EVALUESERVE

Emerging TECH Radar

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Preface

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The pace of technological advancement is increasing at an unprecedented and unpredictable rate. The World Economic Forum has acknowledged this in its Future of Jobs report, identifying it as the beginning of a fourth industrial revolution driven by emerging technologies.

Emerging technologies are innovative and nascent technologies that are still in early stages of development and adoption. These technologies are evolving and are still getting integrated into existing systems. Nevertheless, they hold significant promise and the potential to address complex problems and create future opportunities for businesses and individuals. They can have a profound impact on industries and reshape the way we think, live and work.

The emerging technologies are inherently disruptive, offering a competitive advantage and paving the way for entirely new strategic opportunities. To seize these opportunities, it is crucial to understand their potential applications and their paths to widespread adoption. In a rapidly changing technological landscape, envision being the first to identify and respond to new possibilities. A forward-looking approach to technology strategy can make this a reality. Therefore, staying updated on emerging technologies is vital for those aiming to remain competitive in the fast-paced digital world.

New emerging technologies have the potential to enhance the human experience if they are designed, regulated, and deployed ethically and responsibly. As these technologies rapidly usher in new business models, governments worldwide must adapt and enforce regulations to safeguard consumers from unfair practices while fostering innovation. In the realm of technology, boundaries may transcend regulatory and national borders. The European Union's proposed "landmark rules" could become "hallmark rules" aimed at mitigating economic risks associated with emerging technology.

Our report strives to address practical questions such as ; Which technologies are gaining the most traction? What are the crucial trends that business leaders should anticipate? We should concentrate on quantifiable factors such as investments, research endeavors, and media attention to evaluate the momentum of each technology. Additionally, we analyzed critical use cases to identify the sectors and solutions, most likely to benefit from their adoption.

We hope that our report serves as a thought leadership for business leaders, innovators, futurists and policymakers, enabling them to unlock the transformative potential of emerging technologies and shape our digitally enabled future human society and promote sustainable and equitable progress.

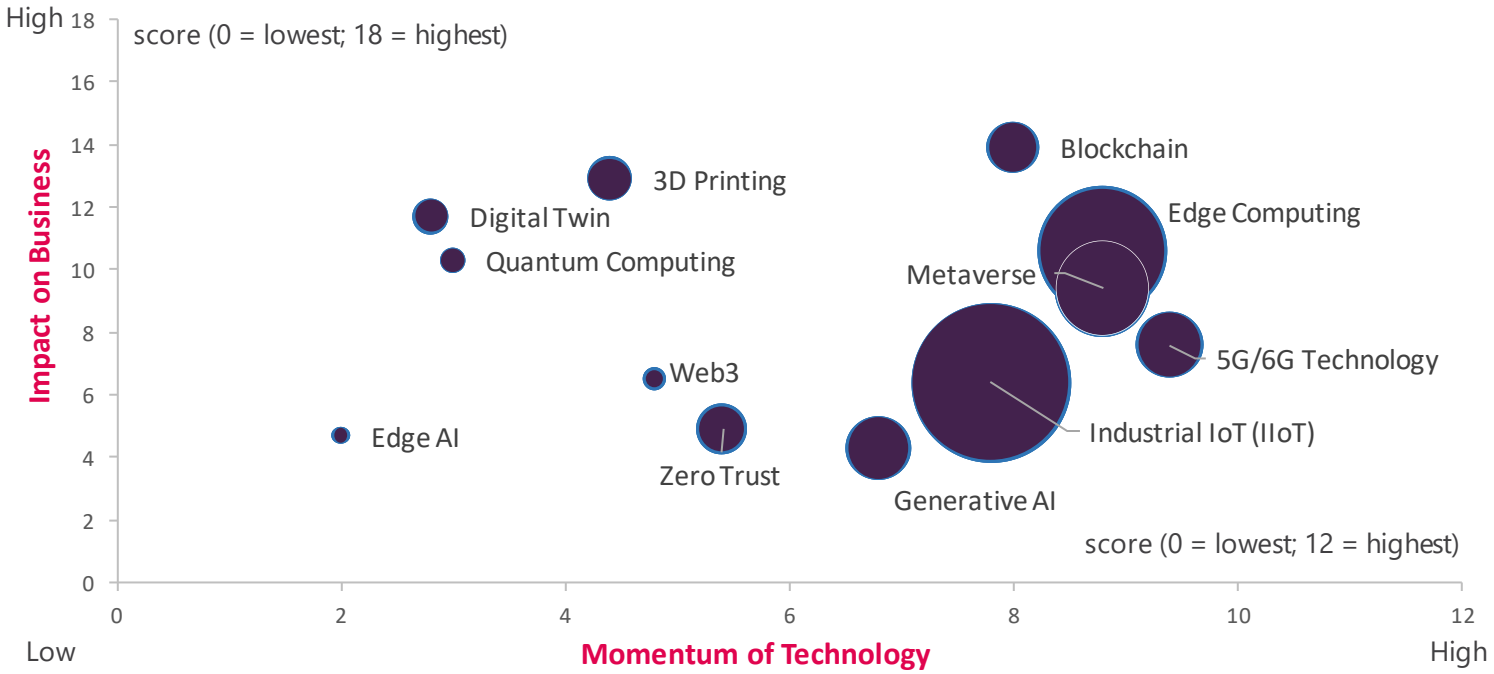
Emerging Technologies Radar

Click On the bubble to view details

Our research spotlights a dynamic landscape of 12 emerging technologies poised to reshape businesses across sectors. Industrial IoT, Edge Computing, Blockchain, and 5G/6G stand as stalwarts, demonstrating proven impact across industries and gathering momentum, indicating substantial revenue potential. Another cohort features promising newcomers: Generative AI, Quantum Computing, Digital Twin, and 3D Printing. Lastly, there's a trio of technologies - Web 3, Zero Trust, and Edge AI - offering focused applications and secure business environments.

Collectively, these technologies wield significant influence across three pivotal themes: the Connected World, where interconnectivity reigns; the rise of smarter technologies driving intelligent living; and the surge in productivity through operational efficiency gains.

