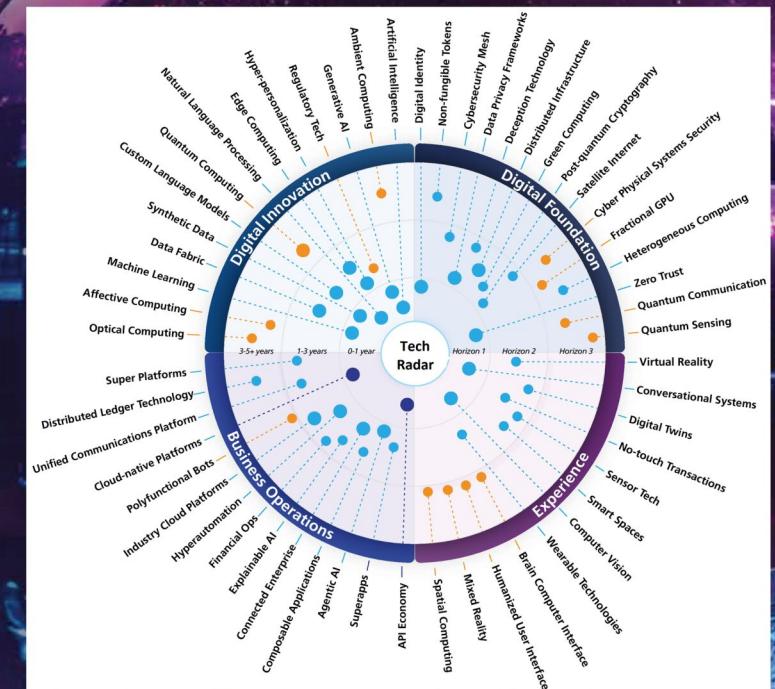


Technology Radar 2025

Excellent Overview

Insights and Status Quo



Discover and Explore the News

Table of Contents

Excellent Insights

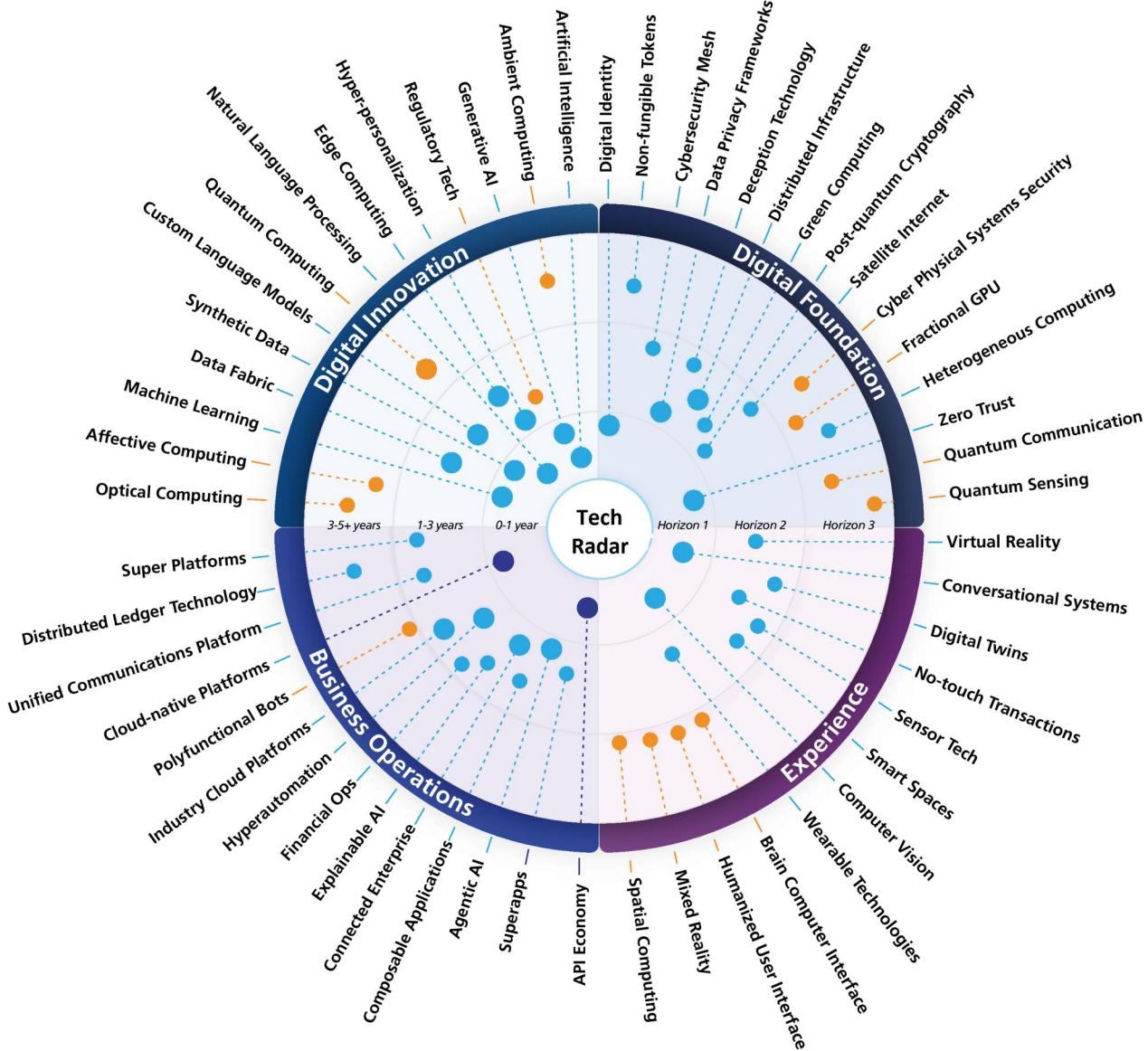
| Technology Radar 2025

| Segments

- Digital Innovation 07
- Digital Foundation 15
- Experience 24
- Business Operations 31

| Appendix 39

Technology Radar 2025



Legende

Horizon

- Horizon 1**
0 - 1 Year
- Horizon 2**
1 - 3 Years
- Horizon 3**
3 - 5+ Years

Technology will be industrialized in less than 1 year
Technology will be industrialized within 1 to 3 years
Technology will take more than 3 to 5+ years to reach industrialization state

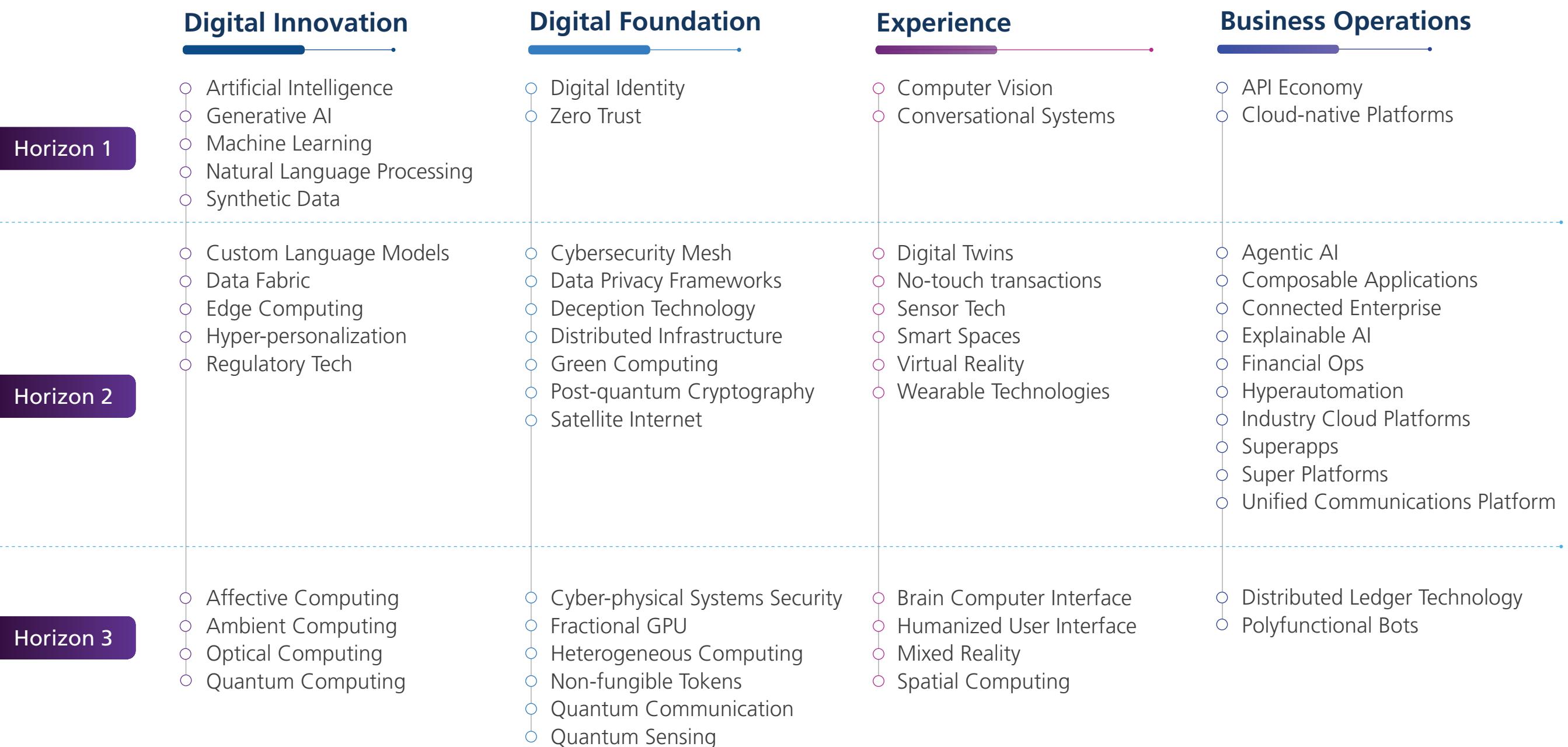
Adoption Phase

- Emerging** (Orange dot)
- Improving** (Blue dot)
- Mature** (Dark Blue dot)

Market Potential

- Low (Small dot)
- Medium (Medium dot)
- High (Large dot)

Navigating the radar





Segment 1 **Digital Innovation**

Sub-segments: Data & Analytics | Digital Engineering

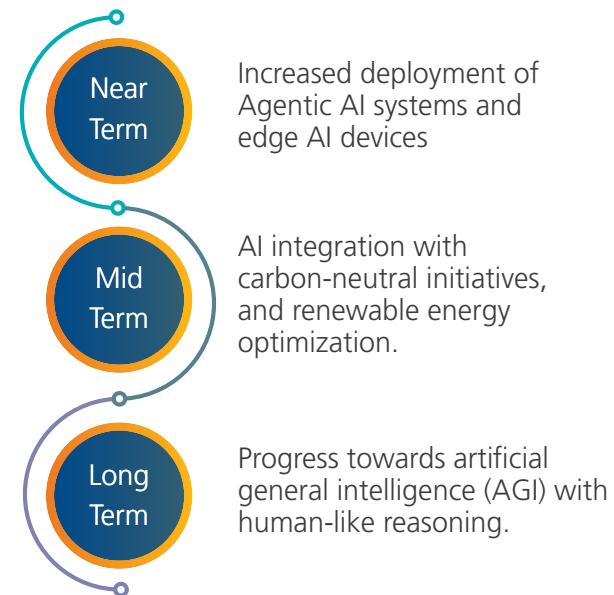


Data & Analytics

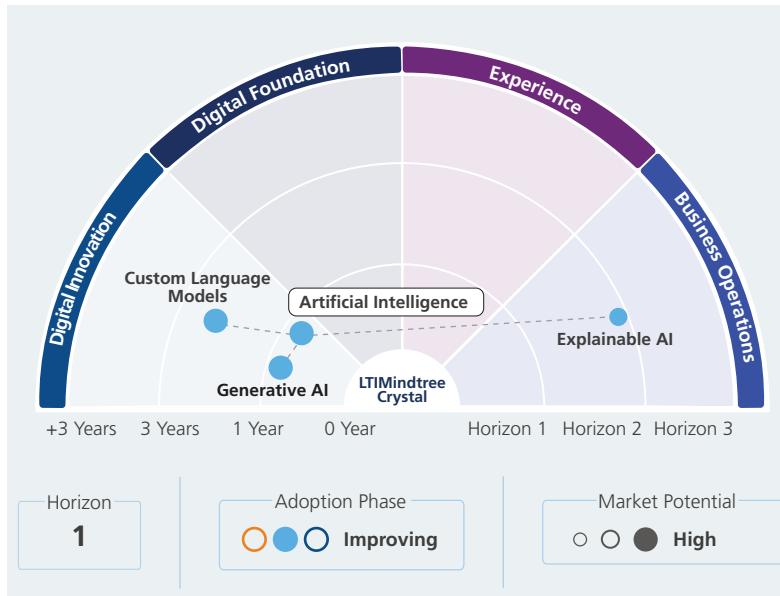
Artificial Intelligence

Artificial Intelligence (AI) is transforming how businesses operate in today's digital landscape. AI also plays a crucial role in addressing sustainability challenges, such as advancing renewable energy initiatives and optimizing resource utilization. Recently, AI has progressed to large-scale deployments, with deep learning being a widely utilized subfield. The AI market is expected to grow at a CAGR of 37%, reaching USD 1.8 trillion by 2030. In 2025, AI-powered tools are anticipated to become part of the daily workflow for at least half of the global workforce.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Intelligent automation

AI-powered automation in industrial processes, customer support, and supply chain management.

