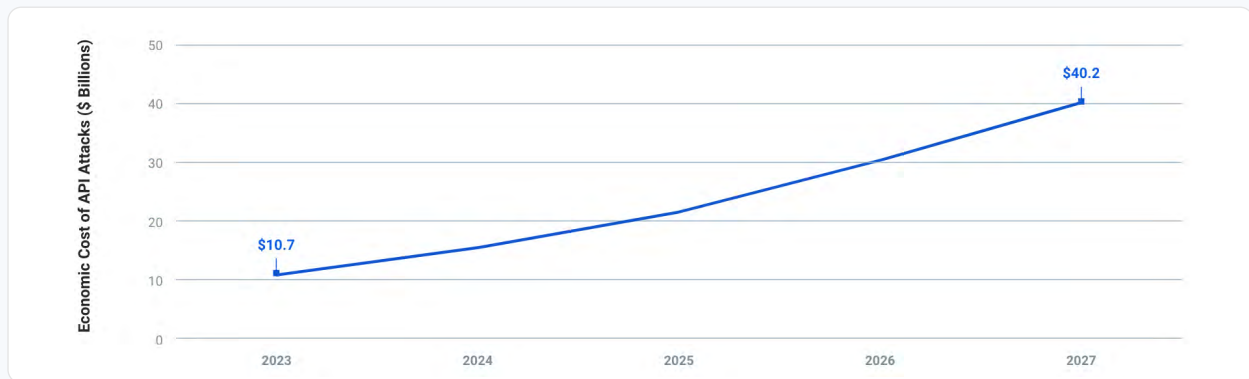
But why will costs outpace the rate of growth in attacks? Blame a higher cost per attack.

As systems and organizations become increasingly interconnected, what used to be self-contained will have a larger impact. While cybersecurity costs account for much of the expenses incurred, the bulk of the impact is expected to come from shutdowns and reputational costs.

60%
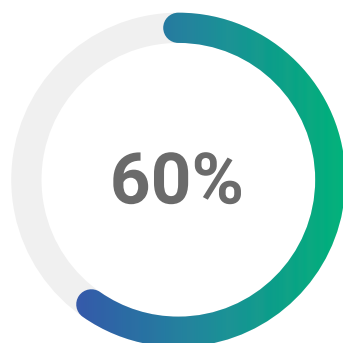
Developer Insights

60% of respondents said they wish leaders would invest more in API security.

Source: 2023 Kong User Survey

Employment trends: The rising demand for API skills

In the context of tech sector layoffs and hiring freezes in 2022 and 2023, there remains a strong demand for API development skills. This may come as little surprise when considering that APIs are a core part of the organization for at least 85% of Fortune 100 companies.

As of June 2023, more than 15,500 API developer posts on jobs site Indeed alone. By comparison, there are only 1,800 SQL developer posts.

With 102,000 software developer job listings total, this informal snapshot of the job market suggested that API-skilled developers currently make up 15% of the software labor market.
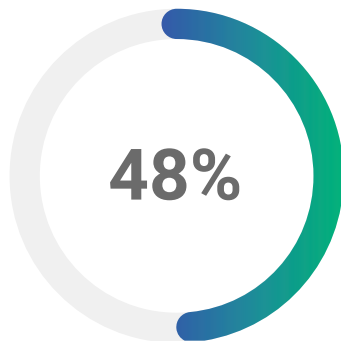
Highly in-demand job

Despite tech industry layoffs and hiring freezes, over **15,500** API developer job posts on Indeed

- In comparison, only **1,800** SQL developer job posts
- **102,000** software developer posts, suggesting API developers are over 15% of software labor market

Widely used by leading companies

Used by over **85%** of **Fortune 100** companies

48%

Developer Insights

The biggest challenge businesses face in securing API infrastructure? 48% said it's lacking the right technical expertise. This points to a skills gap that could have serious consequences for businesses.

Source: 2023 Kong User Survey

# Economic implications of advancing API-related innovations

API monetization

The growing API economy has led to a surge in organizations exploring API monetization — the process of offering APIs as products or services to create revenue, typically by charging external developers for their usage.

As businesses tap into their API resources for additional revenue streams, the impact of

API monetization is substantial — and on the rise — with the global economic impact of API monetization forecasted to grow from $3.97 billion in 2023 to $8.56 billion by 2027. Keep in mind that these estimates are extremely conservative and based on publicly verifiable sources.