12 Emerging Technologies in 2023



Note

- The 'Impact on Business' and 'Momentum of Technology' scores are relative. All 12 technologies exhibit a medium to high momentum and significant investment.
- Momentum of Technology combines the scores given for patents, published research papers, Google trends, and expected growth rate in 2022-25.
- Patent score is based on the number of patent filings and research score on the number of research publications.
- Impact on Business combines investments, estimated market size in 2025, and overall impact on different industries, based on potential use cases across functions.
- The bubble size indicates the market potential of a technology by 2025, relative to the other technologies.

Source: Evalueserve Analysis

Emerging Technologies across Sectors

Most of the industries have medium to high impact basis the use cases offered by these technologies

Impact: High | Med | Low

	Financial Services	Manufacturing	Construction	Healthcare	Media & Entertainment	Telecom	Consumer Packaged Goods	Information Technology
5G/6G	High	Med	High	High	High	High	High	Med
Blockchain	High	Med	Med	Med	Med	Med	Med	Med
Digital Twin	Med	High	Med	Med	Med	Med	Med	Med
Edge AI	High	Med	Med	Med	Med	Med	High	High
Edge Computing	Med	High	High	High	High	High	Med	High
Generative AI	High	Med	Med	Med	Med	Med	Med	High
Industrial IoT	Low	Med	Med	High	Low	Low	Med	Med
Metaverse	High	Med	Med	High	Med	Med	High	High
Quantum Computing	Med	Med	Med	Med	Med	Med	Low	Med
3D Printing	Med	Med	Med	Med	Med	Med	Med	Med
Web3	Med	High	Med	Med	High	High	Med	Med
Zero Trust	High	High	High	High	High	High	High	Med

**Note: Impact on Industries is based on the analysis of relevant use cases of each technology across different business functions including Supply Chain & Operations, Sales & Marketing, Research & Development and Support functions*

The synergy of emerging technologies is catalyzing a sweeping metamorphosis across industries, fundamentally altering their operational landscapes.

- In the realm of Financial Services, these technologies are revolutionizing transactions with real-time processing via 5G/6G, enhancing security and transparency through Blockchain, and refining risk assessment via AI-powered analytics.
- Manufacturing is undergoing a seismic shift with streamlined production pipelines empowered by Industrial IoT, AI-optimized quality control, and agile 3D Printing, all bolstered by secure and low-latency connectivity provided by Edge Computing.
- Construction is embracing Digital Twins to meticulously plan and monitor projects, while AI and Edge Computing optimize resource allocation and 3D Printing accelerates prototyping and fabrication.
- The Healthcare sector is undergoing a patient-centric transformation through remote monitoring enabled by IoT, precision medicine propelled by AI analysis of patient data, and the potential of Quantum Computing in advancing drug discovery and genetic research.
- Media & Entertainment is immersing audiences in the Metaverse, leveraging Blockchain for content rights and royalty distribution, utilizing AI for tailored content creation, and optimizing production pipelines through 3D Printing.

Achieving seamless integration across industries mandates navigating regulatory frameworks, safeguarding data privacy, and fostering workforce adaptability to leverage the full spectrum of these technologies' capabilities.

Key Themes

- Connected World
- Smarter Living
- Increased Productivity

Connected World

A Fusion of Tech and Connectivity

The connected world epitomizes seamless interconnectivity among devices, systems, and individuals. Through the Internet of Things (IoT), 5G/6G networks, and advanced technologies, a vast array of objects and entities communicate, share data, and collaborate in real time. This convergence propels innovation, enabling smart cities, efficient industries, personalized healthcare, and immersive experiences in media. However, it also brings challenges such as privacy concerns and cybersecurity risks, necessitating a balanced approach to harnessing the potential of this interconnected landscape.

Key Trends

~51.9 Billion Connected Devices Expected by 2025

The adoption of connected devices is expected to go up exponentially as applications that require absolute reliability, such as vehicle safety systems or medical devices, rapidly adopt connected devices supported by 5G / 6G.[1]

Surging Need for Network Capacity

As industries increasingly rely on 5G / 6G-enabled applications that support large data volumes to grow their businesses, offer new services, and deliver a better user experience, a 20-25% increase in data will likely create a need for higher-bandwidth networks.[2]

Increased Demand for Edge and Cloud Storage

More networks will subsequently increase the need for edge and cloud storage, where storage and processing are cheaper. As more 5G / 6G networks are rolled out, flash-based storage will be in greater demand.

Why should business Leaders take a note of this theme?

Technologies such as 5G and 6G are poised to create a more connected world. These transformative technologies will not only enhance our digital experience but also underpin the development of smart cities, revolutionize industries, and redefine how we interact with technology.

Their potential is immense, and their widespread adoption promises a future of unprecedented connectivity and innovation.

Businesses must be vigilant and seize any opportunity to harness their power so as to ensure that these technologies contribute positively to their growth.

Source: Evalueserve Analysis,, [1,2]Mckinsey

Increased Productivity

Promising a future of unprecedented efficiency

The integration of emerging technologies across various industries is leading to significant productivity improvements. We have discussed below a few high-impact technologies and their influence on production levels across industries.

Examples

AI-driven Automation Reduces Manual Tasks and Improves Efficiency

The current gen AI and related technologies have the potential to automate work that takes up **60-70%** of employees' time.[3]

IoT Drives Operational Optimization in Manufacturing

Operations management applications could account for **32-39%**, or $0.5-1.3 trillion, of potential economic value created by IoT in factory settings by 2030.[4]

AR Streamlines Training and Maintenance

Boeing has used AR for technicians to **increase productivity by 40%** and **reduce wiring production time by 25%.**[1]

DT Helps Accelerate Time-to-market

A prominent automotive OEM involved in designing seat-belt fastening systems has leveraged digital twin to successfully reduce time spent on finding optimal designs to **less than a minute from 3+ days**.[6]

Blockchain Disrupts Banking Industry with Faster Settlement Time

Blockchain company Ripple has used a decentralized infrastructure to reduce the time needed for international payments to **3 seconds from up to 5 days** under traditional international bank transfers.[5]

3DP Helps Inventory Optimization and Reduces Costs

GE Aviation has used its 3D-printed fuel nozzle to decrease inventory by **95%** and lower component costs by **30%.**[2]

How should businesses take a note of this theme?