Energy optimization

Optimize energy usage by analyzing consumption patterns and integrating renewable resources.

Fraud detection

Detect irregularities and suspicious patterns in data to identify and mitigate risks.

Key Takeaway

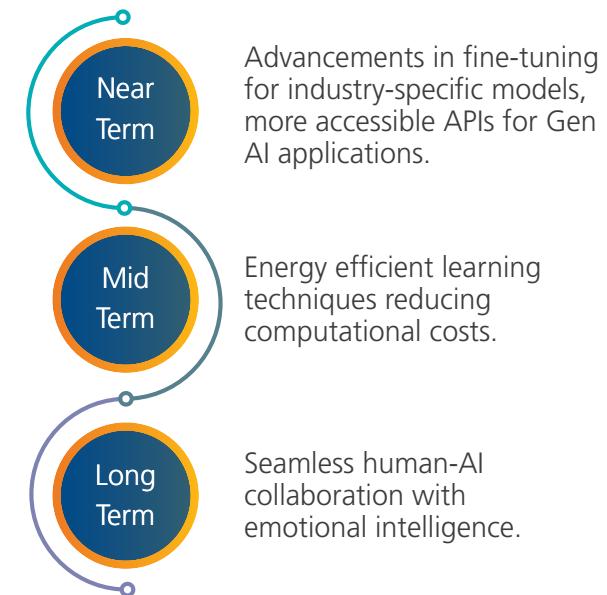
AI's transformative power lies in its ability to not only automate but augment human decision-making, driving progress and reshaping the future of how businesses work. AI has the potential to disruptively transform industries by automating processes, building deep insights and enabling innovations. To fully realize AI's promise, organizations must invest in ethical frameworks, AI governance, and upskilling talent while embracing innovation.

Data & Analytics

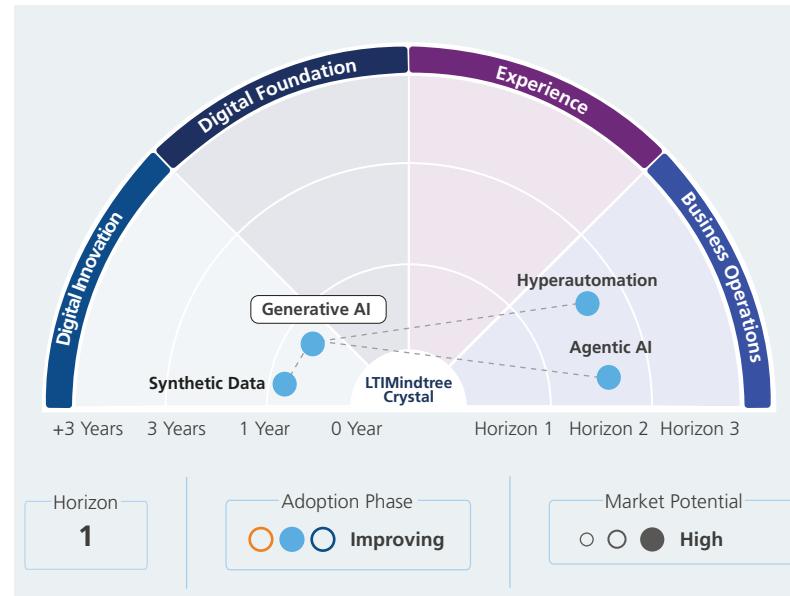
Generative AI

Generative AI (Gen AI) is a branch of AI technology that uses advanced machine learning models such as neural networks to create new content, including text, images, and videos. Gen AI can automate content creation, enhance decision-making processes, and foster innovation across industries. By the end of 2025, the global market for Gen AI is projected to exceed \$100 billion, driven by its increased adoption in customer experiences, virtual assistants, and autonomous systems.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Material science

AI-driven simulations can design new polymers or alloys by predicting molecular structures with desired properties.

Fraud detection and prevention

AI-generated anomaly patterns for real-time identification of suspicious transactions.

Drug discovery

Gen AI speeds up drug discovery by predicting protein binding and simulating molecular interactions, leading to efficient and safe drugs.

Key Takeaway

Gen AI is a transformative technology that fosters automation, personalization, and innovation. Its potential as a game-changer lies in its ability to enhance efficiency, reduce human efforts, and accelerate advanced decision-making. However, challenges such as ethical concerns, and data bias must be addressed through robust governance and responsible AI practices. With these safeguards, Gen AI can unlock unparalleled potential for human-machine collaboration and redefine the future of innovation.

Data & Analytics

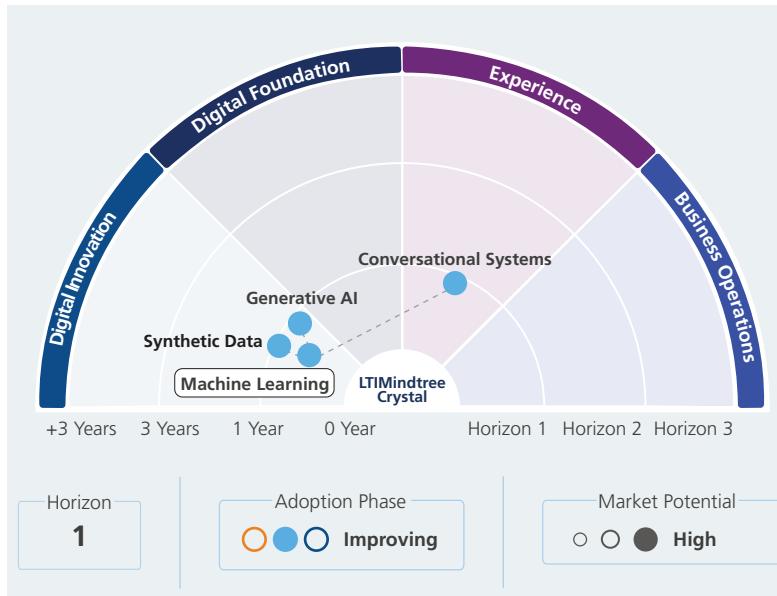
Machine Learning

Machine Learning (ML) is a branch of AI that involves the development of algorithms and statistical models, allowing computers to perform tasks without explicit programming. As of 2025, machine learning has seen several significant advancements, improving AI capabilities. The development of generative AI models, such as GPT-4, has achieved higher levels of language fluency and comprehension. Additionally, multimodal learning has gained prominence, enabling models to process and integrate various data types, including text, images, and audio.

Technology Advancement

- Near Term:** Incorporating additional environmental variables to further enhance the model's accuracy and predictive power.
- Mid Term:** Enhanced data classification accuracy with optimized weight selection to identify complex patterns and relationships in large dataset.
- Long Term:** Focus on developing energy-efficient ML models and systems to reduce the environmental impact of large-scale deployments.

Radar View & Related Trends



Key Use Cases

Spam filtering
Machine learning is essential in cybersecurity for identifying and filtering spam communications.

Dynamic pricing
Optimize pricing strategies in real-time by analyzing market trends, customer behavior, and competitor pricing.

Managing content tags
Tag and organize extensive media libraries, facilitating the search for files.

Key Takeaway

The advancement of IoT technology is expected to promote the implementation of machine learning models on edge devices. This will lead to reduced latency, improved privacy, and real-time decision-making across various applications, such as autonomous vehicles and smart homes. Additionally, machine learning will be increasingly customized for specific industries, thereby enhancing diagnostic accuracy in healthcare, improving fraud detection in finance, and optimizing supply chain management in retail.

Data & Analytics

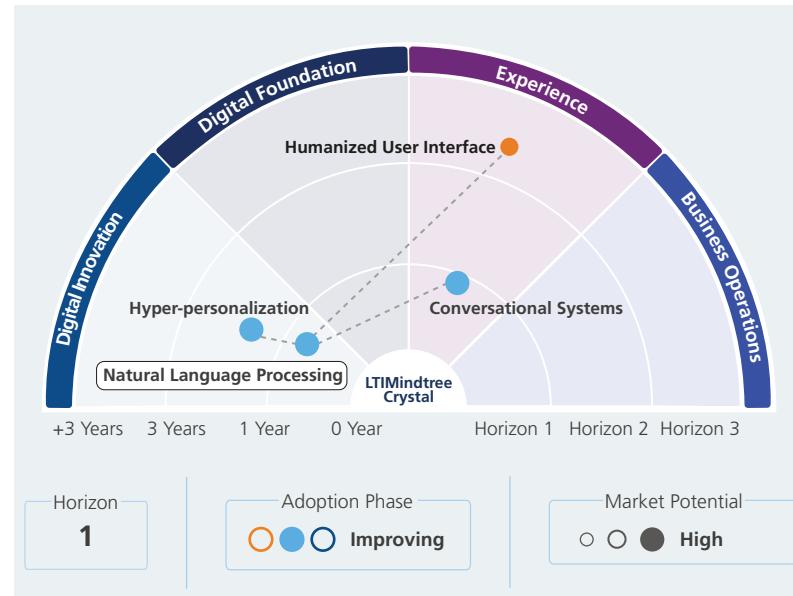
Natural Language Processing

NLP uses rule-based or ML approaches to interpret natural language input and meaning. It is crucial in chatbots, voice assistants, scanning programs, translation apps, and enterprise software, enhancing business operations and productivity. Advances, especially with LLMs like OpenAI, DeepSeek and Llama, are boosting accuracy in tasks like translation, sentiment analysis, and summarization, widespread adoption.

Technology Advancement

- Near Term:** Emotion detection and intent understanding for responsive interactions.
- Mid Term:** Integrate text, images, audio, and video to develop richer, comprehensive models for cross-media understanding and generation.
- Long Term:** Make NLP models interpretable and transparent to understand models' decision making.

Radar View & Related Trends



Key Use Cases

Sentiment analysis
To assess customer sentiments from reviews and social media, helping companies enhance their products and services.

Speech recognition
NLP transcribes speech to text automatically, removing manual typing and minimizing errors.

Document automation
NLP tools summarize lengthy documents, making large data volumes more accessible for decision-making.

Key Takeaway

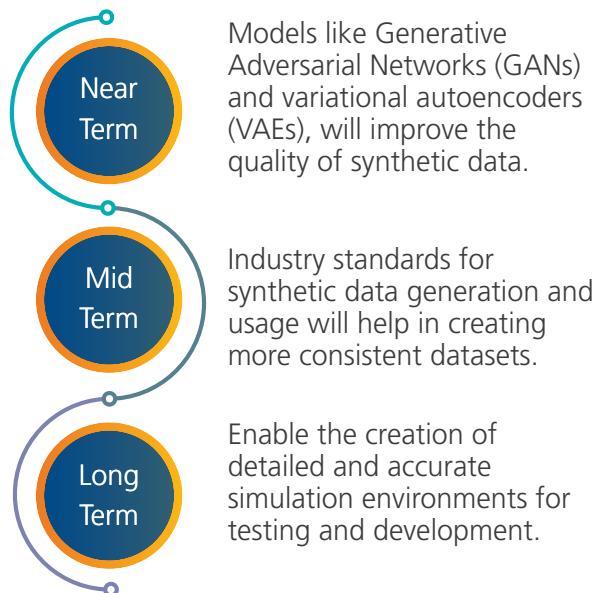
NLP is pivotal in modern AI, helping businesses streamline operations, enhance communication, and offer personalized experiences. Despite its potential, NLP faces challenges like language ambiguity, bias, data privacy issues, and high resource demands. These can be mitigated with transformers, ethical AI frameworks, diverse data, and optimization techniques. NLP also boosts productivity, improves accessibility for people with disabilities, and fuels research innovation.