**Global Economic Value of API Monetization**
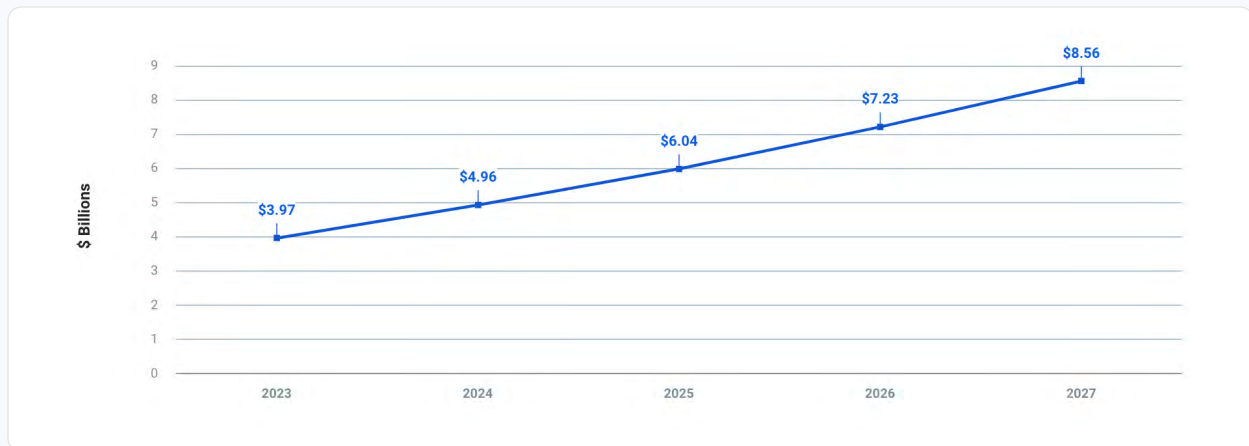
Generative AI

With the rapid growth and widespread availability of next-generation large language models (LLMs) like OpenAI's ChatGPT combined with AI compute functionalities that seem almost magical in their ability to understand and engage with us, it's evident that we're in the midst of a generative AI "supercycle." This shift will deeply influence the global economy. Central to this technology are APIs, because APIs are the eyes, ears, and hands of today's artificial intelligence.

Put simply: more AI means more APIs. The data that powers AI tools comes from APIs, and APIs are used to send back the model developed by AI. APIs are also used to integrate AI into other applications. Consequently, we've sought to determine the value of infrastructure and API technology within the AI adoption curve, as illustrated in the figures below.

Global Economic Value of APIs to Enable AI

- Total value of APIs to AI will reach $5.4 trillion in 2027
- 76% growth in 5 years
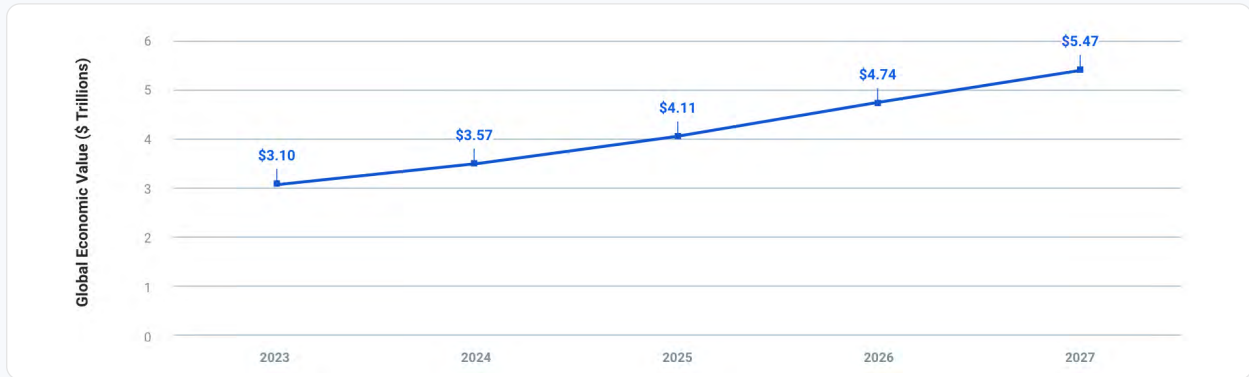
Blockchain technologies, Web3, and Crypto

Like other digital innovations, blockchain technology, Web3, and cryptocurrencies wouldn't be possible without APIs, which are essential for their operation and integration. And, like the APIs that enable them, these technologies are having a massive — and growing — economic impact, with a forecasted growth of $1.9 trillion in global economic value over the next five years.