Business Leaders must adopt a multi-faceted approach to capitalize on the potential of emerging technologies.

- They must foster a culture of curiosity and adaptability within their teams and encourage a proactive attitude towards staying updated.
- They should allocate resources for training and skill development to ensure that the workforce is equipped to use technologies.
- They should identify specific areas within the organization that could benefit from the implementation of innovative technologies.
- Leaders should encourage cross-functional collaboration to ensure seamless adoption and integration.

By focusing on these key aspects, leaders can harness the power of emerging technologies to drive productivity and maintain a competitive edge in today's rapidly evolving landscape.

Source: Evalueserve Analysis, [1]Capgemini, [2]GE, [3,6]Mckinsey, [4]101Blockchains, [5]Cbinsights

Smarter Living

Employing technology for a better future

Smart Living, a concept driven by technological advancements, is transforming the way we interact with our homes and communities. The integration of innovative technologies into our living spaces has ushered in a new era of convenience, efficiency, and sustainability. From AI-powered devices to IoT-enabled systems, the role of technology in smart living is reshaping our daily lives and paving the way for a brighter and more interconnected future

Home Automation

At the heart of smart living lies home automation, that is, the use of technology to control and optimize various aspects of living spaces. Smart home devices, such as smart thermostats, lighting systems, and home security cameras, provide unprecedented levels of control, comfort, and security. Key enablers include IoT, 5G, AI

Connected Transportation

The transportation sector is experiencing a major shift towards connected and autonomous solutions. IoT enables vehicles to communicate with each other and the infrastructure, leading to improved traffic management, reduced accidents, and enhanced road safety. The integration of AI and IoT in autonomous vehicles is paving the way for self-driving cars. By 2030, about 95% of new vehicles sold globally will be connected, up from around 50% in 2021[1].

Health and Wellness Tracking

Wearable devices, such as smartwatches and fitness trackers, have become indispensable tools for health-conscious individuals. These devices monitor our daily activities, heart rate, sleep patterns, and even stress levels, providing valuable insights for better self-management and healthier lifestyles. The data collected by these devices can be analyzed by AI algorithms to offer personalized health recommendations and track progress towards wellness goals.

Smart Cities

Smart cities integrate IoT-enabled infrastructure, such as intelligent transportation systems and public Wi-Fi, to create seamless experiences for residents and visitors alike. Connected living enables streamlined services such as real-time public transportation updates to reduce commuting stress and improve mobility. Additionally, smart cities leverage data to address traffic congestion, reduce energy consumption, and optimize urban planning for a more livable environment.

Why should business take a note of this theme?

Business leaders can stay relevant and be successful in today's dynamic landscape of smart living, smart infrastructure, smart healthcare, and overall smart experiences by focusing on these key areas:

- Prioritizing a user-centric approach to ensure seamless integration, interoperability, and data security
- Maintaining scalability, sustainability, and regulatory compliance
- Focusing on partnerships, analytics, and continuous improvement to drive innovation
- Forming clear value propositions and differentiation strategies to shine in a competitive market
- Educating users and providing support for the successful adoption of smart technologies

Source: Evalueserve Analysis, McKinsey

Emerging Technologies

Blockchain

Enabling innovation and securing the future

Back

Blockchain is a secure database shared across a network of participants, where up-to-date information is available to all participants at the same time. A blockchain is a type of distributed database or ledger. The power to update a blockchain is distributed between the nodes, or participants, of a public or private computer network.

Cryptocurrencies

Cryptocurrencies, particularly Bitcoin, have demonstrated their value. Around 19 million Bitcoins are in circulation today.[1]

Asset Tokenization

The total value of illiquid asset tokenization globally is expected to stand at $16 trillion by 2030.[2]

Smart Contracts

The growing number of verified smart contracts highlights the rising demand for blockchain solutions.

Integration with IoT

Businesses can strengthen their operations by sending IoT data to an immutable blockchain ledger to add security.

Blockchain has the potential to boost global GDP by $1.76 trillion over the next decade.[3]

Industry	Impact across Business Functions			
	Supply Chain & Operations	Research & Development	Marketing & Sales	Support Functions
Financial Services	■	■	■	■
Manufacturing	■	■	■	■
Construction	■	■	■	■
Healthcare	■	■	■	■
Media & Entertainment	■	■	■	■
Telecommunications	■	■	■	■
Consumer Packaged Goods	■	■	■	■
Information Technology	■	■	■	■

High Med Low

Blockchain has the potential to revolutionize various industries. It can enhance transparency, security, and efficiency while reducing costs and the need for intermediaries. Be it finance, supply chains, healthcare, or government services, the impact of blockchain spans all, as it enables faster cross-border payments, improved supply chain traceability, secure health data management, and decentralized finance applications. Research says that by 2027, up to 10% of global GDP could be associated with blockchain-enabled transactions.[4]

Use Cases across Industries

Supply Chain & Operations

- Real-time Multiparty Tracking
- Decentralized Finance
- Smart Contracts
- Non-fungible Tokens
- Digital Identity
- Supplier Management
- Log Operational Maintenance Data

Research & Development

- Trustworthy and Scientific Publishing
- Data Monetization and Licensing
- Healthcare Research
- Funding and Grants
- Intellectual Property Protection
- Clinical Trials

Marketing & Sales

- Tokenization and Crowdfunding
- Digital Advertising
- Protection of Customer / Patient Data
- Loyalty Cards
- Decentralized Customer Engagement Platforms
- Micropayments

Support Functions

- Cross-border Payments
- Identity and Data Security
- Hack-proof Authentication
- Fine Art Investments
- Integrated Billing & Provisioning
- Real Estate Title Exchange

Source: Evalueserve Analysis, [1]CoinMarketCap, [2]BCG, [3]PWC, [4]Mickinsey

Digital Twin

Double the vision, double the win with digital twin!