Data & Analytics

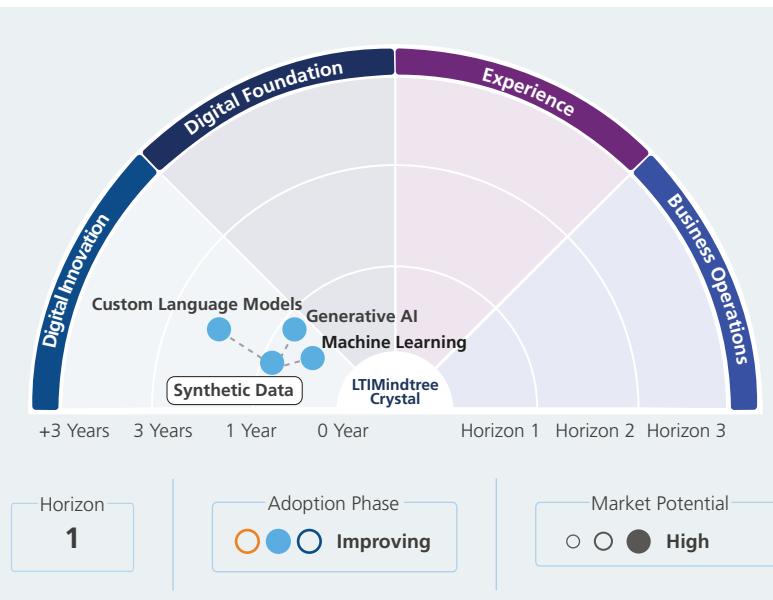
Synthetic Data

Synthetic data is information that is created artificially rather than derived from real-world events. It is generated algorithmically and used as a substitute for test data sets of production or operational data, to validate and train mathematical and ML models. The primary application of synthetic data is in the training of neural networks and ML models, where developers require labelled data sets that can range from a few thousand to tens of millions of items.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Fraud detection

Use a synthetic dataset to simulate claim scenarios and evaluate their financial impact.

Training and simulation

Imaging diagnostic algorithms are assessed using synthetic data's realistic but fictitious images.

Internal data sharing

Share data across departments while complying with privacy regulations and providing necessary access without lengthy approvals.

Key Takeaway

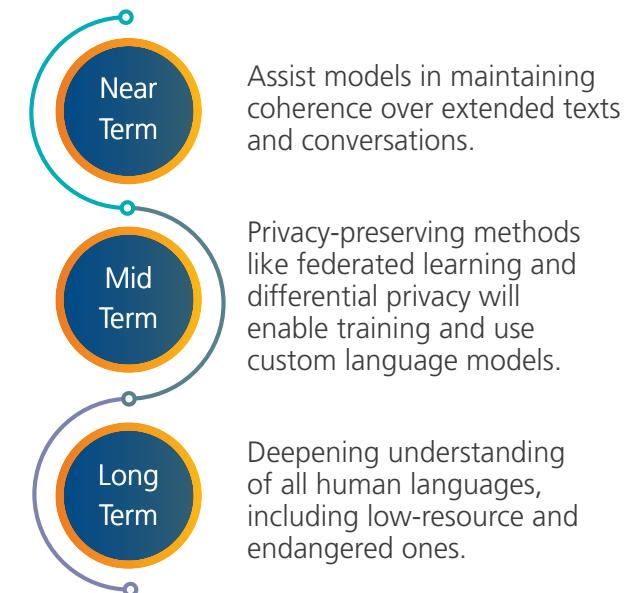
Synthetic Data will play a crucial role in AI/ML model training by enhancing data privacy and accessibility. It is expected to propel advancements in sectors such as healthcare, finance, and autonomous systems, facilitating robust model training and innovation without the limitations associated with real data. Regulatory support and improved generation techniques are anticipated to further accelerate its adoption across various industries.

Data & Analytics

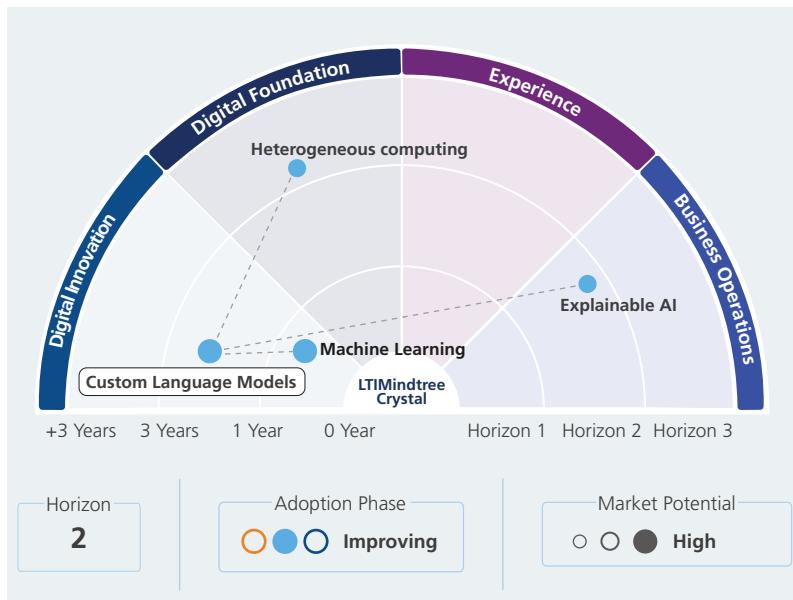
Custom Language Models

Custom language models are modified versions of Large Language Models (LLMs) that have been adjusted to meet specific requirements or tasks. These models are based on pre-trained LLMs, such as GPT-3 or BERT, and undergo additional training on targeted datasets or modifications to improve their performance for particular tasks. Advancements in efficient training techniques and multitask model architectures are primary factors in enhancing the capabilities of small language models.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Improved data processing

Reviewing customer feedback, preparing responses to customer inquiries, or extracting relevant information from extensive reports.

Search tasks

CLM scan analyze the semantics and relationships between words as well as the content of indexed documents.

Real-time translation tools

Companies can enhance cross-cultural interactions and global collaboration with instant translation capabilities.

Key Takeaway

In 2025, custom language models are expected to experience advancements, including agentic AI for autonomous learning, improved tool integration, and advanced memory systems. These models will have multimodal capabilities to process text, images, and audio, while employing privacy-preserving techniques to ensure data security. They will utilize Retrieval Augmented Generation (RAG) and dynamic context retrieval, enhancing their efficiency, versatility, and contextual awareness.

Data & Analytics

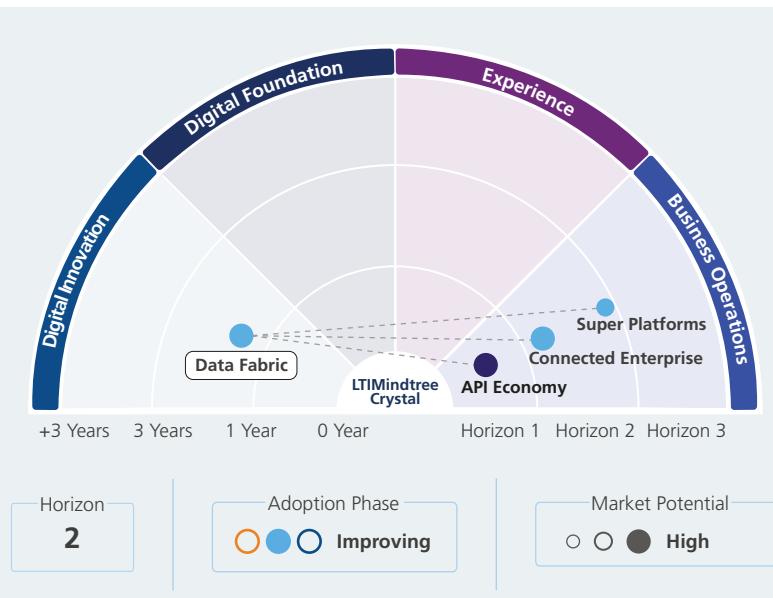
Data Fabric

Data fabric is an architectural approach designed to facilitate the seamless integration and management of information across various environments, including on-premises, cloud, and hybrid systems. A significant challenge faced by organizations is data silos, which occur when information is stored separately across different departments or platforms, preventing it from being accessible or shared across the organization. In these instances, data fabric can be employed to unify disparate data sources, thereby enabling more comprehensive and data-centric decision-making.

Technology Advancement

- Near Term:** Advancements in real-time data processing and analytics, enabling organizations to gain better insights.
- Mid Term:** Improvements in metadata management will enable more efficient data discovery, integration, and governance.
- Long Term:** Integration of advanced AI and machine learning capabilities to create self-managing data fabrics.

Radar View & Related Trends



Key Use Cases

Master data management

Organizations can maintain accurate and consistent data by establishing a single, authoritative source.

Data federation

Offers a virtual database that federates queries across multiple data sources and combines data flexibly and dynamically.

Holistic customer views

Utilized data from interactions contribute value and incorporate real-time information from various sales activities.

Key Takeaway

Data fabric architectures, which facilitate access and management across heterogeneous environments, are expected to become more common. This method allows for improved management of unstructured and semi-structured data, enhancing companies' ability to adapt to market changes. The integration of AI with specialized databases such as graphs and NoSQL databases is anticipated to increase flexibility and efficiency in leveraging complex relationships between datasets.

Data & Analytics

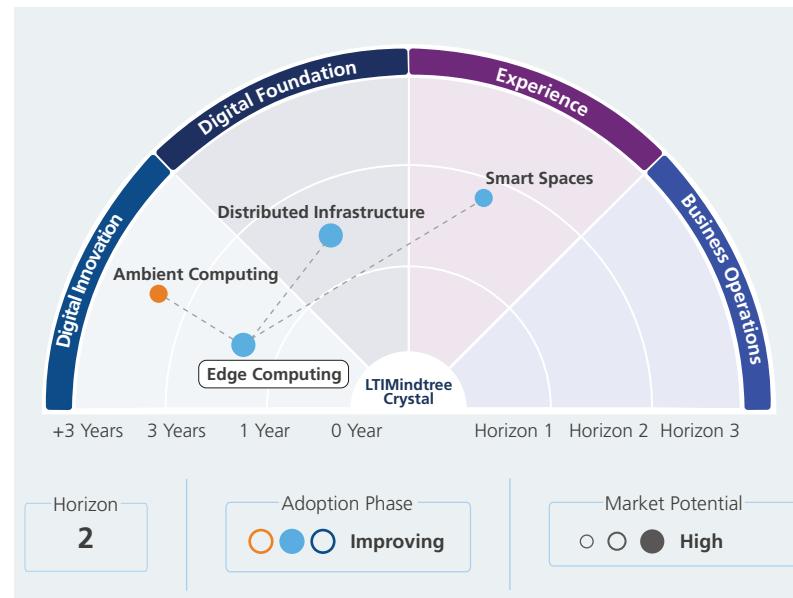
Edge Computing

Edge computing is a distributed framework that processes data closer to its source, like IoT devices or local servers, reducing latency and bandwidth issues. With 5G accelerating data growth, edge computing enables faster insights, real-time analysis, and improved response times. By harnessing in-device computing power, it unlocks operational IoT data for predictive analytics, driving innovation, enhancing decision-making, and delivering better customer experiences across industries, from connected vehicles to smart factories.

Technology Advancement

- Near Term:** Leverage 5G and AI for real-time data processing, reducing latency and improving operational efficiency.
- Mid Term:** Adopt edge-as-a-service for scalable and cost effective solutions.
- Long Term:** Enable autonomous systems with AI-driven edge intelligence, achieving seamless, decentralized operations.

Radar View & Related Trends



Key Use Cases

Real-time IoT data processing

Analyze sensor data locally for instant decisions.

Predictive maintenance

Monitor equipment performance to prevent unexpected failures.

