Emerging Tech Unpacked

an Endava Report

2023

Contents

Introduction

In 2023, business leaders are flooded with new trends that affect their choices regarding technology.

This constant flow of information makes it tough to discern what's relevant and worth pursuing and what's fleeting and will prove to be all hype. Decision makers must evaluate emerging trends and gauge their impact on existing technology and future initiatives.

Today, the pressure to make the right choices is decidedly elevated in the face of potential economic downturn; the decisions organizations make will enable them to thrive post-recession. Even though the stakes are high, organizations have to invest in upgrading systems and creating new products, since failure to do so has relegated many businesses from household names to relics of the past.

So faced with a constant stream of competing priorities and economic unpredictability, businesses are challenged to determine what initiatives will benefit them most.

Endava data shows that organizations are excited about the bevy of emerging trends: leading retailers are showing how the metaverse can transform the shopping experience, both in-store and at home; cutting-edge manufacturers are getting closer to the lights-out warehouse; healthcare providers are excited about digital twins of patients to assess possible treatment options. **And it's still only the tip of the iceberg.**

To build a more complete picture of the business of the future, Endava led a study of organizations' current state and plans for 13 pivotal technology trends, initiatives, and concepts.

This report is designed to give companies insight into emerging trends, how their peers perceive and prioritize those concepts, and what steps they can take to ensure they're ready for them.

Executive Report

Endava's research shows that business leaders take their obligation to ensure their organizations' technological modernity as a top priority, and many see emerging trends as ways to gain an edge over other companies. Some of these concepts are still in relative infancy, unfamiliar to most, while others are commonly written about and discussed in social settings.

The data of this study shows that regardless of what the current hype cycle determines is the next big thing, companies are thoroughly vetting a variety of cutting-edge ideas to retain and attract workers and customers, increase their employees' productivity, and make their IT infrastructure more dependable.

The years long pandemic and subsequent uncertain economic conditions have both accelerated certain emerging trends and hampered the resources companies can afford to dedicate to technology.

When asked why they hadn't considered emerging technologies for their businesses, many respondents answered that a lack of budget inhibited them. Yet many also expressed those budgetary constraints merely meant they shifted focus to higher priority technological investments. One leader employed in the Finance sector stated:

" The recent economic uncertainty, though very challenging, has made my organization see the need to invest more in modern technology to increase business output. "

Our experts believe that through this pragmatic approach, leaders will be able to assess which investments make the most sense for their business.

Key Insights

01. ☑

Big Data and AI-Driven Automation are two of the most important technologies among businesses included in the study. Respondents are highly familiar with both and overwhelmingly see them as pertinent to their organizational goals.

02. ☑

Despite being less technology-related, many decision makers believe attention to Environmental, Social, and Governance (ESG) is critical. Only 4% of respondents deem it irrelevant to their business and many look at ESG as a way to make their businesses more efficient and attract new customers.

03. ☑

The metaverse is very familiar to businesses, but many say it's insignificant to their industry. Nearly 33% of the companies surveyed have no strategy for incorporating it into their operations, one of the highest figures of the trends included.

04. ☑

Cloud wasn't included on the list of trends, as Endava views it as an established component of business technology, but many respondents mentioned it in open-ended responses. Several mention migrating workloads to the cloud as an example of their organizations' positive attitude toward technology and emerging trends.

05. ☑

Predictive Analytics is one of the most relevant technologies among surveyed companies, which is a trend Endava has observed in other studies. Its high appeal likely stems from protracted market instability and its relevance to all organizations across size and industry.

06. ☑

Organizations are most likely to have implemented a strategy for Big Data, ESG, AI-Driven Automation, and Predictive Analytics of all the trends covered in this publication.

07. ☑

Plans for Digital Ecosystems and Microservices are currently being implemented by 33% of respondent organizations.

08. ☑

Many businesses lack a strategy for Digital Twin and Phygital concepts—likely due to unfamiliarity and perceived irrelevance with both.

Data Sumary

The data included in this study comes from a 2023 survey of nearly 700 North American and European organizations of all sizes and industries. Respondents had to assert their status as a decision maker and familiarity with organizational technology strategy, operations, and processes.

Who Should Read This

This publication is intended for organizational leadership looking to learn about the latest technology trends in 2023 and beyond.Companies should leverage this to brief themselves on how those trends will affect their industry and use this to inform their strategy IT-related investment.

Emerging ↗ Trends and Impacts ⌕ on Business

The section below defines 13 technologies, concepts, and initiatives that Endava experts have identified as poised to have a significant impact on businesses in 2023 and beyond. It also examines how organizations from around the world currently use and plan to use them in the future. Study respondents were asked about their familiarity with the 13 concepts, the level of relevance they had to their line of business, and whether they had already planned or implemented them.

AI-Driven Automation

Definition

Automation that uses Artificial Intelligence to mimic the human ability to think and use logic. Examples include manufacturing robots, smart assistants, and financial robo-advisors.

Market Awareness and Current State

AI-driven automation is one of the most relevant, familiar, and implemented initiatives included in the study.

The technology has one of the largest assortments of applications; nearly every department can use it in some fashion, from creating a nearly touchless accounting process to taking humans out of risky manufacturing tasks. AI's wide range of applications is evident looking at the study's responses: an IT and Digital Business Manager in manufacturing mentioned the technology enabling autonomous conveyor vehicles, better decision-making, and more sustainable production.

Echoing this sentiment, a CIO in Engineering said:

" We are investing in Artificial Intelligence. We feel this will help us automate a lot of our processes and help streamline our workforce. "

Because of this ubiquity, AI is the second highest priority of the 13 trends Endava considered. Just 4% of survey respondents are unfamiliar with the technology, and even fewer deem that it is irrelevant to their business; over 70% are moderately or very familiar with it *(Figure 1)*.

Thirty-three percent have already implemented some form of AI-driven automation, and of the remaining organizations that haven't, more than half are currently in the process of doing so. Among companies that have already outlined a plan for or implemented AI-driven automation, the top drivers are increasing operational efficiency and productivity, reducing cost, and gaining a competitive advantage.