Back

A digital twin is a digital representation of a physical object, person, or process, contextualized in a digital version of its environment. Digital twins can help an organization simulate real situations and their outcomes, ultimately allowing it to make better decisions.

Increasing revenues and improved product quality

Increase in revenue by up to 10% and improve product quality by up to 25% for businesses that have adopted it.[3]

Game changer for manufacturing industry

Digital Twins in the Manufacturing industry is expected to increase ten-fold by 2025 as compared to 2020.[2]

Human digital twins are trending

With 3D models proliferating, digital twin technology is progressing rapidly towards the metaverse and so the trend of digital humans

Improved structures and their systems

Big physical structures, power generating equipment and manufactured product can be improved during their design.

70 percent of C-suite technology executives at large enterprises are already exploring and investing in digital twins.[5]

Industry	Impact across Business Functions			
	Supply Chain & Operations	Research & Development	Marketing & Sales	Support Functions
Financial Services	High	Med	Med	Low
Manufacturing	High	Med	Med	Low
Construction	High	High	Med	Low
Healthcare	High	Med	Low	Med
Media & Entertainment	High	Med	Low	Low
Telecommunications	High	Med	Low	Low
Consumer Packaged Goods	High	Med	Low	Low
Information Technology	High	Med	Low	Low

In advanced industries, ~75% of companies have already adopted digital-twin technologies that have achieved at least medium levels of complexity Digital-product-development approaches are evolving rapidly too. Companies can cut down on R&D costs by 20-50% depending on the use case. Additionally, a digital twin created during product development can allow companies to offer a range of value-added aftermarket services, including predictive maintenance and in-service performance optimization. That can increase revenues by 5-10% in some product categories. [4]

Use Cases across Industries

Supply Chain & Operations

- Building Monitoring
- Disaster Management
- Stimulate & Optimize Oil Production
- Fraud Detection and Security
- Production Planning and Scheduling
- Digital Humans/Avatars in Gaming
- Network Performance Visualization

Research & Development

- Algorithmic Trading and Investment Strategies
- Virtual Product Development
- Scenario Testing
- Financial Simulation and Scenario Planning
- Digital Twins of Human organs
- Design Optimization

Marketing & Sales

- Virtual Site Tours
- Virtual Consultation and Demos
- Virtual Product Launches and Promotions
- Virtual try-on and Experiences
- Remote Sales Support

Support Functions

- Workplace Safety
- Event Management and Planning
- Training and Development
- Facility Management
- Virtual Onboarding and Orientation

Source: Evalueserve Analysis, [1,3,4,5]Mckinsey [2]Statista,

Edge AI

Offering a competitive edge in a digital world

Back

Edge AI is the deployment of AI applications in devices throughout the physical world. It's called edge AI because the AI computation is done near the user at the edge of the network, close to where the data is located, rather than centrally in a cloud computing facility or private data center.[1]

Enhanced Interoperability among AI Frameworks

The maturing edge AI market will lead to greater standardization & device interoperability, simplifying integration into existing systems, enhancing efficiency, and cutting costs

Edge Solutions Driving Edge AI Adoption

93% of companies worldwide are adopting edge AI. Businesses, developers, and consumers realize the importance of edge solutions.[8]

Eliminate Privacy Concerns

Mitigates privacy concerns by processing data locally on devices, reducing the need for transmitting sensitive information to external servers

Improving Performance and Analysis across Industries

AI can improve performance by up to 69% compared to other analytical techniques.[4]

By 2025, the world will have generated 175 zettabytes of data, with edge devices expected to create more than 90 zettabytes.[6]

Industry	Impact across Business Functions			
	Supply Chain & Operations	Research & Development	Marketing & Sales	Support Functions
Financial Services	High	Med	High	Med
Manufacturing	High	Med	Low	Med
Construction	High	Med	Low	Med
Healthcare	Low	High	Med	Med
Media & Entertainment	Low	Med	High	Med
Telecommunications	Low	Med	High	Med
Consumer Packaged Goods	High	Med	High	Med
Information Technology	High	High	Med	Low

In the financial services and IT industries, advanced AI can provide a competitive advantage by enabling real-time decision-making, improving customer experience, and optimizing supply chain operations. As these industries continue to implement digital transformation, Edge AI will play a key role in driving innovation and efficiency. The convergence of 5G and Edge AI is expected to drive exciting use cases around autonomous driving, remote patient monitoring, smart farming etc.

Use Cases across Industries

Supply Chain & Operations

- Inventory Management
- Demand Forecasting
- Energy Management
- Supply Chain Visibility
- Vendor Management
- Inertial Sensor / Environmental Sensor Analytics

Research & Development

- Edge AI Frameworks and Libraries
- IoT Device and Sensor Research
- Advanced Analytics and Intelligent Decision-Making Capabilities
- Content Security and Copyright Protection
- Imaging Analysis

Marketing & Sales

- AR and VR Experiences.
- Predictive Sales Analytics
- Expression Analysis to Improve Shopping, Advertising, or Driving
- Contextual Advertising
- Customer Segmentation

Support Functions

- AI Powered Chatbots
- Employee Training
- Anomaly Detection
- Workflow Automation
- Falling costs

Sources: Evalueserve Analysis, [1]NVIDIA, [3]McKinsey[1], [4]McKinsey[2], [6]Kearney, [7]Bain & Company, [8]Xailient

Edge Computing

Enabling real-time processing and reduced latency

Back

Edge computing is an emerging computing paradigm that refers to a range of networks and devices at or near the user. Putting computing at the edge allows companies to improve how they manage and use physical assets and create new, interactive, and human experiences. Worldwide spending on edge computing is expected to reach $208 billion in 2023, a 13.1% increase over 2022.[1]

Cloud AI Deployments

Rising AI adoption is creating a need for edge computing for local data processing, latency mitigation, and the adoption of real-time AI applications.