Fleet management

Optimize route planning and vehicle tracking using real-time edge insights.

Key Takeaway

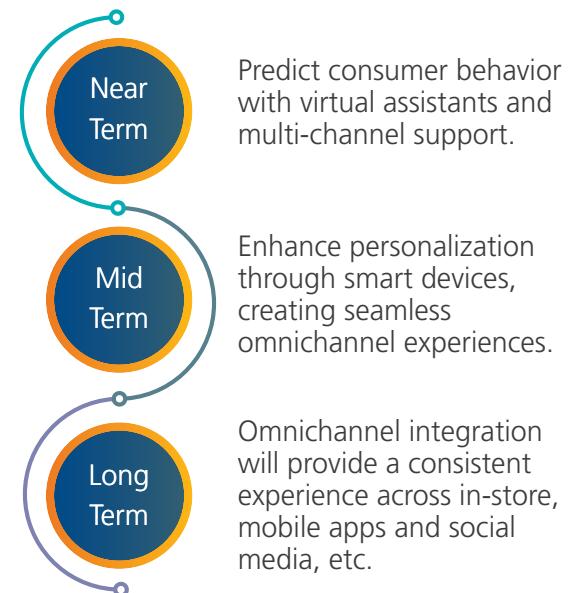
Edge computing is reshaping business strategies, enabling faster decision-making, enhanced security, and real-time IoT data processing. With 5G accelerating its adoption, businesses must harness edge computing's potential to drive efficiency and gain a competitive edge. This technology offers scalable, flexible solutions for handling exponential data growth and future-proofing operations. Companies should prioritize edge computing to navigate today's data-driven landscape, ensuring adaptability, innovation, and sustained growth in an evolving digital economy.

Digital Engineering

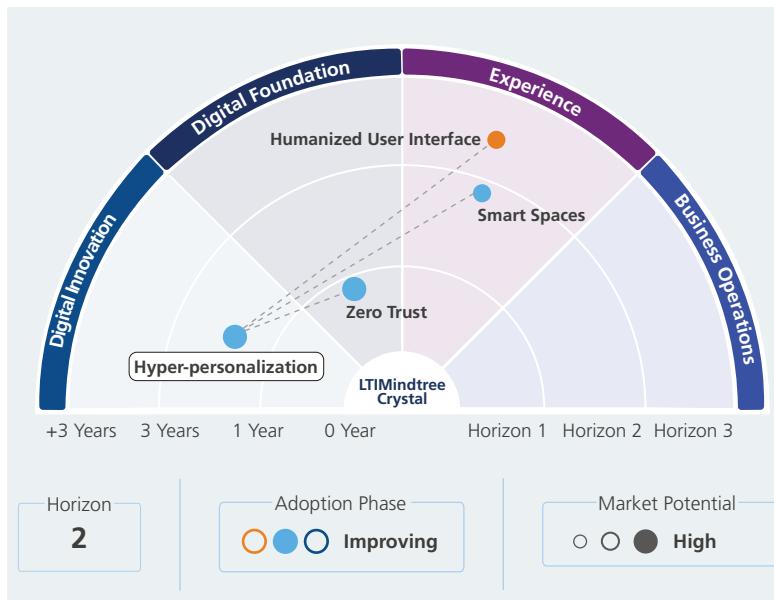
Hyper-personalization

Hyper-personalization uses AI and real-time data to deliver highly customized experiences. A leading consulting firm reports that 80% of consumers prefer buying from companies that personalize their experiences. Today, personalization has become an inevitable strategy rather than an optional characteristic. Generic marketing strategies are losing effectiveness as customer expectations evolve. Modern consumers demand personalized, real-time interactions that cater to their specific needs and preferences. Thus, businesses - from startups to large corporations are using hyper-personalization to meet customers' expectations.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Product recommendation in e-commerce

Mobile payment capabilities, digital wallet features, loans, and credit service.

Financial advice

Offer customized investment advice based on spending patterns and financial goals.

Content recommendation

Streaming service providers recommend shows, movies, and music based on user preferences and viewing/listening history.

Key Takeaway

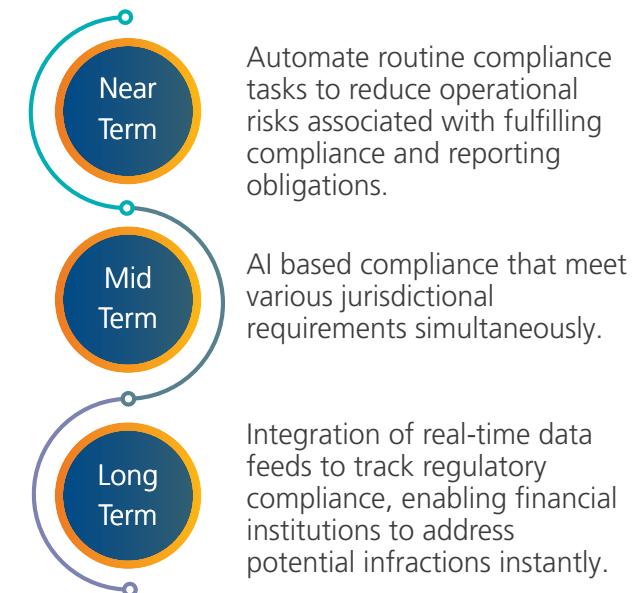
Hyper-personalization is now imperative for businesses striving to remain competitive. As hyper-personalization advances, it will become essential in crafting meaningful and engaging customer experiences across diverse industries. It aims to transform customer relationships and establish new benchmarks for personalized service.

Digital Engineering

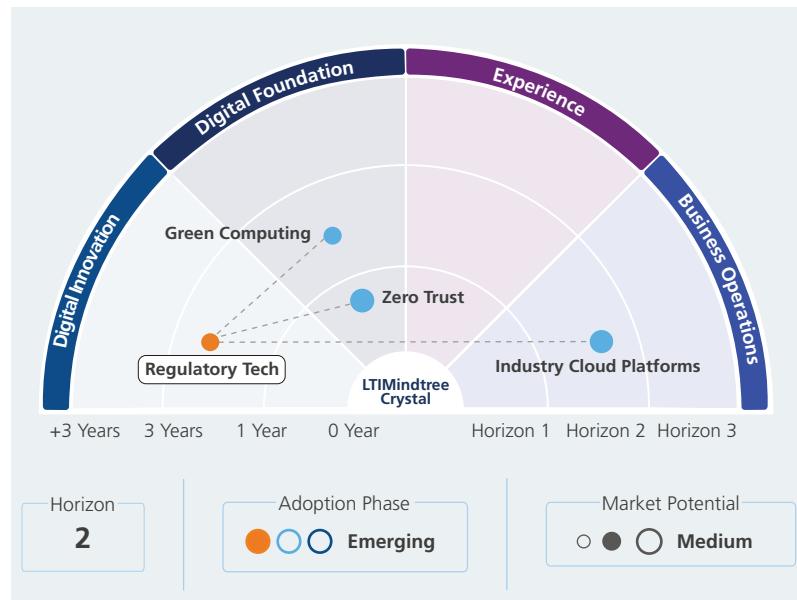
Regulatory Tech

Regulatory technology, or RegTech, is the integration of emerging technologies to enhance regulatory compliance management. Though relatively new, RegTech is rapidly evolving, using ML, NLP, blockchain, AI, and automated alerts. Key drivers include increasing regulation and a focus on data and reporting. Changes in data privacy, Anti-money Laundering (AML), and ESG reporting are boosting RegTech adoption. RegTech is positioning itself as a catalyst for significant change in multiple sectors.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Anti-money laundering (AML) and Know your Customer (KYC)

Track suspicious activity and perform customer due diligence automatically.

Real-time transaction monitoring

Monitor, document, and maintain adherence to regulations promptly, minimizing the chance of non-compliance issues.

Automated reporting

Streamline regulatory reporting by automating data collection, validation, and submission to regulatory authorities.

Key Takeaway

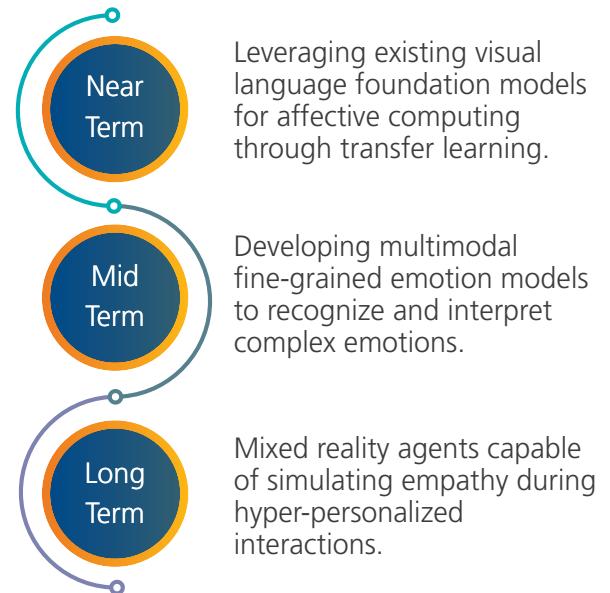
RegTech has a promising future of automating regulatory assessment and control management, simplifying compliance processes. It aims to facilitate compliance management and mitigate regulatory risks, addressing global trends and complex regulations. Advances in data processing, AI, and digitalization of financial markets will shape RegTech's future, enhancing market surveillance but also introducing new risks.

Data & Analytics

Affective Computing

Affective computing is an interdisciplinary field focused on developing systems and devices that can recognize, interpret, process, and simulate human emotions. It is changing how organizations interact with customers and manage workforces, with significant potential in the public sector. It aims to give machines emotional intelligence, enabling them to adapt their behavior based on the emotional state of the user, thereby providing more appropriate and empathetic responses. While affective computing offers numerous benefits, it also raises ethical concerns.

Technology Advancement



Key Use Cases

Personalized digital experiences

Dynamically adapt content and services to meet individual users' needs and preferences.

Fraud detection

Predicting and preventing complex fraud schemes by analyzing behavioral patterns and emotional signals in real-time.

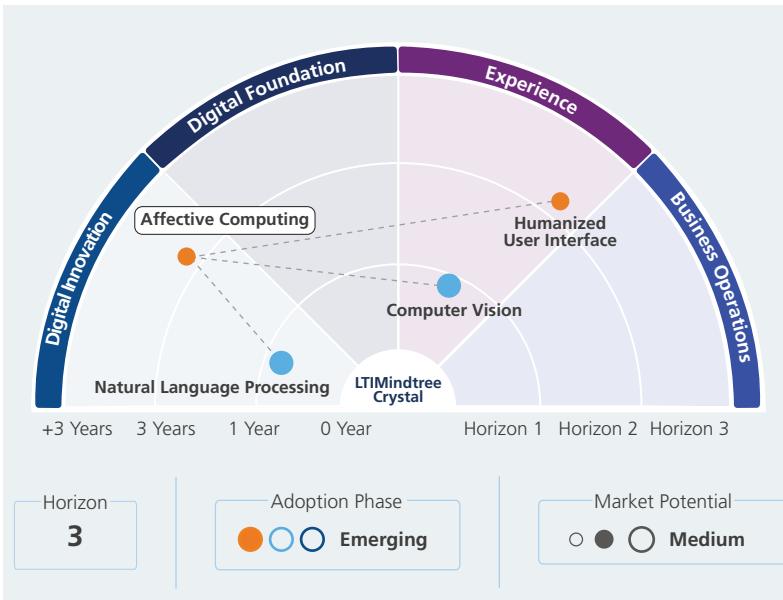
Workforce readiness

Creating immersive, emotionally responsive training environments using mixed reality to provide personalized guidance and support.

Key Takeaway

Affective computing is an advancement in human-centric design that captures more data points about an individual's emotional state while reducing the need for direct human interaction. It is important to use these technologies responsibly and ethically to ensure public trust and maximize their positive impact. Techniques such as federated learning and secure multi-party computing can help protect privacy.