Early adopters of AI know that the field is rapidly advancing, meaning they will have to remain diligent in updating their current systems. Respondent organizations that do not have an AI-driven automation strategy say that the technology isn't relevant to their industry, and they lack the resources and understanding to confidently implement it.
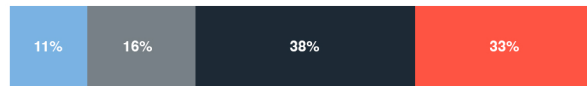
Figure 1

4%	9%	16%	34%	38%
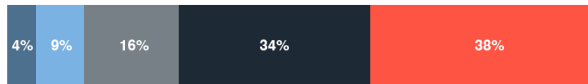
**Familiarity with
AI-Driven Automation**

- Unfamiliar
- Slightly
- Somewhat
- Moderately
- Very

4%	5%	14%	26%	52%

**Relevance of
AI-Driven Automation**

- Irrelevant
- Loosely
- Somewhat
- Moderately
- Very

11%	16%	38%	33%

**Current State of
AI-Driven Automation**

- No AI-driven Automation strategy
- Formulated a strategy
- Currently implementing a strategy
- Already implemented a strategy

Big Data and Predictive Analytics

Definition

Big Data: Big data refers to datasets too large and complex to extract conclusions from. The term is usually referenced in the context of "big data analytics." Big data analytics applies AI and ML to these datasets to analyze trends, assess organizational performance and efficiency, scorecard suppliers, and identify areas for improvement.

Predictive Analytics: The use of past data and statistical models to infer future outcomes and performance.

Market Awareness and Current State

Big data and predictive analytics are two of the three highest-priority initiatives among companies surveyed. Respondent organizations are extremely familiar with both and consider them highly relevant to their businesses. Both technologies have been implemented by around 40% of the organizations surveyed *(Figure 2)*.

Companies adopt big data strategies to increase operational efficiency and productivity, make IT systems more reliable, and gain a competitive advantage.

Respondents leaned on predictive analytics to increase productivity and operational efficiency, improve end products, and gain a competitive advantage. Companies that didn't have a big data strategy lacked the budget, understanding, and relevance to be able to implement one, while those without predictive analytics cited the same reasons, but also had a lack of technical resources to be able to manage.

Endava has seen in previous studies that organizations are highly interested in getting insight into their future financial well-being via big data and predictive analytics—especially with market volatility on the horizon.

With the ability to see what needs businesses may have in the future, they can adjust to meet them in the present. In the study, one retail CTO called out the importance of having good data to inform choices:

" Our organization has continued to sponsor investments toward technology to help offset recent economic uncertainty. Collecting, analyzing, and storing data that can be interpreted as a predictive model to guide decision-making is a direct result of our investment in emerging technology that helps our organization remain competitive within our industry. "

Figure 2 Big Data
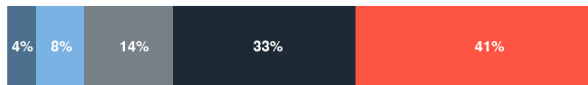
Familiarity with Big Data

4%	8%	14%	33%	41%

- Unfamiliar
- Slightly
- Somewhat
- Moderately
- Very

Relevance of Big Data

3%	6%	10%	23%	58%

- Irrelevant
- Loosely
- Somewhat
- Moderately
- Very
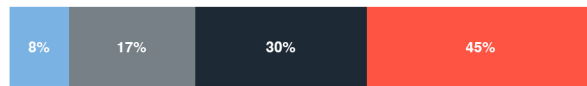
Current State of Big Data

8%	17%	30%	45%

- No big data strategy
- Formulated a strategy
- Currently implementing a strategy
- Already implemented a strategy

Figure 2 Predictive Analytics

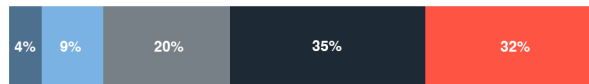|				
4%	9%	20%	35%	32%

Familiarity with Predictive Analytics

- Unfamiliar
- Slightly
- Somewhat
- Moderately
- Very

3%	4%	13%	30%	50%

Relevance of Predictive Analytics

- Irrelevant
- Loosely
- Somewhat
- Moderately
- Very

10%	18%	32%	40%
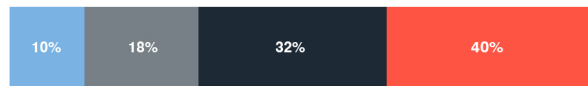
Current State of Predictive Analytics

- No predictive analytics strategy
- Formulated a strategy
- Currently implementing a strategy
- Already implemented a strategy

Composable Enterprise

Definition

Utilizing modularity to respond to changing regulations and environments in an agile and flexible manner.

Market Awareness and Current State

The concept of "composable enterprise" was one of the least familiar to respondent organizations. Despite low familiarity, 60% of organizations see it as relevant to their line of business, though many lack a plan for becoming a composable enterprise and fewer have completed the transition into one *(Figure 3)*.

Of the 25% of respondents that do not have composability on the horizon, nearly 40% do not understand it, and many others do not have the budget or leadership buy-in. Among companies planning to adopt composable enterprise, they are prioritizing it to increase productivity and efficiency and make IT systems more reliable.

Figure 3

Familiarity with Composable Enterprises

| 15% | 16% | 24% | 29% | 16% |

- Unfamiliar
- Slightly
- Somewhat
- Moderately
- Very
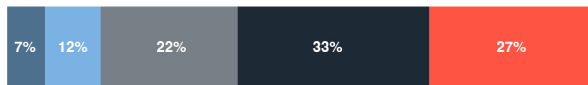
Relevance of Composable Enterprises

| 7% | 12% | 22% | 33% | 27% |

- Irrelevant
- Loosely
- Somewhat
- Moderately
- Very
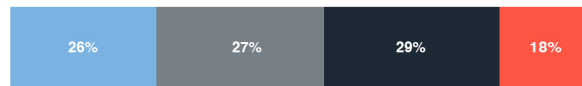
Current State of Composable Enterprises

| 26% | 27% | 29% | 18% |

- No composable enterprises strategy
- Formulated a strategy
- Currently implementing a strategy
- Already implemented a strategy

Digital Ecosystem

Definition

The unification of business elements in a
digital environment.