Data Gravity

Edge computing addresses the trend of data gravity due to a surge in data generation, which drives the need to shift computing capabilities nearer to data sources.

Integration of VR

Edge computing is vital for VR adoption across industries, processing data close to source for reduced latency, and enhanced user experience.

Constructing Post-Covid Connections

Post-pandemic recovery has fostered global partnerships with edge computing providers for quick, risk-minimized international growth and simplified administration.

By 2024, the number of apps at the edge is expected to increase by 800%; over 50% of new enterprise IT infrastructure will be at the edge instead of at corporate data centers.[1]

Industry	Impact across Business Functions			
	Supply Chain & Operations	Research & Development	Marketing & Sales	Support Functions
Financial Services	High	Low	Med	Low
Manufacturing	High	High	Low	Med
Construction	High	High	Med	Med
Healthcare	Med	High	Low	High
Media & Entertainment	Low	Med	High	High
Telecommunications	Med	High	Low	High
Consumer Packaged Goods	High	Low	Low	Med
Information Technology	Med	High	Low	High

Edge computing is revolutionizing the R&D sector by enabling rapid data processing and action at data sources, thus enhancing decision-making and project responsiveness. Furthermore, it is facilitating the deployment of advanced applications, such as AR, which can be leveraged for product development, simulation, and testing. It also plays a key role in smart manufacturing, where data analytics-based decision-making is vital.

Use Cases across Industries

Supply Chain & Operations

- Connected Robotics & Automation
- Predictive Maintenance
- Asset Tracking
- Quality Assurance
- Real-time Inventory management
- Fleet Management

Research & Development

- Product Testing & Development
- Remote Field Research
- Simulation & Modeling
- Laboratory Management
- Clinical Research
- Advanced Microscopy & Imaging
- Real-time Data Analytics

Marketing & Sales

- Personalized Customer Experiences
- Location-based Marketing
- AR for Sales & Marketing
- Remote Operations & Sales
- Interactive Digital Signage
- Mobile Content Delivery

Support Functions

- Remote IT Infrastructure Management
- HR Analytics
- Automation of Administrative Tasks
- Enhanced Video Conferencing
- Virtual Training & Onboarding
- Real-time Employee Tracking

Source: Evalueserve Analysis, [1]IDC, [2]McKinsey

Generative AI

The coming together of imagination and innovation

Back

Gen AI refers to a category of AI algorithms that generate output based on the data they have been trained on. Gen AI uses a type of deep learning, called generative adversarial networks (GANs), to create new content. A GAN consists of two neural networks, a generator that creates new data and a discriminator that evaluates the data.

Burgeoning Market Share

Gen AI is expected to account for a 30% share of the overall AI market by 2025.[1]

Revolutionizing Sales and Marketing

By 2025, 30% of marketing content is likely to be created by human-augmented gen AI, compared with less than 2% in 2022.[1]

10x Increase in Investments

VCs have steadily increased their positions in gen AI, from $408 million in 2018 to $4.5 billion[2] in 2022.

Customer Experience Enhancement

The application of gen AI for customer care functions can increase productivity by 30-45% of current function costs.[4]

Gen AI has the potential to create additional value of $6-7 trillion for the global economy.

Industry	Impact across Business Functions			
	Supply Chain & Operations	Research & Development	Marketing & Sales	Support Functions
Financial Services	Med	Med	High	Med
Manufacturing	Med	Med	High	Med
Construction	Med	Med	High	Med
Healthcare	Med	Med	High	Med
Media & Entertainment	Med	Med	High	Med
Telecommunications	Med	Med	High	Med
Consumer Packaged Goods	Med	Med	High	Med
Information Technology	High	Med	High	Med

High Med Low

Industries such as banking, high tech, and life sciences are poised to experience substantial effects, in terms of revenue, through the adoption of gen AI. For instance, the banking sector could witness an annual revenue increase of $200-340 billion if it fully embraces the technology. Similarly, the retail and consumer packaged goods sectors have the potential to gain $400-660 billion in additional revenue each year with the implementation of gen AI.[4]

Use Cases across Industries

Supply Chain & Operations

- Portfolio Management
- Text / Video / Image Generation
- Automation of Preliminary screening
- Autonomous Networks
- Retail Store Analytics
- Deepfakes & Face Swaps
- Software Development

Research & Development

- Product Engineering
- Code-based Applications
- Predictive Analysis
- Generating Synthetic Data
- Drug Discovery
- Consumer Research
- Advanced Data analysis

Marketing & Sales

- Customer Support via Chatbots
- Personalized Marketing
- Copywriting
- Synthesize RFPs
- Pricing Optimization

Support Functions

- Reports for Legal, Compliance, & Regulatory departments
- HR Self-serve functions
- Automated Accounting
- Workflow Automation
- Develop Code, Assist cybersecurity test-case generation & quality assurance

Source: Evalueserve Analysis, [1]BCG, [2]Gartner, [3]Pitchbook, [4]McKinsey

Industrial IoT

Unlocking a smarter world

Back

IIoT is an ecosystem of devices, sensors, applications, and associated networking equipment that work together to collect, monitor, and analyze data from industrial operations. This technology is also a fundamental component of Industry 4.0 technologies.

5G-propelled Growth

It is estimated that 5G IoT devices worth $5 billion will be sold in 2025[2], with 5G acting as a key enabler for IIoT technology owing to its ability to support ultra-fast and low-latency communications.

Fog Computing

Fog computing relocates intelligence to the edge of network which reduces the latency between cloud server IIoT network thus, enabling real-time control, and greater manageability.

Big Data Analytics

Big data analytics play a crucial role in extracting valuable insights from the collected information, leading to better decision-making and process optimization

Adoption by Manufacturers

Digital and process manufacturing are expected to see the highest investments in IIoT solutions and will likely account for more than a third of the market.