Radar View & Related Trends

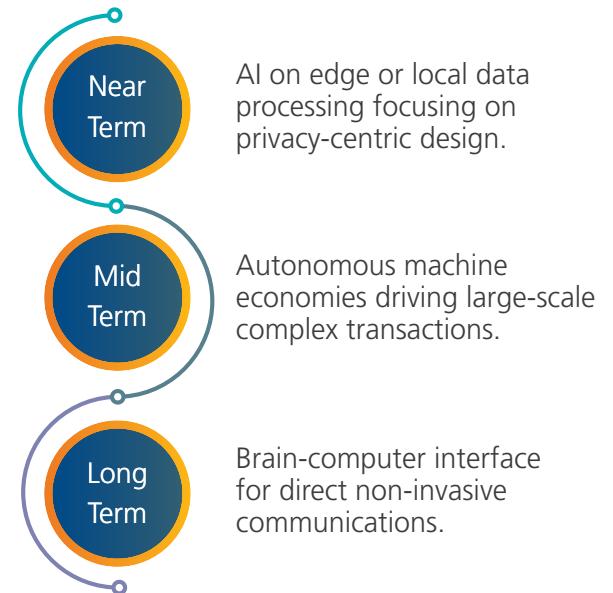


Data & Analytics

Ambient Computing

Ambient computing, also known as ubiquitous or pervasive computing, focuses on making technology omnipresent yet unobtrusive, facilitating natural and intuitive interactions. It incorporates endpoint hardware, software, and human-machine interaction, working in the background to learn from user behaviours and provide customized experiences. Drawing on data from transactions and external sources, ambient computing integrates insights seamlessly into existing business applications, enhancing convenience, personalizing experiences, improving efficiency, and optimizing resource management.

Technology Advancement



Key Use Cases

Natural language interfaces

Using gestures or voice as an interface to interact in a more human-centric manner with systems.

Machine customers

Smart devices autonomously engaging in transactions like purchasing goods and services.

Invisible authentication

Frictionless authentication with biometric or behavior-based verification without explicit user actions.

Key Takeaway

Ambient computing is moving from concept to early implementation, driven by advancements in AI, sensors, mixed reality, human-centric design, and WiFi 7's arrival. It will enhance connectivity by enabling seamless integration of ambient computing into daily life through touch, vision, voice, VR/AR, and gesture recognition. However, maximizing the full potential of this technology will require improved interoperability, low-power solutions, long-lasting affordable hardware, and embedded security.

Data & Analytics

Optical Computing

Optical computing, or photonic computing, uses light for calculations, reasoning and AI tasks. It employs photons from lasers or diodes to represent data and perform computations through wave propagation and interference patterns, enabling instantaneous latency-free processing. Its potential for significant energy efficiency gains makes it ideal for the emerging era of AI and machine learning.

Technology Advancement

- Near Term:** Development of optical accelerators to meet AI and ML computational demands.
- Mid Term:** Non-volatile integrated photonics to solve power and scalability issues of current optical computing chips.
- Long Term:** Optical computing will aid scalable quantum computers, as photons resist decoherence and travel long distances efficiently.

Radar View & Related Trends



Key Use Cases

Data centre optimization

Optical computing enhances data centre efficiency by processing large data sets with low power consumption.

Image processing

Optical computing accelerates real-time image analysis and processing, rendering it beneficial for autonomous vehicles, robotics, and medical imaging.

Analog data processing

Handle high bandwidth data without intermediate digitization and storage.

Key Takeaway

The optical computing market is set for substantial growth due to rising demand for high computational power and speed needed for ML and AI, as traditional electronic computing nears its limits. Benefits include high-speed data and parallel processing, low power consumption, high bandwidth, and reduced heat. Advances in silicon photonics and quantum optics have further spurred interest in optical computing solutions.

Data & Analytics

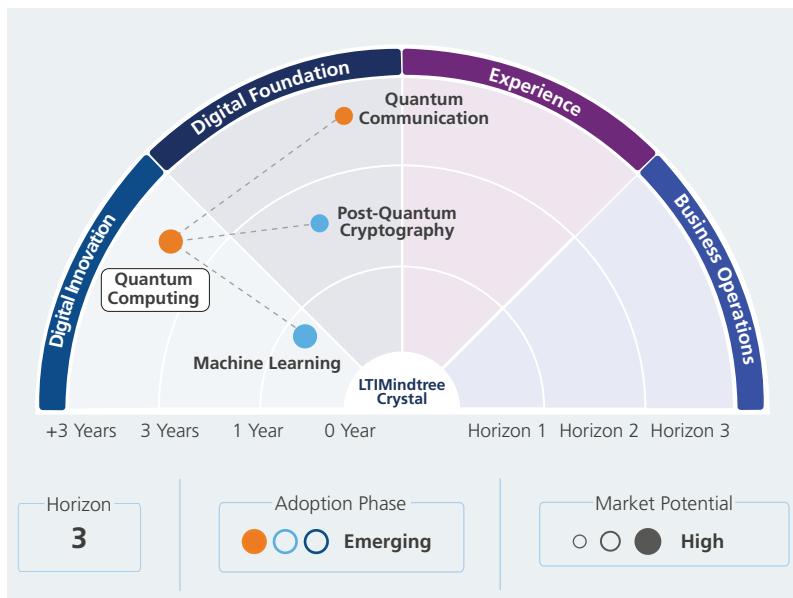
Quantum Computing

Quantum computing leverages the principles of quantum mechanics to process large amounts of information faster. Unlike classical versions, which store only 1s and 0s, Quantum Bits (qubits) can be superposed and represent many states simultaneously. Physical qubits are realized using photons, trapped ions, neutral atoms, superconductors, topological material, etc. Quantum phenomena like superposition and entanglement enable quantum computers to tackle complex problems much faster, which are otherwise intractable on classical systems.

Technology Advancement

- Near Term:** Enhanced scalability and lower error rates, high-precision gates, and streamlined control hardware.
- Mid Term:** Combining quantum and classical computing for better performance, and broadening quantum computing access through cloud services.
- Long Term:** Fully fault-tolerant quantum computers for reliable computations.

Radar View & Related Trends



Key Use Cases

Quantum simulations

Simulate and optimize large-scale systems, like carbon capture processes, and energy grids.

AI augmentation

Boosting machine learning by efficiently processing large datasets faster.

Optimization

Rapidly solving complex optimization problems beyond classical computers' capabilities.

Key Takeaway

According to a top consulting firm, quantum computing is projected to generate USD 450 billion to USD 850 billion in economic value by 2040. In the rapidly evolving tech world, quantum computing stands out as a gamechanger, especially for network security. It is poised to be a formidable disruptor in the cybersecurity space due to its ability to execute complex calculations at incredible speeds.



Segment 2 Digital Foundation

Sub-segments: Cloud & Infrastructure | Security

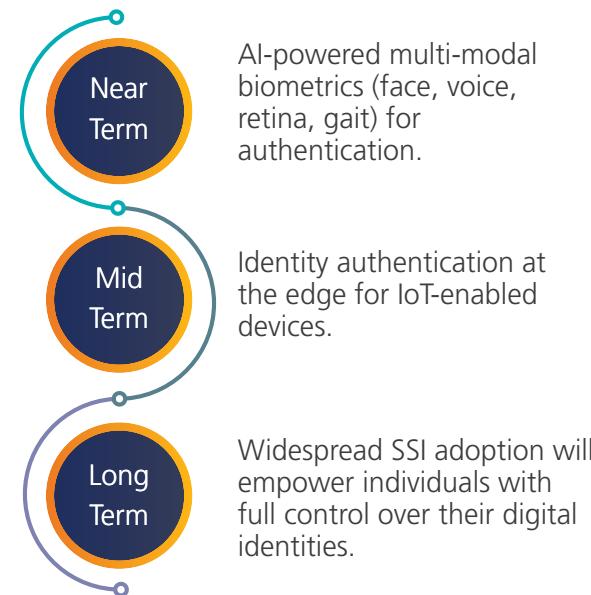


Security

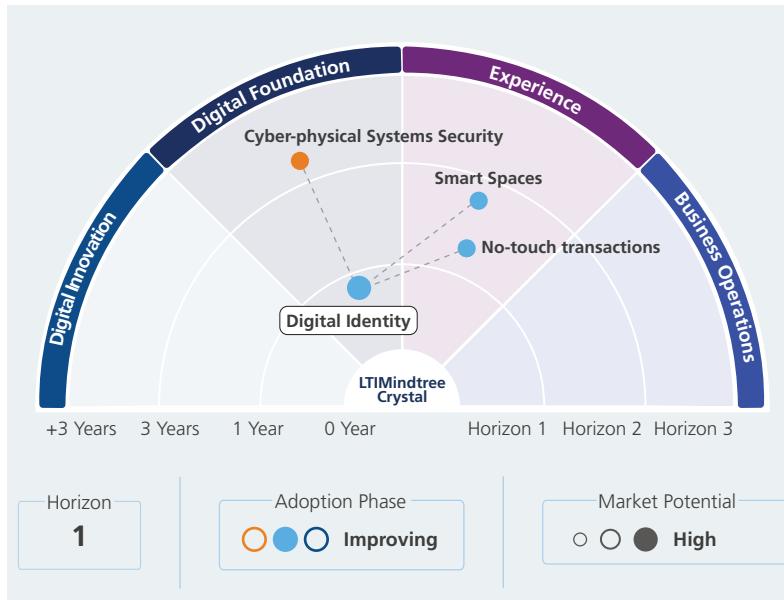
Digital Identity

Digital identity is crucial for digital transformation, and is linked to identifiers such as usernames, passwords, or device IDs. These identifiers are essential for digital authentication, recognizing and verifying individuals or devices online. The rise of digital IDs, along with advancements in identity protection, will enhance cybersecurity and reduce online fraud.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Enhanced security

Unified shopping, payment, real time delivery tracking & customer interaction experiences.

Improved user experience

Simplifies login processes and removes the need for multiple passwords.

Authorization

Defining the level of access a user has to specific information or functions based on their identity.

Key Takeaway

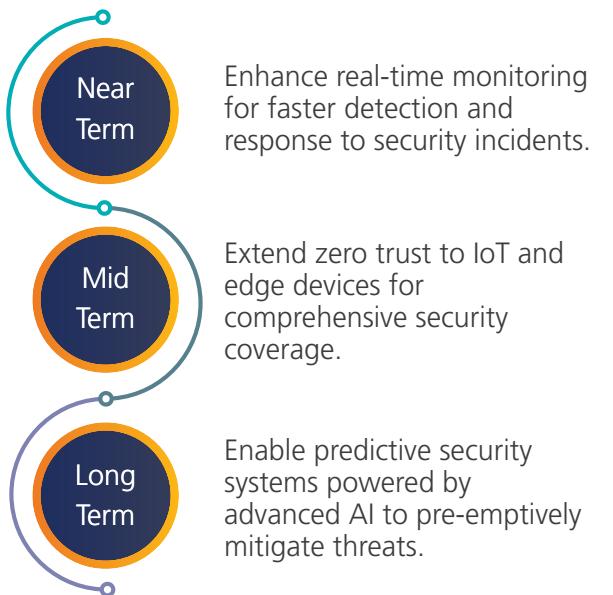
Digital identity is becoming more secure and user-friendly with password-less authentication methods. The future of digital identity depends on effectively combating AI-enabled fraud. Behavioral biometrics, such as location verification and phone movement analysis, will likely gain traction as users grow comfortable with advanced identification methods.

Security

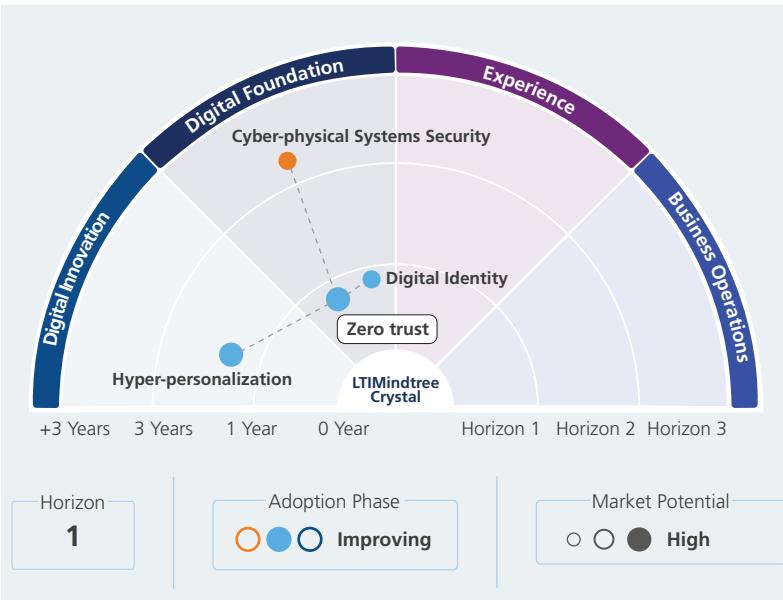
Zero Trust

Zero trust is a cybersecurity framework that treats every connection and endpoint as a potential threat, ensuring continuous and adaptive protection. It supports hybrid cloud environments by integrating policies, practices, and technologies to proactively manage risks. As a strategic initiative, zero trust helps organizations build effective security strategies. Zero trust implementation in large enterprises requires navigating complex systems, aligning policies and maintaining a long-term commitment to security.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Zero trust network access

Replace VPNs by granting least-privilege access to specific applications securely.