Market Awareness and Current State

The concept of forming digital ecosystems is familiar to many organizations *(Figure 4)* and placed as the fifth highest priority. Among organizations that have either put digital ecosystems into place or are in the process of doing so, they did so to increase efficiency, productivity, and system reliability; gain competitive advantages; and improve end-product.

Digital ecosystems often leverage partnerships to create more powerful applications. By doing this, companies get access to new customers, speed up time to market by combining their existing offerings with those of partners, and increase the stickiness of those products, growing customer loyalty.

Figure 4
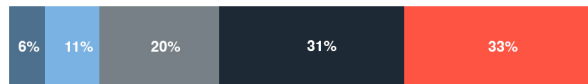
6%	11%	20%	31%	33%

Familiarity with Digital Ecosystems

- Unfamiliar
- Slightly
- Somewhat
- Moderately
- Very

4%	9%	14%	32%	41%

Relevance of Digital Ecosystems

- Irrelevant
- Loosely
- Somewhat
- Moderately
- Very

14%	22%	36%	29%
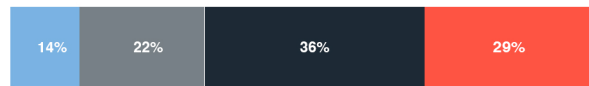
Current State of Digital Ecosystems

- No digital ecosystems strategy
- Formulated a strategy
- Currently implementing a strategy
- Already implemented a strategy

Environmental, Social, and Governance

Definition

Organizations' consideration of their business' effect on the world around them, with particular attention to diversity, their employees, the environment, and local communities.

Market Awareness and Current State

Most organizations are acquainted with the concept of ESG. Nearly 70% of respondent organizations are moderately or very familiar with ESG and consider it relevant to their organization *(Figure 4)*.

Over 66% of these companies are either in the process of or have already implemented an ESG strategy.

Those that have an ESG plan in place did so to increase operational efficiency, attract more customers, and make their IT systems more reliable. The organizations that have fallen short of strategizing for ESG list lack of budget, executive sponsorship, knowledge, and clear return on investment as hurdles. Among respondents, ESG ranks as the fourth highest priority initiative of the 13 Endava considered.

Figure 5
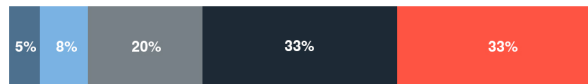
Familiarity with ESG

- ● Unfamiliar
- ● Slightly
- ● Somewhat
- ● Moderately
- ● Very

Familiarity with ESG bar: 5% | 8% | 20% | 33% | 33%

Relevance of ESG

- ● Irrelevant
- ● Loosely
- ● Somewhat
- ● Moderately
- ● Very

Relevance of ESG bar: 4% | 7% | 17% | 29% | 43%
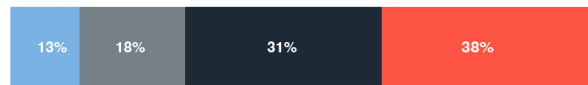
Current State of ESG

- ● No ESG strategy
- ● Formulated a strategy
- ● Currently implementing a strategy
- ● Already implemented a strategy

Current State of ESG bar: 13% | 18% | 31% | 38%

Metaverse

Definition

A virtual-reality space where users can interact with a computer-generated environment and other users.

Market Awareness and Current State

Much has been made of the metaverse and how it could change the business and consumer worlds. Among the 13 trends examined for this study, the metaverse was one of the best known: just 4% of respondents are unfamiliar with the concept *(Figure 6)*. But unlike other emerging trends with high market awareness, many companies don't see its application to business.

Thirty percent of organizations lack a strategy for including the metaverse in their business, and half of those said it was because the technology is irrelevant to their business. Companies were candid in expressing their doubt in the metaverse (as it exists today) creating real business cases, and one IT specialist at a life sciences organization went as far as to say: "No one takes the metaverse seriously." The data makes it clear that if the metaverse is going to have the impact proponents say it will, it will have to fight the stigma that deems it flash with little substance.

Thomas Bedenk, Endava's VP of Extended Reality, cautions against organizations dismissing the metaverse too early, saying:

" **My advice is to be open and invest in further exploring the potential of these developments—in an accelerated way, backed by a strategy rather than with one-off projects.** "

In a blog post for *Endava's Next Gen Insights*, he identifies why the hype around the metaverse is relevant to businesses and the lessons they should take from the space's pioneers.

Figure 6
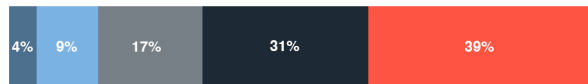
Familiarity with Metaverse

| 4% | 9% | 17% | 31% | 39% |

- Unfamiliar
- Slightly
- Somewhat
- Moderately
- Very

Relevance of Metaverse

| 12% | 14% | 17% | 25% | 31% |

- Irrelevant
- Loosely
- Somewhat
- Moderately
- Very

Current State of Metaverse

| 30% | 22% | 27% | 21% |

- No metaverse strategy
- Formulated a strategy
- Currently implementing a strategy
- Already implemented a strategy

Microservices

Definition

Developing software by building small, independent software components that integrate with each other via APIs.

Market Awareness and Current State

Our data shows that nearly 60% of organizations are familiar with microservices, and 64% think using such an architecture makes sense for their business (Figure 7). One such IT decision maker in the technology field said they were using microservices *"to bring systems up to modern architectural standards."*

While less than 25% have implemented a microservices framework for developing software, many are currently in the process of shifting to this approach, and it ranked as the 6th. Those that do not have a strategy for incorporating microservices consider it to be poorly suited to their business or lack the resources and expertise.