Blockchain, Web3, and Crypto Economic Size

- $1.9 trillion growth in 5 years
- 76% growth in 5 years
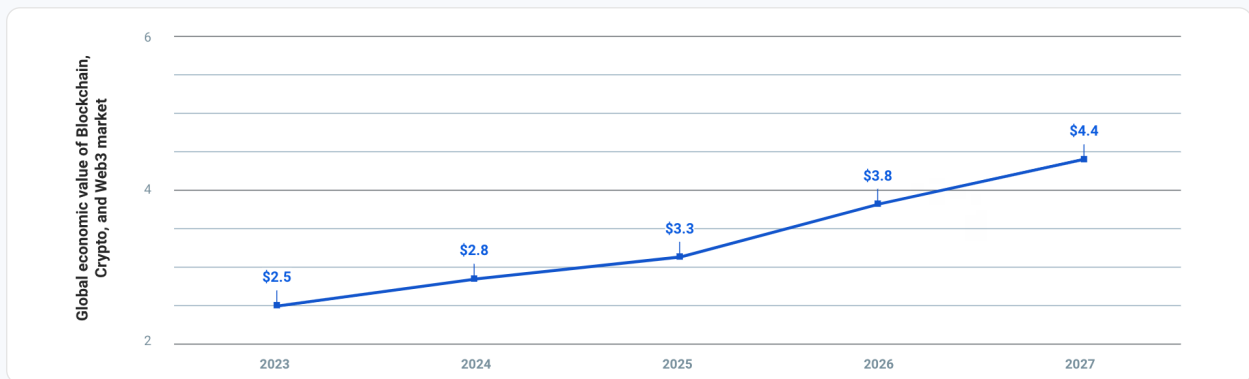
Conclusion

APIs have exploded in use across industries. Along the way, they've evolved from the backbone of most modern software applications to the backbone of most modern enterprises.

John Musser, Director of Engineering at Ford Pro, Ford's business unit building digital services, once said, "If you believed that everything was going to move to the cloud . . . then it wasn't going to be much of a question that everything in the cloud is going to have an API, as APIs are the glue that connects cloud services."

Modern organizations should strive to be software-enabled, data-driven, and secure. APIs help achieve all three. Because APIs are no longer simple building blocks — they're becoming the smart neural network for the cloud.

Leaders need to adopt an API-first strategy and build a cloud nervous system. In doing this, they can take advantage of the benefits of API innovation while minimizing security and compliance risks in the years to come.

44%   **67%**

50%   **65%**
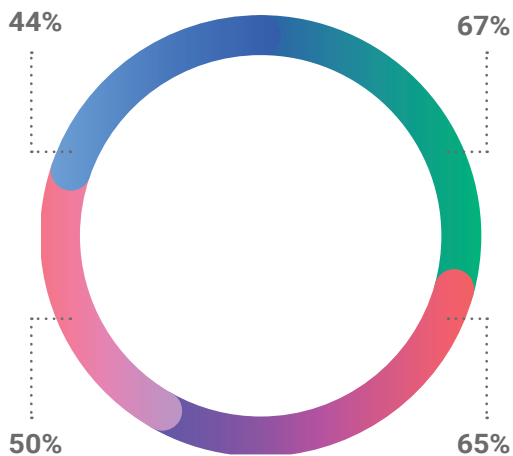
Developer Insights

To capitalize on the massive opportunity presented by APIs, businesses need tools to effectively manage them. These are the benefits developers and business leaders report seeing with API management:

- 67% Increased agility
- 65% Team productivity
- 50% Increased revenue
- 44% Competitive advantage

Source: 2023 Kong User Survey

About Kong

Kong Inc., a leading developer of cloud API technologies, is on a mission to enable companies around the world to become "API-first." Kong helps organizations globally — from startups to Fortune 500 enterprises — unleash developer productivity, build securely, and accelerate time to market.

For more information about Kong, please visit www.konghq.com or follow us on Twitter @thekonginc.

Methodology

Our study examined both economic trends in API infrastructure and related technologies, as well as the cost of various API security vulnerabilities. We used statistical modeling to forecast future API inflation-adjusted economic growth, and the projected costs of security issues (both direct and indirect), weighted and adjusted for inflation as compiled by the US Bureau of Labor Statistics. This data was compared to the US Gross Domestic Product (GDP) productions developed by the Congressional Budget Office.

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