Multi-cloud security

Ensure consistent security policies across clouds, reducing risks from misconfiguration.

Compliance automation

Automate compliance using zero trust principles for secure and lawful data access.

Key Takeaway

Zero trust is crucial for modern cybersecurity, focusing on adaptive, temporary trust and least-privilege access. With the rise of hybrid work and multi-cloud environments, 'just-in-time' connections and continuous trust reassessments are vital. Transitioning from perimeter-based models needs long-term commitment and strong frameworks. Leaders must prioritize zero trust to secure operations and address evolving cyber threats effectively.

Security

Cyber Security Mesh

Cyber security mesh is a collaborative ecosystem comprising tools and controls aimed at securing modern, distributed enterprises. It integrates composable, distributed security tools by centralizing the data and control plane. This enhances detection capabilities, response efficiency, policy consistency, and access control. This contemporary approach decentralizes security perimeters, allowing for more flexible and scalable protection of digital assets while emphasizing tailored controls and context-aware strategies.

Technology Advancement

- Near Term:** Leverage AI/ML to introduce contextual security that adapts dynamically based on user behavior, device, location and threat levels.
- Mid Term:** Handle quantum-era threats with advanced encryption and adaptive cryptographic measures.
- Long Term:** Self-healing security architecture to mitigate threats in real-time without central dependency.

Radar View & Related Trends



Key Use Cases

Remote workforce security

Protect remote employees by applying security policies directly to their devices, ensuring secure access to corporate resources.

IoT device protection

Secure Internet of Things (IoT) devices by creating individual security perimeters around each device, preventing unauthorized access and data breaches.

Securing 5G networks

Deployment of security measures at every node of a 5G network ensuring low-latency protection.

Key Takeaway

The fragmentation of technology ecosystems has increased due to the growth of cloud services and significant decentralization of workforces. Consequently, there has been a rising demand for distributed technologies and greater adoption of geography-agnostic services such as SaaS. Cybersecurity mesh presents a significant advancement in how organizations can protect their distributed environments and manage the complexity associated with distributed data and services.

Security

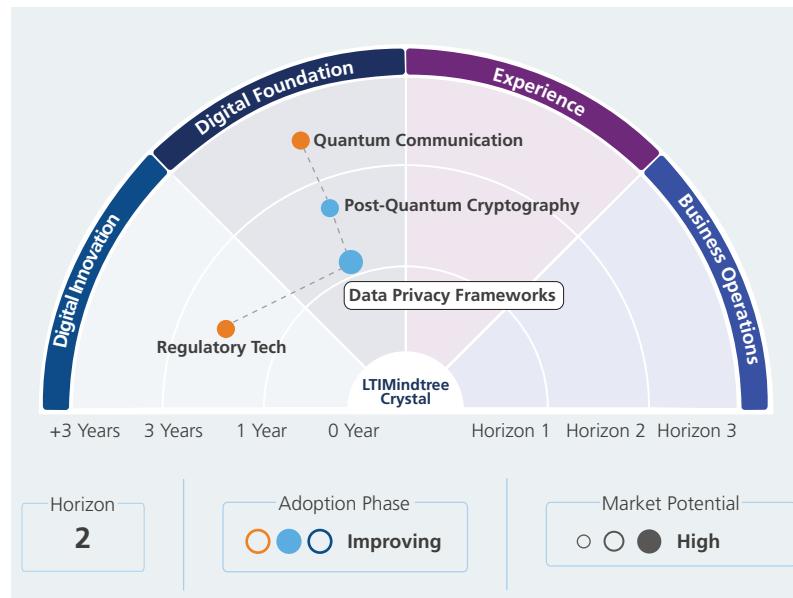
Data Privacy Frameworks

A data privacy framework is a structured approach to managing and protecting personal data. It includes guidelines and best practices to ensure compliance with laws and safeguards individuals' privacy. Due to ongoing geopolitical disturbances and a shortage of skilled professionals, organizations are prioritizing security investments. According to Gartner, global end-user spending on information security is projected to reach USD 12 billion in 2025, an increase of 15.1% from 2024, which will lead to greater adoption of data privacy frameworks.

Technology Advancement

- Near Term:** Adoption of advanced encryption methods, such as homomorphic encryption, allowing data to be processed without being decrypted.
- Mid Term:** Integrating rule-based frameworks analytics and AI to automate compliance in-line with various data privacy regulations.
- Long Term:** Preparing for the advent of quantum computing by developing cryptographic methods that can withstand quantum attacks.

Radar View & Related Trends



Key Use Cases

Data anonymization

Anonymizing personal data to prevent individual identification from datasets.

User consent management

Implementing systems to manage user consent for data collection and processing.

Privacy impact assessments (PIAs)

Conducting PIAs for new projects or systems to evaluate potential privacy risks.

Key Takeaway

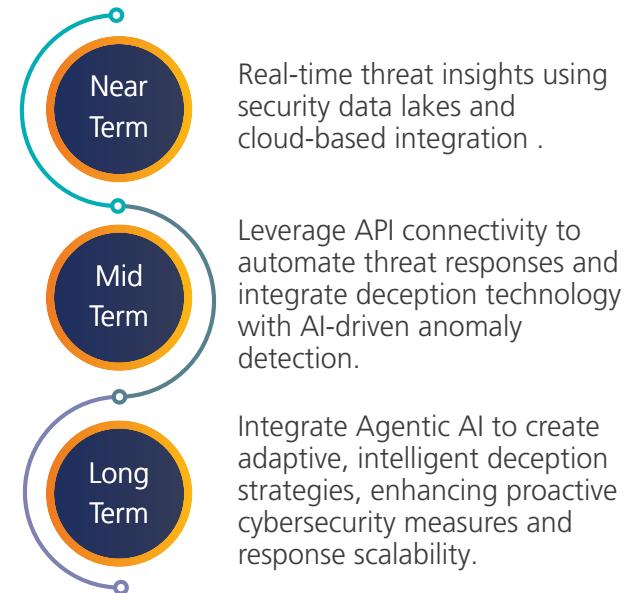
In 2025, ongoing issues such as consent and international data transfers will continue to pose challenges. By 2025, emerging technologies, particularly AI and biometrics, will exacerbate the key risks monitored by data protection authorities (DPAs). The adoption of AI and Gen AI are driving investments in security markets, encompassing application security, data security, privacy, and infrastructure protection. These developments underscore the importance of robust data privacy frameworks.

Security

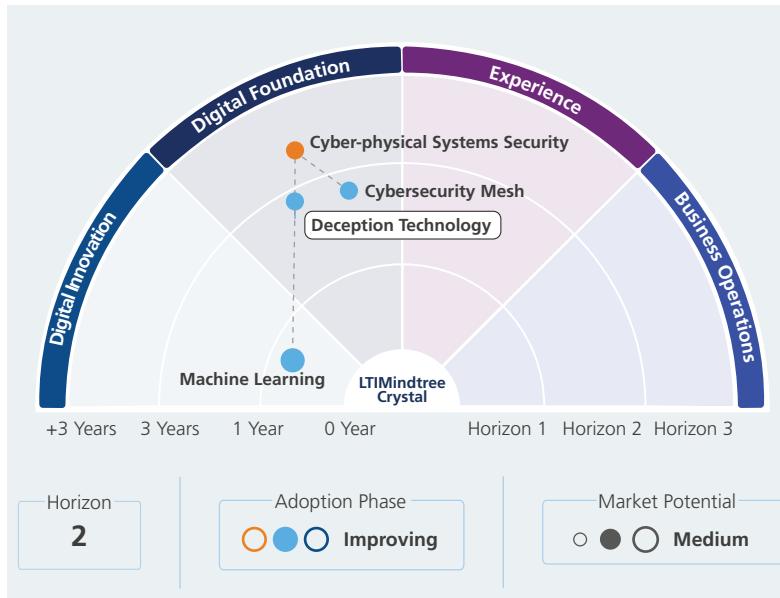
Deception Technology

Deception technology proactively detects cyber threats by deploying decoy assets like fake servers, data, and credentials. It shifts the focus from reactive to intelligence-driven deception techniques enabling swift threat detection while gathering attacker insights. Advanced analytics and AI enhance detection accuracy, reducing false positives and bolstering cybersecurity across industries, especially those relying on Operational Technology (OT) systems.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Vulnerability assessment and patch management

Simulate attacks to identify vulnerabilities and prioritize patching efficiently.

Threat intelligence enrichment

Gather actionable threat data by deceiving attackers and analyzing behavior.

Insider threat detection

Identify malicious insiders through deceptive assets and activity monitoring.

Key Takeaway

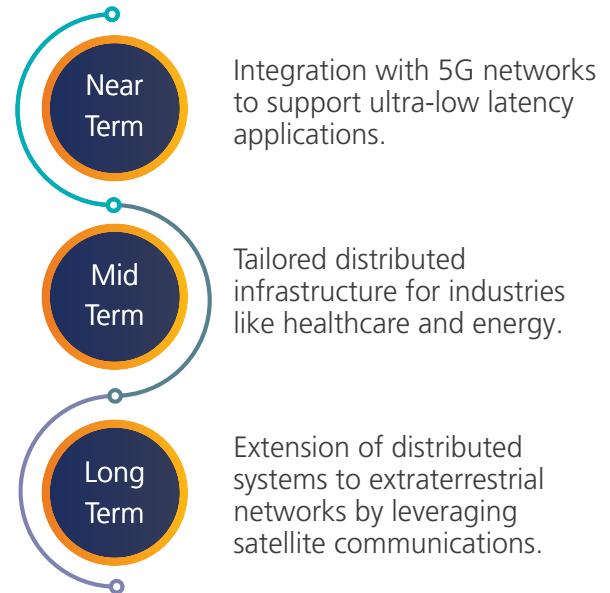
Deception technology holds immense potential, especially in industries reliant on OT/IoT systems, by emulating devices to protect real assets. Integration with detection engineering and frameworks like MITRE ATT&CK and Engage enhances its effectiveness. Gen AI can advance deception and detection simultaneously. Collaboration among vendors, MITRE, and industry bodies like Information Sharing and Analysis Centers (ISAC) will be crucial for standardization, scalability, and addressing implementation challenges.

Security

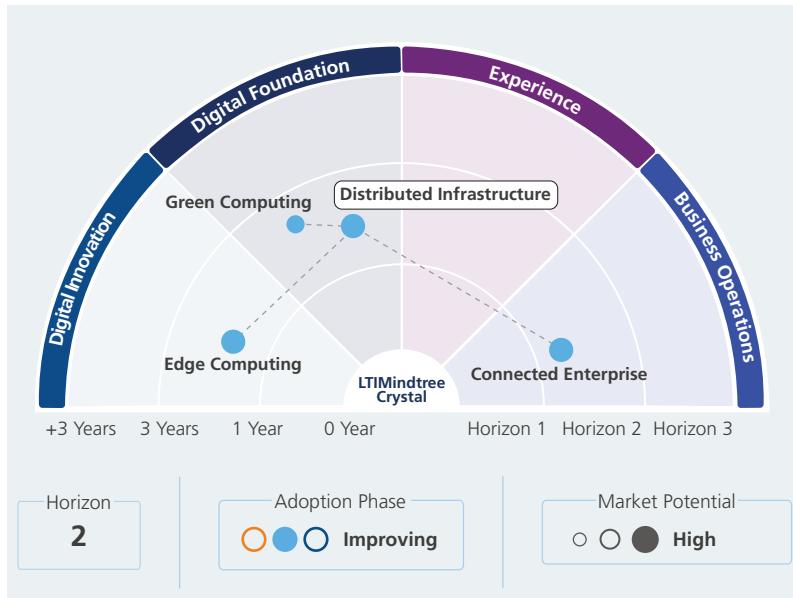
Distributed Infrastructure

Distributed infrastructure is crucial for contemporary IT, as it supports cloud-native and containerized applications across various environments. This architecture allocates computing resources such as servers, storage, and networking across multiple locations rather than a single data center. The need for better user experiences is pushing cloud services closer to the edge, reducing latency. However, distributed infrastructures often encompass numerous and diverse endpoints, thereby increasing the attack surface and making the exploitation of vulnerabilities a significant threat.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Local AI inferencing

Enables data processing at the source, particularly useful for applications like video analytics.