Figure 7

7%	12%	23%	32%	26%

Familiarity with Microservices

- Unfamiliar
- Slightly
- Somewhat
- Moderately
- Very

16%	25%	37%	23%

Current State of Microservices

- No microservices strategy
- Formulated a strategy
- Currently implementing a strategy
- Already implemented a strategy

4%	11%	21%	30%	34%
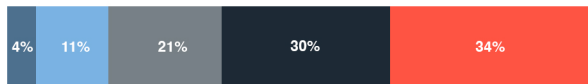
Relevance of Microservices

- Irrelevant
- Loosely
- Somewhat
- Moderately
- Very

Phygital, Digital Twin, and Omnichannel

Definition

Phygital: The blend of physical and digital experiences.

Digital Twin: The creation of a digital replica of a real-world product or experience. Real-world use cases include creating digital copies of human body parts to run test scenarios for treatment options and copies of cities to assess how adding public transit would affect traffic flow.

Omnichannel: Providing customers with seamless, consistent experiences across all sales channels. Examples are retail applications showing users what aisle a product is available in and the ability to return a purchase made online in the store.

Market Awareness and Current State

The trends defined above all speak to the interaction of the physical world with the digital one. Of those the study examined, these three terms have some of the lowest market awareness: 26% of respondent organizations are completely unfamiliar with phygital *(Figure 8)*, which is somewhat of an umbrella term for digital twin and omnichannel. Digital twins and phygital are also seen as slightly less relevant among survey participants.

Our data shows that omnichannel is the best known among the three and is the furthest along from an implementation perspective: 26% have already implemented an omnichannel strategy, and a similar number are in the process of doing so. Digging deeper shows these terms are more commonplace in certain industries: retailers, manufacturers, and banks are far more familiar with and further along in implementing these concepts, especially omnichannel.

While similar, the reasons organizations chose to adopt strategies for the three differ somewhat: companies with a digital twin strategy seek to increase efficiency; businesses with an omnichannel focus are trying to attract more customers; and those with a phygital strategy are trying to make their IT systems more reliable.

Among those that haven't laid out a strategy for these concepts, the reasons for hesitation are nearly identical: irrelevance to the industry is the top justification, followed closely by a lack of understanding and resources. Omnichannel ranks as the 9th highest priority for respondents, while digital twins and phygital round out the bottom as 12th and 13th, respectively.

Figure 8 Phygital

| 26% | 18% | 22% | 20% | 14% |

Familiarity with Phygital

- Unfamiliar
- Slightly
- Somewhat
- Moderately
- Very

| 39% | 20% | 28% | 14% |

Current State of Phygital

- No phygital strategy
- Formulated a strategy
- Currently implementing a strategy
- Already implemented a strategy

| 11% | 18% | 20% | 27% | 24% |

Relevance of Phygital

- Irrelevant
- Loosely
- Somewhat
- Moderately
- Very

Figure 8 Digital Twins

Familiarity with Digital Twins

19%	Unfamiliar
14%	Slightly
23%	Somewhat
29%	Moderately
16%	Very

- Unfamiliar
- Slightly
- Somewhat
- Moderately
- Very

Relevance of Digital Twins

- Irrelevant
- Loosely
- Somewhat
- Moderately
- Very
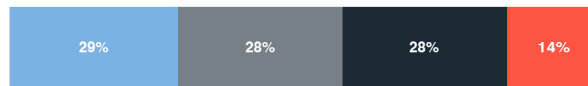
Current State of Digital Twins

- No digital twin strategy
- Formulated a strategy
- Currently implementing a strategy
- Already implemented a strategy

Figure 8   Omnichannel

| 16% | 16% | 20% | 27% | 21% |

Familiarity with Omnichannel

- Unfamiliar
- Slightly
- Somewhat
- Moderately
- Very

| 7% | 14% | 20% | 27% | 31% |

Relevance of Omnichannel

- Irrelevant
- Loosely
- Somewhat
- Moderately
- Very

| 24% | 22% | 28% | 26% |

Current State of Omnichannel

- No omnichannel strategy
- Formulated a strategy
- Currently implementing a strategy
- Already implemented a strategy

Telematics

Definition
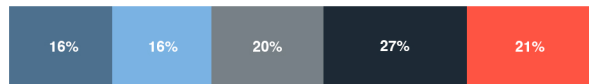
The combination of telecommunication and computer science.

Market Awareness and Current State:

Many are familiar with telematics in the context of auto insurers tracking driving, though it has many applications outside of insurance. About 50% of businesses are familiar with the technology, and 60% believe it's relevant to their organization *(Figure 9)*. Overall, it ranked toward the bottom as the 8th out of 13 priorities, but there were several industries that placed it closer to the top of their list, including insurance, mobility, media,entertainment, and gaming.

Figure 9

12%	16%	25%	30%	20%
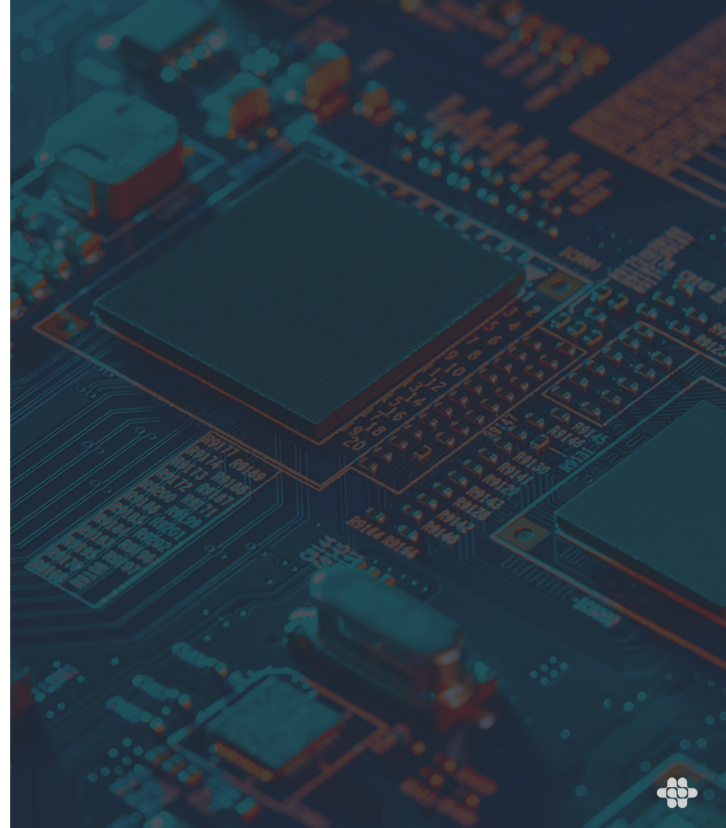
Familiarity with Telematics