IIoT is expected to be a $500 billion market by 2025, as advancement in essential technologies drive up demand.[2]

Industry	Impact across Business Functions			
	Supply Chain & Operations	Research & Development	Marketing & Sales	Support Functions
Financial Services	Low	Low	Low	Low
Manufacturing	High	Med	Low	Med
Construction	High	Med	Low	Med
Healthcare	High	High	Med	Low
Media & Entertainment	Low	Low	Low	Low
Telecommunications	Low	Low	Low	Low
Consumer Packaged Goods	High	Low	Low	Med
Information Technology	High	Med	Med	Low

High Med Low

Manufacturing operations and production asset management, the two IoT use cases expected to receive the most investments in 2023, are closely linked to the manufacturing industry. The next major use cases are inventory intelligence, smart grid (electricity) and supply chain, which will receive significant investment from the retail and utilities sectors. IoT services will be the largest area of spending in 2023 and through the end of the forecast, accounting for nearly 40% of all IoT spending worldwide.

Use Cases across Industries

Supply Chain & Operations

- Production Visibility
- Predictive Maintenance
- Asset Tracking & Management
- Patient Monitoring
- Smart Grid
- Connected Warehouse Robots
- Automated Guided Vehicles

Research & Development

- Product Testing & Development
- Data Collection & Analysis
- Automated Experimentation
- Digital Twins
- Quality Control & Testing
- Energy Efficiency & Sustainability

Marketing & Sales

- Product Usage Monitoring
- Customer Behavior Analysis
- Smart Vending Machines
- Real-time Promotions & Offers
- Interactive Displays & Signage
- Customer Loyalty Programs

Support Functions

- Smart Safety Helmets
- Remote Terminal Units
- Automatic Safety assistance
- Emergency Response & Disaster Management
- Virtual Training
- Real-time Employee Tracking

Source: Evalueserve Analysis, [1]Cisco ,[1]McKinsey

Metaverse

A realm of infinite potential

Back

The metaverse is the next evolution in social connection and the successor to the mobile internet. Like the internet, the metaverse will help you connect with people when you aren't physically in the same place and get us even closer to that feeling of being together in person.[2]

VR Gaming

Gaming, especially VR, has been pivotal in evolving the metaverse by creating immersive and interactive virtual environments.

Metaverse Events

The metaverse provides a platform in which major performing artists can hold virtual live concerts and engage with fans, thereby offering an alternative for those who cannot attend physical events.

Digital Humans

Within the metaverse, digital humans, called avatars, aid virtual customer service, host virtual events, and facilitate social interactions.

Virtual Economies

The metaverse has seen the rise of virtual economies in which users can trade in digital assets, including virtual real estate or unique creations.

Metaverse could generate $4-5 trillion across consumer and enterprise use cases by 2030.[1]

Industry	Impact across Business Functions			
	Supply Chain & Operations	Research & Development	Marketing & Sales	Support Functions
Financial Services	Med	Low	High	High
Manufacturing	High	Med	Low	Low
Construction	Low	Med	Low	Low
Healthcare	High	High	Low	Med
Media & Entertainment	Med	Low	High	Low
Telecommunications	High	Low	Low	Low
Consumer Packaged Goods	High	Med	High	High
Information Technology	High	Med	Med	High

High Med Low

Financial services, healthcare, high tech, retail and manufacturing industries stand out for their potential to improve customer experience and streamline operations using the metaverse. In 2022, more than $120 billion was invested in the metaverse space, more than double the $57 million recorded in 2021, as big tech companies, startups, and brands seek to capitalize on growth opportunities.[1]

Use Cases across Industries

Supply Chain & Operations

- AR-based Inventory Management
- Factory Floor Simulation
- Risk Management & Prediction
- Real-time Supply Chain Optimization
- Virtual Prototyping & Testing

Research & Development

- Prototyping & Testing
- Customer Insights
- Advanced Simulations
- Real-time Collaboration
- Training & Skills Development
- Immersive Exploratory Research

Marketing & Sales

- Virtual Storefronts
- Immersive Advertising
- Virtual Product Launches
- Customer Engagement
- ARTrials

Support Functions

- HR Onboarding & Training
- Virtual Recruitment
- Employee Engagement & Collaboration
- Virtual Office Spaces for Admin Functions
- Learning & Development

Source: Evalueserve Analysis, [1]McKinsey, [2]Meta

3D Printing

Building success layer by layer

Back

3DP is an additive technology used to manufacture products. It doesn't require a block of material or a mold to manufacture physical objects, it simply stacks and fuses layers of material. It is fast, involves a low fixed setup cost, and can create more complex geometries than 'traditional' technologies.[1]

Zero-waste Technology

3D printing scrap rates stand at only 1-3% and are expected to eventually approach zero.[2]

Material Versatility

With options such as composites, powders, resins, metal, carbon fiber, etc., 3DP opens a range of applications for manufacturers.

Boom in VC Funding

In H1 2022, venture funding on 3DP reached $1.5 billion, the highest for any year except 2021, when more than $2 billion was raised.[3]

Increased Production Volume

Technologies such as metal binder jetting are enabling higher volume production with 3DP technologies.

In the next 10 years, 3DP could impact up to 42% of production in five sectors, taking the total economic value of 3DP on-shoring to $900 billion from $600 billion.[4]

Industry	Impact across Business Functions			
	Supply Chain & Operations	Research & Development	Marketing & Sales	Support Functions
Financial Services	Med	High	Med	Med
Manufacturing	Med	High	Med	Med
Construction	High	Med	Med	Med
Healthcare	Med	High	Med	Med
Media & Entertainment	Med	High	Med	Med
Telecommunications	Med	High	Med	Med
Consumer Packaged Goods	Med	High	Med	Med
Information Technology	Med	High	Med	Med

High Med Low

As a technology that facilitates mass customization, reduces production costs, and lowers the total cost of ownership, 3DP is creating a wide range of new opportunities in industries such as manufacturing, automotive, healthcare, education, and aerospace and defense. Future manufacturing scenarios might drastically change as a result of this technology, which could completely transform the industrial value chain. 39% of 3DP decision-makers anticipate a five-fold increase in business growth by 2026.[5]