Data privacy regulation

Ensures data residency and compliance with local regulations by storing and processing information in specific geographic locations.

Real-time applications

Supports mission-critical and near real-time applications, ensuring continuity and low latency.

Key Takeaway

Distributed infrastructure is crucial for training and deploying large neural networks and Large Language Models (LLMs). As these networks become more complex, parallelism is required to meet their computational and memory needs. By using distributed infrastructure, organizations can effectively manage modern AI applications. Companies like Google and Microsoft use custom hardware and software frameworks to train large models efficiently.

Cloud and Infrastructure

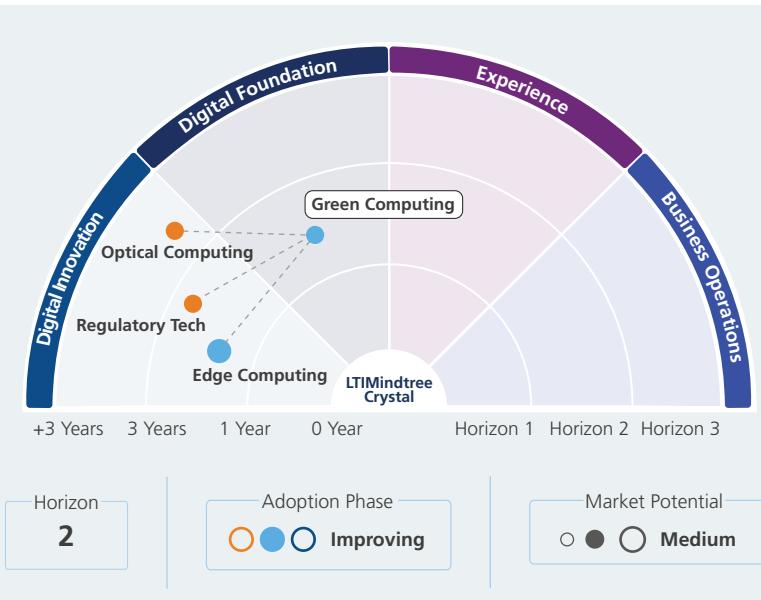
Green Computing

Green computing, also known as green IT, is an approach aimed at designing, manufacturing and using computing resources in an environmentally sustainable manner. It focuses on reducing energy consumption, minimizing electronic waste, and enhancing resource efficiency across the entire lifecycle of IT systems. Organizations are embracing green cloud solutions and circular economy practices to align with global sustainability goals. This shift not only ensures carbon neutrality but also enhances brand value and operational cost efficiency.

Technology Advancement

- Near Term:** Enhanced use of low-power processors and solid-state drives optimized for energy conservation.
- Mid Term:** Increased deployment of edge devices to reduce latency and energy-intensive data transfers.
- Long Term:** Fully renewable and carbon-neutral data centers using advanced technologies like hydrogen fuel cells, etc.

Radar View & Related Trends



Key Use Cases

AI-driven energy optimization

AI models analyze and optimize power consumption in real-time across devices and IT infrastructure.

Sustainable cloud computing

Energy efficient servers and optimized resource allocation for sustainable and cost-effective cloud services.

Energy-efficient data centers

Green computing enables data centers to utilize advanced cooling systems and renewable energy sources, reducing their carbon footprints and costs.

Key Takeaway

Green computing offers innovative solutions that effectively balance technological advancement with environmental responsibility. With increased global collaboration and stricter regulations, this approach sets the stage for a future where IT infrastructure is powered by renewable energy sources, hardware is recyclable, and sustainable practices are the norm. As industries adopt green computing, it promises significant contributions towards creating a cleaner, greener, and more intelligent planet.

Security

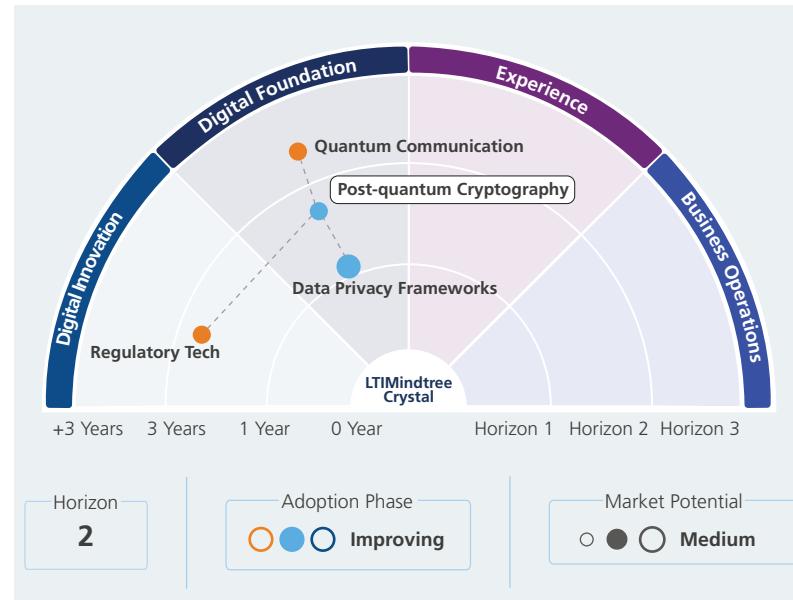
Post-quantum Cryptography

Post-quantum cryptography (PQC) is essential for securing digital communications against the emerging threat of quantum computers. Q-day is a term referring to stage when quantum computers become powerful enough to break current cryptographic algorithms. Quantum Secure Direct Communication (QSDC) and PQC algorithms like CRYSTALS-Kyber, CRYSTALS-Dilithium, and SPHINCS+ are being developed to ensure robust security. These advancements are crucial for protecting sensitive data in various sectors, including finance, healthcare, and government.

Technology Advancement

- Near Term:** Standardization of PQC algorithms.
- Mid Term:** Integration of PQC into existing systems and networks, enhancing crypto-agility and performance.
- Long Term:** Adoption of PQC across all digital communication platforms, ensuring long-term security against quantum threats.

Radar View & Related Trends



Key Use Cases

Secure SD-WANs

PQC in Software-defined Wide Area Networks (SD-WANs) to secure enterprise communications.

Quantum secure direct communication (QSDC)

Eliminates the need for key exchanges by allowing the direct transmission of messages through quantum channels.

PQC in IoT and Mobile Edge Computing (MEC)

Securing data transmitted between connected devices and central data processors or edge servers using PQC.

Key Takeaway

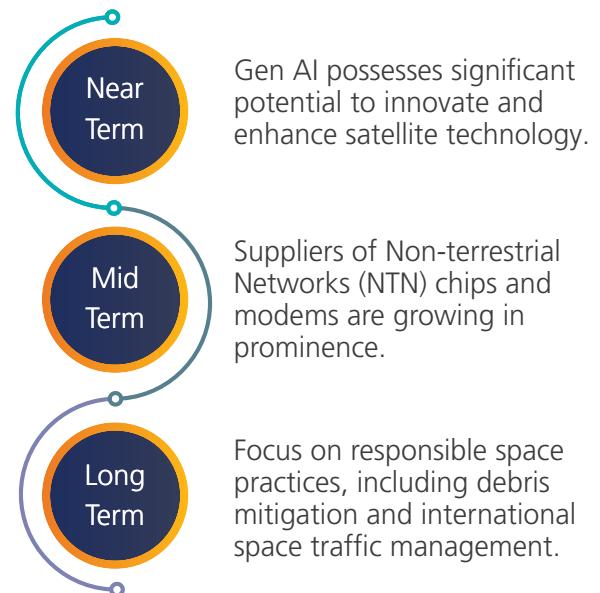
The transition to PQC is essential to safeguard digital communications and data against the emerging quantum threat. Organizations must start planning and implementing PQC solutions to ensure long-term security and operational resilience. The UA-DI-QSDC protocol represents a significant advancement in quantum secure communication, offering a practical and robust solution for secure message transmission in the quantum era.

Cloud and Infrastructure

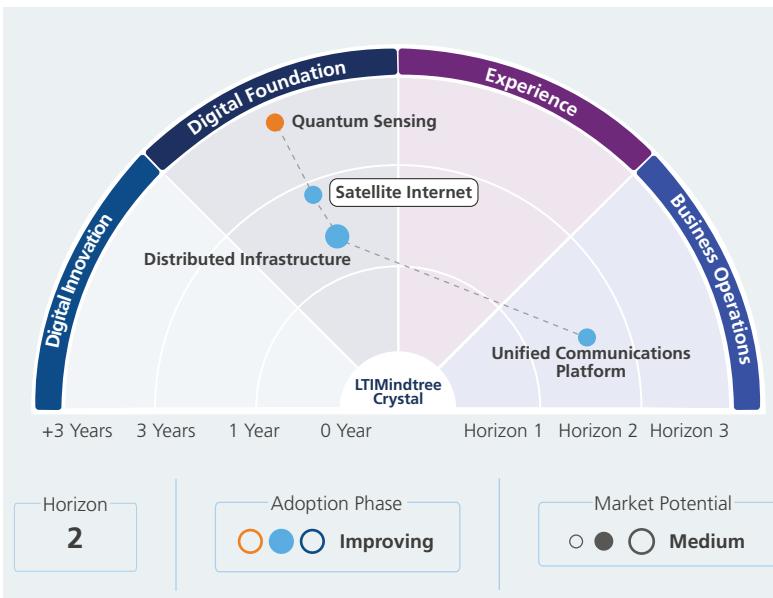
Satellite Internet

Satellite internet is a service that uses communication satellites to provide wireless internet access. Recent advancements, including Low Earth Orbit (LEO) satellites, have enhanced latency and data speeds, making satellite internet more favorable than terrestrial options. With a growing number of satellites in orbit and plans for additional launches, companies are striving to offer low-cost internet solutions to remote areas through satellite internet.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Disaster recovery services

Ensure communication during natural disasters and emergencies when terrestrial networks fail.

Scalable infrastructure

Better connectivity enables scalable infrastructure for remote offices, ATMs, and insurance companies, supporting growth and business continuity.

Predict supplier requests

Links to the supplier network, displaying real-time sales data from cash registers to distribution facilities.

Key Takeaway

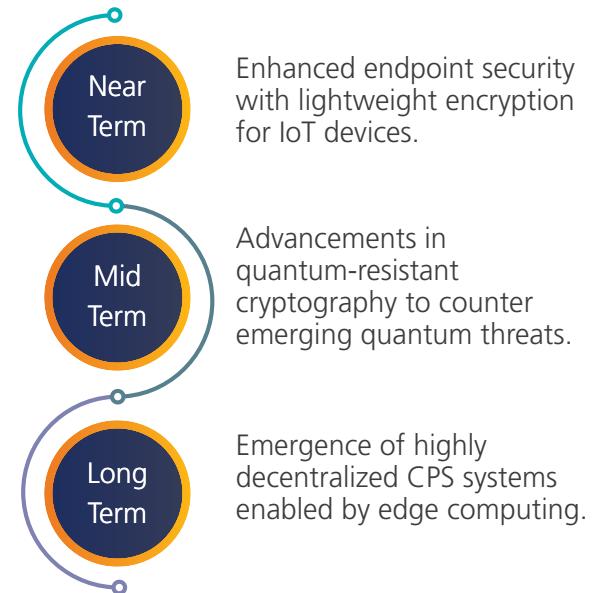
The satellite internet market is expected to experience growth and innovation, influenced by trends such as the deployment of LEO satellites and the integration of satellite networks with terrestrial networks, including 5G and future 6G technologies. The reach and quality of communication services are projected to improve with Device-to-device (D2D)-aided 5G and cloud technologies. Industry participants, regardless of size, may explore merger and acquisition opportunities to provide high-speed connectivity to the remote areas.