- Unfamiliar
- Slightly
- Somewhat
- Moderately
- Very

7%	12%	20%	30%	30%

Relevance of Telematics

- Irrelevant
- Loosely
- Somewhat
- Moderately
- Very

22%	22%	30%	26%

Current State of Telematics

- No telematics strategy
- Formulated a strategy
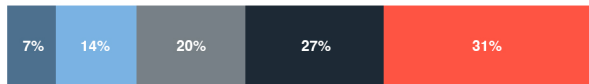- Currently implementing a strategy
- Already implemented a strategy

Web3

Definition

The next evolution of the internet that focuses on decentralization and shifting control from a small group of companies to individuals.

Market Awareness and Current State

Rather than referring to a specific set of actions, Web3 refers to a more democratic internet that wrests power away from the large corporations that control it today. Web3 isn't a simple application update—rather, it's technology that accomplishes the goal of decentralization. Conceptually, Web3 accomplishes this using blockchain, tokenization, and cryptocurrency. It ranks toward the middle of the pack in both familiarity and relevance among respondent organizations. *(Figure 10)*

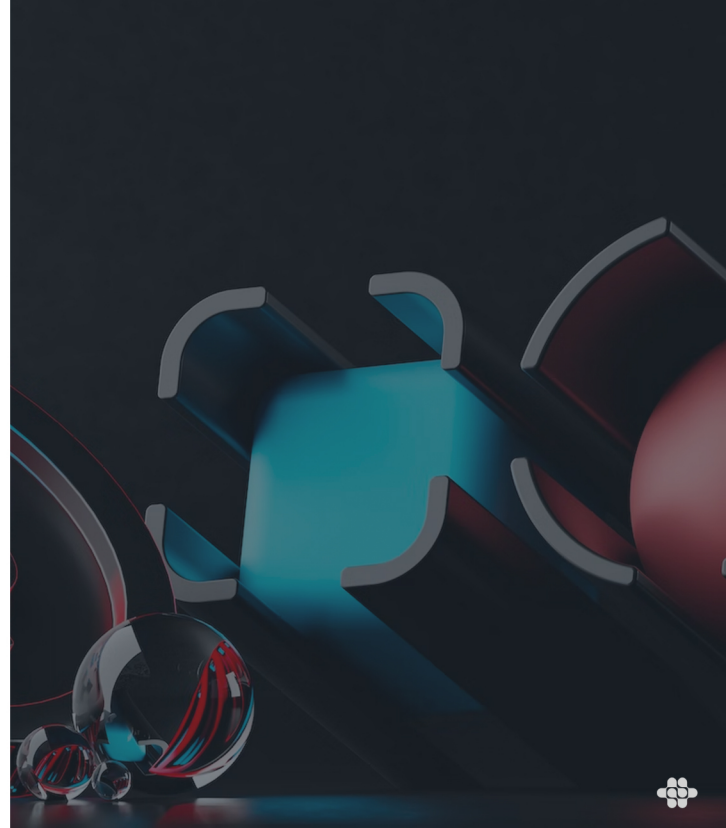Nearly 25% lack a strategy for utilizing Web3 in their business, primarily because they consider it irrelevant, do not understand it, and do not have the budget for implementation. While Web3 isn't as simple as a software package that can be installed, organizations can prepare for it now by examining use cases for technology like blockchain and the metaverse. Those that have used Web3 concepts did so to make IT systems more reliable, increase productivity, and improve end products.

Figure 10

11%	13%	21%	28%	27%

Familiarity with Web3

- Unfamiliar
- Slightly
- Somewhat
- Moderately
- Very

7%	11%	16%	29%	37%
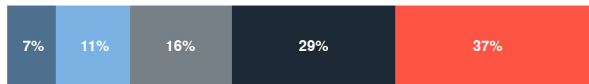
Relevance of Web3

- Irrelevant
- Loosely
- Somewhat
- Moderately
- Very

22%	21%	30%	27%

Current State of Web3

- No Web3 strategy
- Formulated a strategy
- Currently implementing a strategy
- Already implemented a strategy

Industry Impacts

The following section looks at how the previously mentioned technology topics affect specific industries.

This constant flow of information makes it tough to discern what's relevant and worth pursuing and what's fleeting and will prove to be all hype. Decision makers must evaluate emerging trends and gauge their impact on existing technology and future initiatives.

Today, the pressure to make the right choices is decidedly elevated in the face of potential economic downturn: the decisions organizations make will enable them to thrive post-recession. Even though the stakes are high, organizations have to invest in upgrading systems and creating new products, since failure to do so has relegated many businesses from household names to relics of the past.