Use Cases across Industries

Supply Chain & Operations

- Supply Chain Decentralization
- Product Customization & On-demand Production
- Replacement Parts
- Automated Assembly
- Rationalize Inventory & Logistics
- Sustainable Production

Research & Development

- Product Development & Testing
- Generative Designing
- Rapid Prototyping
- Bioprinting & Tissue Engineering
- Prosthetics & Human Organs
- Specialized nutrition food for Space & Military

Marketing & Sales

- Product/ Model Demonstrations
- Customized Credit/ Debit Cards
- 3D models/Miniatures of Structures
- Brand Giveaways
- Limited Edition Collectibles
- Pricing optimization

Support Functions

- Layout Planning & Space Optimization
- HR Self-serve Functions
- Training Aids & Models for Learning
- Quality Control & Inspection
- Security Enhancements
- Customized Gifts & Rewards to Employees

Source: Evalueserve Analysis, [1]HUBS,[2]McKinsey, [3]Pitchbook, [4]AT Kearney, [5]JABIL

Quantum Computing

Revolutionizing computing technologies

Back

Quantum computing comprises aspects of computer science, physics, and mathematics to solve complex problems faster than classical computers. Quantum computers can solve specific kinds of problems faster by taking advantage of quantum mechanical effects, such as superposition and quantum interference.

Cybersecurity

Quantum computing has ushered in a race to improve existing security protocols to make them more secure.

Simulation

Simulations have major applications in diverse industries including drug discovery, battery design, and fluid dynamics.

Growth in Public Funding

Governments around the world are increasing funding to accelerate the development of quantum computing.

Business Process Optimization

Businesses such as insurance, logistics, and finance are looking to adopt quantum optimization to improve their business processes and minimize risk.[1]

Quantum computing has the potential to capture nearly $700 billion in value as early as 2035; its market is estimated to exceed $90 billion annually by 2040.[2]

Industry	Impact across Business Functions			
	Supply Chain & Operations	Research & Development	Marketing & Sales	Support Functions
Financial Services	Med	High	Low	Low
Manufacturing	Med	High	Low	Low
Construction	Med	High	Med	Low
Healthcare	Med	High	Low	Med
Media & Entertainment	High	Low	Low	Low
Telecommunications	Low	High	Low	Low
Consumer Packaged Goods	Low	Low	Low	Low
Information Technology	Med	High	Low	Low

High Med Low

Quantum computing can be used by finance to make risk assessment and more precise trading strategies; healthcare to benefit from faster drug discovery through molecular simulation; and supply chains in logistics to optimize cost-efficiency and enable faster deliveries. However, the technology's potential to break current cryptographic systems will necessitate advancements in cybersecurity.

Use Cases across Industries

Supply Chain & Operations

- Logistics: Network Optimization
- Quantum Factorization
- Multiscale Production Optimization
- Supplier Management
- Quantum Networks

Research & Development

- Finance: Market Simulations
- Prototyping and Testing
- Drug Discovery
- Chemist: Catalyst Design
- Synthetic Data Processing
- Quantum Linear Algebra
- Faster Machine-learning Models

Marketing & Sales

- Targeted Marketing
- Market Forecasting
- Customer Segmentation
- Pricing Optimization
- Sentiment Analysis

Support Functions

- Data Privacy & Security
- Cybersecurity
- Tax Administration
- Fraud Detection

Source: Evalueserve Analysis, [1]BCG, [2]McKinsey.

5G / 6G

Speeding into the future

Back

5G and 6G mobile networks feature lower latency, higher capacity, and increased bandwidth, compared with predecessors such as 4G. 6G, which is still at a nascent stage, is expected to be rolled out in the 2030s to deliver omnipresent wireless intelligence that can merge physical and virtual experiences.

Growing Private wireless solutions

12% of telecom operators have launched private wireless solutions, as these solutions play a critical role in enabling efficient edge computing deployments by providing low-latency, reliable and scalable connectivity.[1]

Increasing Investment in 6G

Countries are investing heavily in 6G–related R&D. The US, Japan, China, South Korea, and the EU region are in a race to be the 6G market leaders.

Rise of 5G FWA*

As of Jan 2023, more than 90 fixed broadband service providers (mostly mobile operators) had launched commercial 5G-based fixed wireless services across more than 48 countries.[1]

Network of Future

5G is expected to cover about 60% of the world's population by 2026, with 5G networks carrying more than half of the world's smartphone traffic.[2]

5G is expected to benefit the global economy, mostly developed regions, by more than $960 billion by 2030[2]

Industry	Impact across Business Functions			
	Supply Chain & Operations	Research & Development	Marketing & Sales	Support Functions
Financial Services	Med	High	High	Med
Manufacturing	Med	High	Med	High
Construction	High	High	Med	High
Healthcare	High	High	Med	Med
Media & Entertainment	Med	High	High	Med
Telecommunications	High	High	Med	Med
Consumer Packaged Goods	High	High	Med	Med
Information Technology	Med	High	Med	High

High Med Low

Financial services gain faster transactions and enhanced security, while manufacturing achieves real-time data exchange for efficiency. In construction, swift connectivity fosters collaboration and error reduction. Healthcare benefits from remote patient monitoring and telemedicine. Media and entertainment thrive with immersive experiences. Telecommunications, consumer goods, and IT sectors improve processes through better network speeds and data handling.