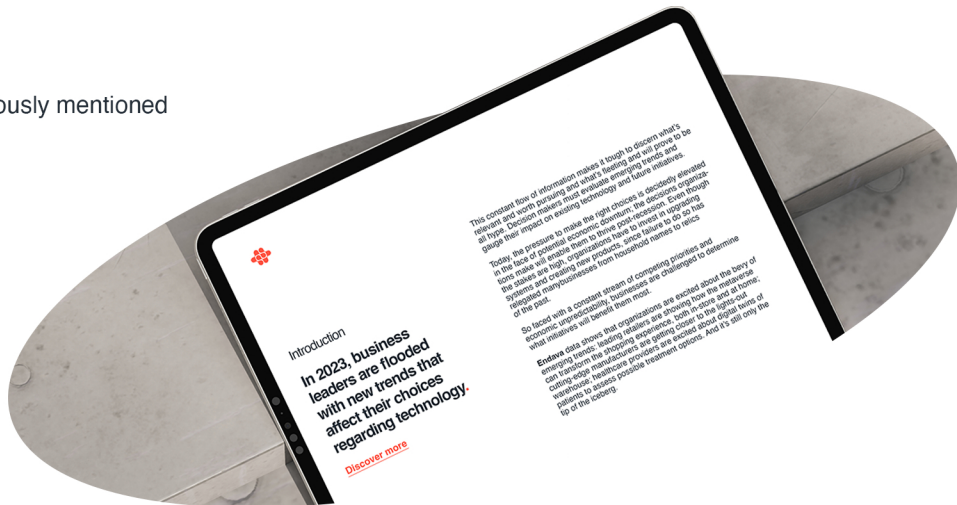So faced with a constant stream of competing priorities and economic unpredictability, businesses are excited about the bevy of emerging trends, leading retailers are showing how the metaverse can transform the shopping experience, both in-store and at home; cutting-edge manufacturers are getting closer to the lights-out warehouse; healthcare providers are excited about digital twins of patients to assess possible treatment options. And it's still only the tip of the iceberg.

Introduction

In 2023, business leaders are flooded with new trends that affect their choices regarding technology.

Discover more

Banking

Banking is in a transitionary period. In the past, banks relied on a combination of strong community relationships and large networks of branch locations to differentiate themselves from competition. Now banking has evolved to where there are nationwide banks with no branch locations (neobanks); non-banks that offer checking accounts and credit cards (via BaaS, which is discussed in-depth in Endava's 2022 BaaS Report); and software that lets users pay bills, hail taxis, and order food in a singular app (super apps). Banks, once seen as reliant on dated processes, must now differentiate themselves using technology or subject themselves to disruption.

With so many banking functions shifting from in-person to the internet, there has been a rise of online banks—financial institutions (FIs) that have no physical presence. These neobanks often compensate for their lack of brick-and-mortar locations by offering low fees, better interest rates, and top-notch applications and web experiences. Though many are now comfortable with neobanks, online FIs may fall short for customers that prefer the traditional banking experience: large ATM networks, wider product variety, and in-person banking.

The popularity of online banks means that traditional banks can use their branches and physical presence to their advantage. Many banks have adopted an omnichannel approach to their business to adapt to evolving consumer preferences.

Going to the bank branch is not a daily or weekly errand for customers to withdraw cash or deposit checks anymore; instead, visiting the bank is a special, irregular occasion. Because going to a branch is much rarer, the customer's experience when they do visit is much more important. Many of customers' transactional banking tasks are now done online, meaning that these channels must be reliable and intuitive. The high-quality experience of the branch needs to be a seamless experience at all touchpoints: mobile app, website, and in-person.

Banking-as-a-Service, a model where licensed FIs provide non-banks with products and services traditionally associated exclusively with banks, is another disruptive model banks must strategize around. FinTech companies that provide financial services through software are viewed as potential competitors to banks, but BaaS creates mutually beneficial partnerships where each party focuses on the areas they excel in. FIs provide FinTech companies (and the end users) with their banking products, security controls, and regulatory expertise in exchange for increased customer loyalty and diversified revenue streams.

Many industry-leading banks also gain a competitive advantage by adopting composability as a cornerstone. Building as a composable enterprise enables banks to deliver new products quicker and more scalably, two characteristics typically attributed to neobanks.

Capital Markets and Private Equity

The Capital Markets and Private Equity (P/E) subsectors are at a crossroads. Economic uncertainty and crises have created conditions where growth has stagnated. This means that in the short term, IT expenditure will primarily come from large players and be driven by meeting customer demand and maintaining the status quo. IT investment is currently focused on AI-driven automation, data and analytics, and ESG.

AI and machine learning are utilized in robo-advisor technology. Using AI, robo-advisors automate the management of investment portfolios based on preferences specified by the customer. Robo-advisors expand access to investing because they require minimal intervention by the account holder, have lower monthly fees than traditional advisors, and have low minimum balance requirements. Beyond robo-advisors, AI also helps traditional advisors with informed decision-making and clients with self-service data visualization.

Driven by regulation and customer demand, ESG has become more important for both Capital Markets and Private Equity groups. One aspect of ESG that is likely to take precedence, even in economic uncertainty, is climate change. With transparency into the business models of the companies they invest in, clients can decide on the causes and initiatives they support. Capital Markets groups can provide clients with this information by creating a data architecture that is thoroughly vetted and allows for easy benchmarking.

P/E is also being asked to consider ESG in all parts of their business—including who they employ and the investments they make. The future of the industry will likely have just as much to do with ethics and global stewardship as it does with the bottom line. Profitability and opportunity can no longer be the sole drivers of P/E's investments. Many are asking for investments to also make a positive impact on the globe.

Healthcare

The healthcare industry is plagued with dependency on legacy systems and lack of connectivity/interoperability. The COVID-19 pandemic sped some digital transformation elements up, but many of the pre-pandemic challenges are still hurdles for the industry's modernization.

In Europe, healthcare technology is focused on patient engagement and improving the healthcare experience, while North America is more focused on easing the payments process. All healthcare organizations face the concern of maintaining data privacy, due to the sensitive nature of health data. Such issues are further complicated by wearable devices that compile a great deal personal health information. A few of the most relevant emerging trends and technologies to healthcare's complex landscape are phygital and big data/predictive analytics.

Wearables, a technology under the phygital umbrella, provide significant information about the body: heart rate, blood pressure, sleep quality, and activity levels. They can also give warnings, insights, and recommendations, prompting the user to take action or see a healthcare professional. *Adrian Sutherland*, an Endava Senior Architect, outlines the different types of wearables in a blog post, where he explains that the technology encourages health maintenance and harm prevention, enables remote patient monitoring, and helps in providing accurate more data.

The data generated by these tracking devices will also play a significant role in creating a digital twin of the human body, which can then be used by medical workers to explore different plans of action and treatment options to see the effect they may have on the body.

With new data and the shift from paper to electronic patient charting come a few questions: What format is this data stored in, where is it stored, and what access do doctors at different organizations have to that information? The answers to these questions lie with government entities, who have played a large role in formalizing and standardizing the digitization of patient information, and healthcare software providers whose responsibility is to build platforms that integrate and exchange information with other solutions.

The ability to see all pertinent information paints a clearer picture of patient health, leading to more accurate diagnoses and patient-doctor transparency.

Insurance

Like banking, **insurance** is an industry that has shifted its customer experience from community-based, brick-and-mortar offices to the mobile phone. As laid out in the Endava 2022 Insurance Trends Report, adapting this customer experience to the modern consumer means that insurers must have access to the right data to personalize their journey and detect customer needs to create new, personalized products.

Insurers are faced with providing coverage to several generations that value different characteristics in their insurance products. Generations Y and Z are digital natives that value considerations like mobile apps, chat-based support, and self-service platforms, while Baby Boomers and Generation X still prefer traditional characteristics, like personal agent relationships, phone customer service, brick-and-mortar locations, and unified products. This difference necessitates a digital transformation in insurance, an industry that Endava data shows trails others.

For insurers, digital transformation involves data re-architecture and analytics, digital twins, omnichannel, and telematics. In a post on how insurers can use technology to differentiate themselves, one of Endava's Principal Architects in the Insurance Vertical said:

> **" Insurers who innovate to meet customers' identified needs will be able to leapfrog the competition in the marketplace. Innovation can differentiate your offerings while simultaneously providing a customer journey that is simpler and more personalized overall. "**

High-quality, accessible data is one of the cornerstones of the insurance digital transformation. It empowers insurers to build a more personalized product better tailored to its customers. Insurers should do an internal analysis to identify what data they collect now; what additional data they need to collect; where and how they'll store that data; and how they can leverage the data to improve the end product. By going through this process to build a dataset that accurately reflects customers, insurers can also create a digital twin of customer types to run simulations and improve their underwriting process.

One new dataset auto insurers have access to relies on telematics. Telematics is pivotal to modern auto insurance. By using data sent directly from vehicles, insurers can collect driving habits and price coverage to reflect drivers' specific risk more accurately. Telematics also allows for the creation of temporary insurance. By getting data from vehicles, insurance can be offered by distance (pay-per-mile) and time (pay-per-hour and pay-per-day).

Media & Gaming

Media and gaming are under constant pressure to be on the cutting edge of technology. Entertainment companies like Netflix are trailblazers in the space, evolving from sending DVDs via mail to a streaming service (a business model they effectively invented) and full-fledged production company that makes major motion pictures. Media companies have accomplished this breakneck innovation using technologies like microservices, big data, and predictive analytics to serve up content customers will find interesting.

Gaming companies are also innovators in utilizing emerging technology. Video games, especially those played online with gamers around the world, are an early example of the metaverse. In the latest evolution of the metaverse, video games leverage AR and VR to fully immerse players into games. Another focus of gaming companies has been enabling cross-platform play, where players using different systems can play each other. This typically involves streaming games from remote servers, eliminating the need to download them or load them via disk.

The following case study gives a real-world example of **how Endava helped the makers of the game Settlers of Catan bring the game into the mobile world and then enabled cross-platform play.**
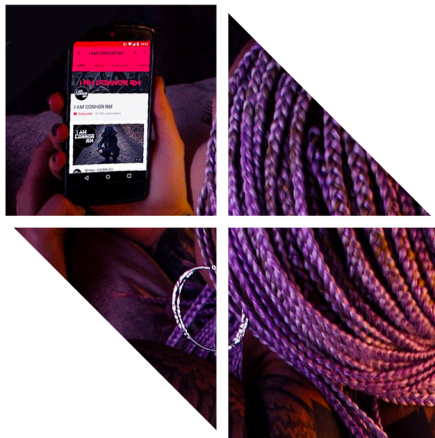
Mobility

Our data shows that the **mobility industry** has a high dependency on legacy systems. Many companies have implemented some solutions, but few have modernized most of their operations. Retail, specifically e-commerce, is driving much of the modernization in mobility. The shift toward online shopping has created customers who expect fast and free delivery, requiring transportation and logistics companies to speed up fulfillment while keeping costs low. The difficult calculus required to keep costs low and speed up delivery necessitates IT investment, a large portion of which is focused on mobility-as-a-service, digital twins, data and predictive analytics, and AI-based automation.

Mobility experts are excited about the smart city changing the industry for the better. Smart cities are where municipalities leverage the Internet of Things (IoT); AI and ML; digital twins; and data and predictive analytics to create an interconnected, more efficient urban environment. The smart city is predicated on the collection of data to create an accurate digital twin of the physical environment. This digitalized replica enables cities to use resources more efficiently, provide superior supply chain visibility and create a more sustainable world.

Brian Estep, an Endava EVP focused on the mobility industry, defines Mobility-as-a-Service (MaaS) as the transition of privately-owned assets to an on-demand model to create the frictionless movement of people and goods. Examples include rideshare, bike share, and scooter share services. The benefits to MaaS are increased equity and access to transportation, more efficient movement of goods and people, and increased sustainability. Automotive companies also play a key role in this equation, as much of MaaS is staked on autonomous vehicles.

AI is involved in many of the technological transformations in mobility. AI-based automation is the key to smart warehouses, which combine several elements of AI-based automation to produce the efficient, nimble supply chain demanded by modern businesses. In a smart warehouse, orders are checked against current stock levels automatically, and once stock is confirmed, many warehouses have automated guided vehicles (guided carts or conveyors) to transport goods. The next evolution, autonomous mobile robots, intelligently navigate their environment without a predetermined, fixed path. **Their utilization of AI increases facility capacity, increases efficiency, lowers injury risk, reduces human intervention, and makes services more reliable.**

Retail

Retail has undergone significant changes in the past few years because of the pandemic and ensuing economic struggles. The pandemic accelerated existing trends toward e-commerce in favor of brick and mortar and forced consumers to rely on services like curbside pickup and delivery. As such, the physical store has evolved to accommodate these new fulfillment options. Retail is also one of the industries affected by nearly every emerging trend explored in this report.