Use Cases across Industries

Supply Chain & Operations

- Production Visibility
- Predictive Maintenance
- AI Assistance
- Fixed Wireless Access
- Real-time Inventory management
- Software Defined Networking
- Waste Management & 3D Bin Picking

Research & Development

- High Frequency Trading
- Autonomous Guided Vehicles
- Building Information Modelling
- Big Data Analytics
- Internet of Medical Things (IoMT)
- Robot Assisted Surgeries
- Enhanced Mobile Broadband (eMBB)

Marketing & Sales

- Virtual Interactions
- Frictionless In-store Experience
- AR for Sales & Marketing
- Mobile Point-of-sales (pos) Solutions
- High-definition Content delivery
- Enhanced Online gaming delivery

Support Functions

- Smart Offices
- Disaster Recovery and Business Continuity
- Multi-Access Edge Computing
- Remote Work & Telecommuting
- Virtual & AR/VR based Training
- Real-time Employee Tracking

Source: Evalueserve Analysis, [1]GSMA, [2]Ericsson Note: *Fixed Wireless Access

Web3

Redefining online trust and security

Back

Web3 is a new version of the web that supports a decentralized internet built on blockchain and trust-based storage of data. It provides a more personalized and interactive experience while giving users more control over their personal data and privacy.

Web3 Gaming

Web3 enables a paradigm shift in gaming, with players gaining ownership of in-game assets, and engaging in asset trading and earning through play-to-earn mechanisms.

Growing Investments

The technology saw a ~70% growth in PE and VC investments in 2017-22.[1]

Web3 and Metaverse

These intertwined technologies have the potential to bring the physical and virtual worlds together.

Decentralized Finance (DeFi)

The largest Web3 lending platforms disbursed more than $200 billion in loans in 2021 (with $1 million cumulative bad debt).[2]

Web3 businesses received $62 billion in equity investments in 2022, and saw a notable 40% rise in job postings compared with 2021.[3]

Industry	Impact across Business Functions			
	Supply Chain & Operations	Research & Development	Marketing & Sales	Support Functions
Financial Services	Med	Med	High	Low
Manufacturing	High	High	Med	Low
Construction	Med	High	Med	Low
Healthcare	High	Med	Low	Med
Media & Entertainment	Med	High	High	Low
Telecommunications	Med	High	High	Med
Consumer Packaged Goods	Med	Med	High	Low
Information Technology	High	Med	Med	Low

High Med Low

Industries that are leading in Web3 adoption include financial services; media and entertainment; and consumer packaged goods.[1] It is now spreading across many other sectors, including social; carbon market; art; real estate; and gaming. Retailers are constantly exploring new possibilities with Web3 and immersive technologies to provide engaging and innovative experiences, increased customer satisfaction, and improved processes, to create a competitive edge in the market.

Use Cases across Industries

Supply Chain & Operations

- Automation & Smart Contracts
- Optimized Asset Tracking
- Decentralized Lending, Borrowing, Trading
- Sustainable Supply Chain Management
- Improved Traceability & Provenance Tracking

Research & Development

- Research Incentivization & Tokenization
- Smart Experimentation & Simulation
- IP Registration & Protection
- Decentralized Finance
- Decentralized Autonomous Organizations (DAOs)

Marketing & Sales

- Decentralized Content Monetization
- Token-based Incentives & Loyalty Programs
- Crypto & NFT Integration
- Blockchain-based Ad Verification
- Metaverse & VR Marketing

Support Functions

- Decentralized Payroll & Payments
- Efficient Record Keeping
- Automated HR Processes
- HR Talent Acquisition with NFTs
- Real Estate Title Exchange

Source: Evalueserve Analysis, [1]McKinsey, [2]McKinsey, [3]McKinsey, [4]Delloitte.

Zero Trust

Revolutionizing cybersecurity for the modern World

Back

Zero Trust is a cybersecurity model that questions traditional perimeter-based security architecture and assumes that a complex network's security is always at risk from external and internal threats. It helps organize and strategize a comprehensive approach to counter such threats.[1]

Increasing Cyberattacks

At the current rate, damage from cyberattacks is expected to reach $10.5 trillion annually by 2025, creating demand for technologies such as Zero Trust.[2]

Identity as the New Perimeter

Verifying user identities and applying access controls based on that information is becoming crucial in the age of remote work and BYOD

Cloud-Native Zero Trust

With the growth of cloud-native applications and services, Zero Trust has extended its focus to offer more scalable and flexible security options in a cloud environment.

Rapid Growth in IT Security Spending by SMB's

85% of small and medium businesses plan to increase their spending on IT security by 2023.[3]

Currently, the global addressable cybersecurity market stands at $1.5-2.0 trillion.[2]

Industry	Impact across Business Functions			
	Supply Chain & Operations	Research & Development	Marketing & Sales	Support Functions
Financial Services	Med	High	High	High
Manufacturing	High	High	Med	Med
Construction	High	High	Med	Med
Healthcare	High	High	Med	Med
Media & Entertainment	Med	High	Med	High
Telecommunications	Med	High	Med	High
Consumer Packaged Goods	Med	High	Low	High
Information Technology	Med	High	Low	Med

High Med Low

Increased preference for cloud infrastructure and digital applications has fueled the need for unified and secure access and network solutions. The development and promotion of Zero Trust frameworks and standards by industry-leading organizations, such as NIST, Forrester, and the Zero Trust Security Alliance, have facilitated the implementation and adoption of Zero Trust practices.

Use Cases across Industries

Supply Chain & Operations

- Third Party Risk Management
- Industrial IoT Security
- Remote Work & Virtual Collaboration
- Endpoint Security
- Multiple Cloud Environment Security
- Vendor & Partner Access Management

Research & Development

- Protect Valuable IP
- Data Protection & Privacy of Research Findings
- Network Micro-Segmentation
- Secure Collaboration with Vendors
- Mitigate Insider Threats
- Dynamic Authorization

Marketing & Sales

- Securing Marketing Campaigns
- CRM Data Security
- Improve Supplier Relations
- Protecting Customer Trust
- Strong Reputation Building
- Demonstrating Data Privacy & Security Commitment

Support Functions

- Data, Cloud & Network Security
- Security Orchestration & Automation of Workflows or Processes
- Privileged Access Management
- Log Monitoring
- Multifactor Authentication
- Complying with Regulations

Source: Evalueserve Analysis, [1]IBM, [2]McKinsey

About Us

Evalueserve Technology, Media, & Telecom (TMT) Practice

A trusted advisory and transformation partner for businesses operating in the IT and communications infrastructure, software services, mobile and integrated operations, security, and internet and digital services space.

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