Retailer Amazon seems to have a product or strategy encompassing all the emerging trends outlined in this report, and much of the innovation in the space comes either from Amazon or companies who consider them a competitor. A great deal of omnichannel and phygital technology is driven by the sector, but ESG, metaverse, and digital twin technology are just as relevant to the industry.

Even prior to the pandemic, the role of the store was changing. While some guessed that brick-and-mortar locations would disappear, it's become obvious that stores merely need to evolve to provide an experience that complements mobile phone and eCommerce technology. Physical stores must provide an experience that makes visiting worth it. Instead of viewing the two channels as incongruous, an omnichannel approach to retail makes each better.

The store is not only a place to make purchases, but a showroom where shoppers can try on items, then order them online in different varieties that meet their needs. The store also serves as a crucial cog in the reverse logistics process, where customers can return purchases made online in person. The goal of an omnichannel retail approach is to create an experience that is seamless and familiar at all a brand's touchpoints.

Even though e-commerce is growing in popularity, it still has its shortcomings: customers are unable to try items on, see if they fit in their home, or get a real feel for how it looks in person. Brick-and-mortar locations fill many of these gaps but require customers to go out of their way to make a store visit.

Metaverse technology has the potential to compensate for e-commerce's shortcomings from the comfort of home. It may look good online or in-store, but Augmented Reality (AR) technology lets users see items in their own spaces to inform their purchasing decisions. Cutting-edge retailers have also experimented with virtual try-on technology, which creates a digital twin of customers' bodies and sees how different sizes fit them. This technology also accounts for body movement and reduces returns.

Telecom

As utility companies, **telecom** providers must stand out by providing superior customer experiences and reliability. Much of this hedges on handling basic processes, like reliability, payments, customer service, latency, and facilities management very well. To improve speed and bandwidth, telcos have rolled out 5G, the next generation cellular network. 5G improves the traditional customer experience but charging more for mobile phone service isn't how telcos will produce a return on investment: 5G plays another role in powering the business of the future.

Internet of Things (IoT), AI-driven automation, and autonomous driving all rely on 5G to work. 5G enables devices to communicate with each other and networks to be divided into "slices". These two features enable a future where factory machines share status information to track performance and maintenance and cars exchange data to avoid crashes and traffic jams—all on subdivided networks allocated to specific uses.

Doing this requires businesses to bring in telcos to set up privatized networks, a new revenue stream for telecom providers.One way for telecom companies to unclutter an industry typically struggling with a cluttered monolithic system is to implement a microservices architecture. Microservices break some of the company's processes into their individual functions, allowing telcos to become more scalable, agile, interoperable, and innovative.

Like other industries, the future of telco relies on big data and predictive analytics. Telcos can use predictive analytics to prepare for future capacity needs, better assess outages, and set pricing more accurate to individual markets. Data will also be used to create entirely new lines of business, like television, hotspot, and wi-fi packages. **By better using the data at their disposal, telcos can increase customer retention and attract new business.**

Considerations for Emerging Trends and Technology

When building an organizational strategy for emerging trends and technology, it's important to ensure that the plan is designed to meet specific organizational needs and goals. Many companies are cautious to implement new technologies without thoroughly examining whether they are suitable for their own organization.

Below are best practices for planning a strategy for **emerging trends and technology:**

01. ☑

Dependence on Legacy Systems

The technology an organization can adopt depends heavily on what they already have in place. Decision makers should bear in mind that to take advantage of certain, advanced technologies, they may have to take intermediate steps by implementing other necessary systems. This is significantly more likely if a company's IT infrastructure is dated and based on legacy systems.

02. ☑

Seek Professional Advice

Sometimes it's best to call in an expert. Partnering with a consultancy to design, ideate, and build new technology can benefit companies by allowing them to take the guesswork out of expensive and stressful modernization efforts. By enlisting the help of subject-matter experts that specialize in emerging technology in their industry, companies raise their odds of success and build long-lasting competitive advantages.

03. ☑

Existing Partnerships

Business partnerships can be tricky to navigate when thinking about upgrading technology. Organizations should consider how any possible changes will affect systems other than their own, such as programs that implement or interact with third-party platforms.

04. ☑

Return on Investment and Economic Conditions

Return on investment is one of the most important considerations for a company weighing new technology. By providing a plan upfront for how the strategy will pay off, decision influencers can address the most pressing concerns of other influencers and decision makers. It's also important to take current economic conditions into account. While it may seem counterintuitive, our research indicates that despite current economic uncertainty, many organizations are prioritizing technology upgrades because they will save the company money in the long run and help survive a possible recession. An example is artificial intelligence solutions that will free employees up for more important, strategic work.

Conclusion ⌐↗

The abundance of emerging technologies presents an intimidating landscape for business leaders responsible for investment decisions. Companies are well-versed in popular technology topics like AI and big data but have limited knowledge or awareness of concepts like digital twins and microservices, which have the potential to transform the business world (if they haven't already).

To gain clarity, companies should consider several resources, ranging from technology publications and competitive research to enlisting help from technology experts. By carefully analyzing what initiatives provide a return on investment, processes can be made more efficient and improve the end product—**allowing organizations to not only gain a competitive edge but also become recognized as industry leaders.**
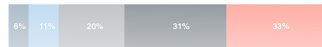
Emerging ↗ Tech <u>Unpacked</u>
an Endava Report

Market Awareness and Current State

The concept of forming digital ecosystems is familiar to many organizations *(Figure 4)* and placed as the fifth highest priority. Among organizations that have either put digital ecosystems into place or are in the process of doing so, they did so to increase efficiency, productivity, and system reliability; gain competitive advantages; and improve end-product.

Digital ecosystems often leverage partnerships to create more powerful applications. By doing this, companies get access to new customers, speed up time to market by combining their existing offerings with those of partners, and increase the stickiness of those products, growing customer loyalty.

≫

| 6% | 11% | 20% | 31% | 33% |

Familiarity with Digital Ecosystems

• Unfamiliar
• Slightly