Security

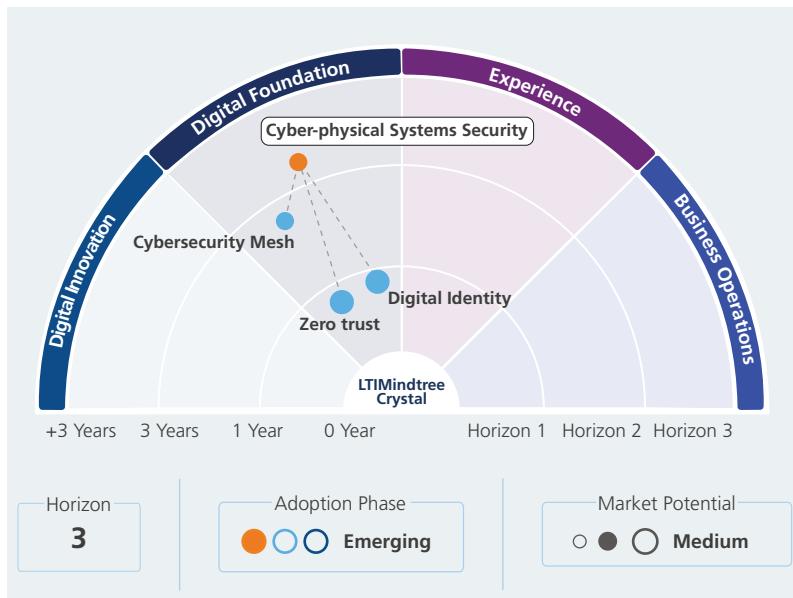
Cyber-physical Systems Security

Cyber-physical (CPS) systems security focuses on protecting the integration of physical processes with computational and networked systems. It addresses the vulnerabilities of systems that are interconnected like autonomous vehicles, smart grids, etc. Organizations are increasingly adopting AI-driven anomaly detection and edge computing for real-time threat mitigation. With increased reliance on interconnected systems, ensuring the security of CPS is critical to prevent operational disruptions, safeguard sensitive data and maintain trust in automated systems.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Secure remote monitoring

Secure data transmission from remote sensors to central systems to monitor physical processes.

Proactive incident management

Predictive analytics and digital twins to identify and mitigate vulnerabilities before exploitation.

Resilient operations

Protecting critical systems from cyberattacks to prevent disruptions in operations.

Key Takeaway

CPS are no longer optional but foundational for the safe integration of physical and digital worlds. They will enable new levels of automation, efficiency and safety while ensuring resilience against ever-evolving cyber threats. However, barriers like high implementation costs, limited cybersecurity expertise, and lack of standardization must be addressed carefully for widespread adoption. Harnessing the full potential of CPS relies on proactive investments and security collaboration.

Cloud and Infrastructure

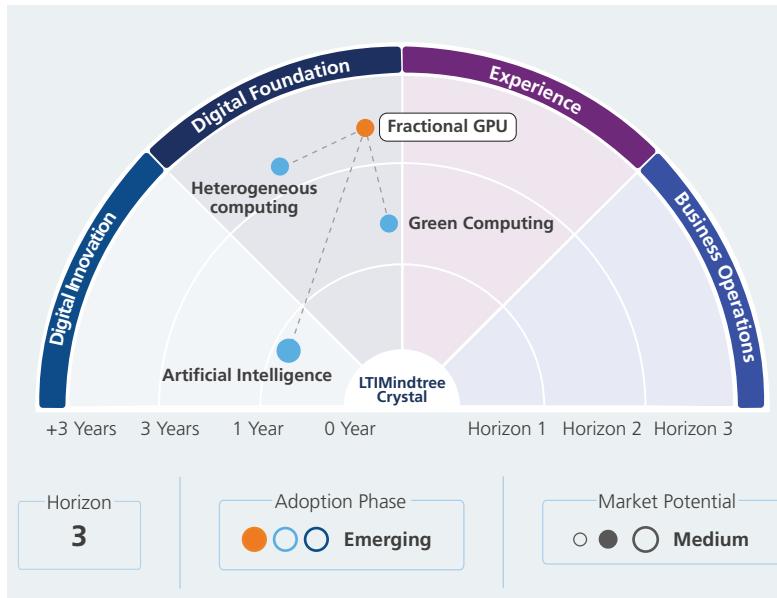
Fractional GPU

Fractional Graphics Processing Unit (FGPU) is a software-driven mechanism for partitioning a GPU's computing and memory resources. It allows efficient utilization of high-powered GPUs by dividing them into smaller and scalable units. The demand for cost-effective GPU resources and cloud-based AI workloads is influencing the rising adoption of FGPs. It plays a vital role in running multiple AI tasks concurrently without interference. FGPs enable better utilization of GPU resources, reducing costs and increasing utilization.

Technology Advancement

- Near Term:** Cloud providers to standardize fractional GPU offerings, making it accessible for SMEs and startups.
- Mid Term:** AI-driven algorithms will dynamically adjust GPU fractions based on workload demands, ensuring optimal resource utilization.
- Long Term:** Blockchain-based frameworks will enable secure and decentralized sharing of fractional GPUs across global networks.

Radar View & Related Trends



Key Use Cases

3D rendering and simulation

Animation, architecture, and media production can leverage fractional GPUs for rendering tasks, eliminating the necessity for dedicated hardware.

Virtual desktop and remote work

High-speed, GPU-accelerated environments for engineering, design and other GPU-intensive workflows.

Workload isolation

Ensures that high-intensity tasks on one partition do not affect the performance of other workloads.

Key Takeaway

Fractional GPUs allow greater efficiency through smaller AI/ML workloads and accessibility for SMEs through cloud platforms. This technology is useful for edge computing, AI/ML, and the gaming industry where dynamic workloads benefit from flexible GPU allocations. However, there are challenges in maintaining performance consistency and resource orchestration. As virtualization techniques advance, FGPs are anticipated to support advanced applications including decentralized GPU sharing and real-time edge analytics, leading to more efficient high-performance computing.

Cloud and Infrastructure

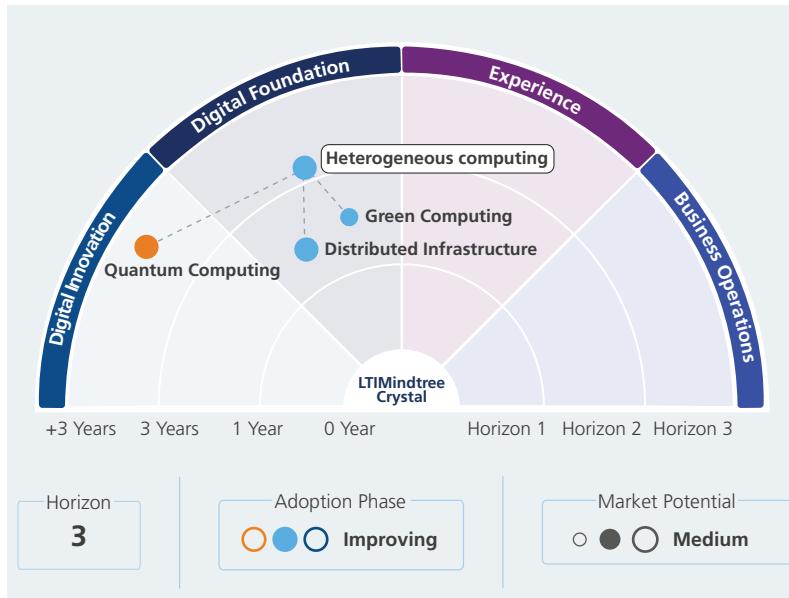
Heterogeneous Computing

Heterogeneous computing uses various computing cores, such as CPUs, Graphics Processing Unit (GPUs), Application-specific Integrated Circuits (ASICs), Field-programmable gate arrays (FPGAs), and Neural Processing Units (NPUs). It involves processors based on different architectures. These systems are beneficial for AI and ML workloads, efficiently processing large data, improving energy savings, and enhancing thermal management.

Technology Advancement

- Near Term:** Emerging AI and machine learning use cases to drive the adoption of heterogeneous computing.
- Mid Term:** Broad adoption of heterogeneous computing with chiplets integrated into customized System-on-chips (SoCs).
- Long Term:** Integration with hybrid systems requiring quantum processors to manage complex tasks such as cryptography.

Radar View & Related Trends



Key Use Cases

ML and AI Implementation

Boost model training and inference using CPUs, GPUs, and Tensor Processing Units (TPUs).

Financial modeling

Expedite processing large datasets with algorithms for forecasting and risk assessment.

Multimedia processing

Accelerate video encoding, image processing, and real-time rendering for media production.

Key Takeaway

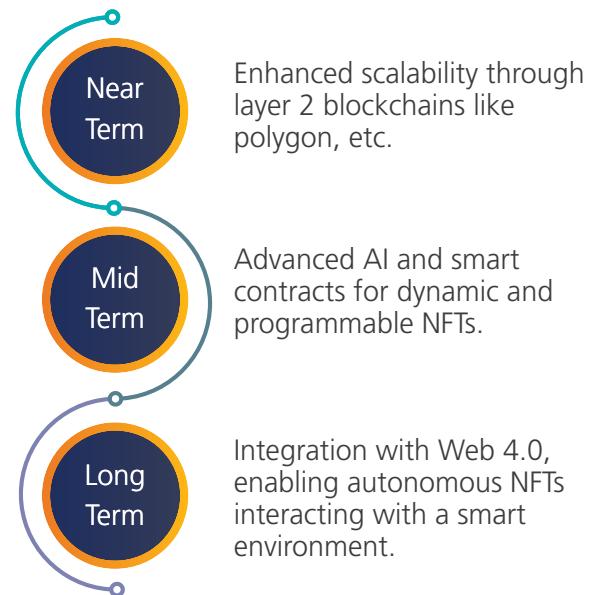
The adoption of heterogeneous computing models is anticipated to progress rapidly in the near future. Future GPUs will have more cores, making task allocation more efficient. This is vital for high-performance computing and autonomous systems needing adaptable hardware. Flexible GPU designs for specific applications and improved software control are anticipated.

Cloud and Infrastructure

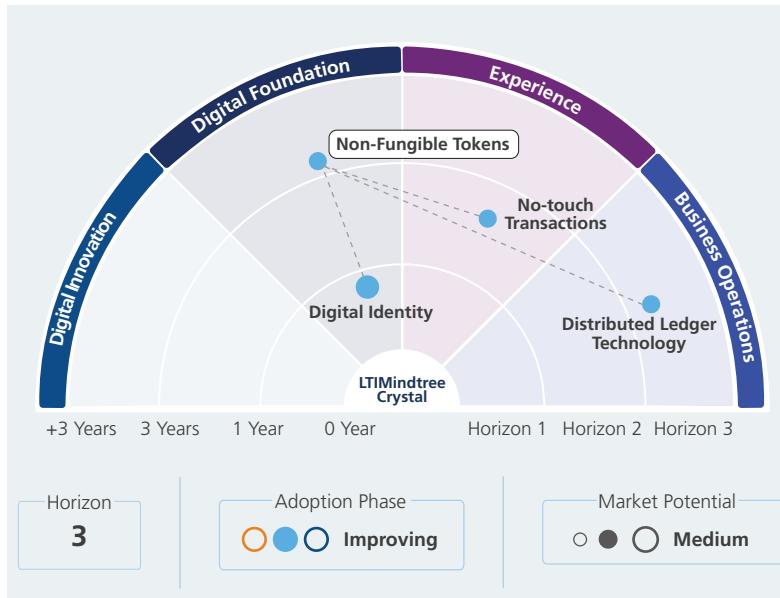
Non-fungible Tokens

Non-fungible Tokens (NFTs) are digital assets stored on a blockchain with unique identification codes and metadata that cannot be duplicated. NFTs are indivisible and distinguishable, making them ideal for certifying the authenticity and ownership of digital or physical assets. The rising adoption of blockchain and digital ownership are driving further adoption of NFTs in real estate, gaming, and ticketing systems. Industry experts believe that NFTs will become a revenue model for the metaverse and attract lucrative opportunities as it advances towards reality.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Supply chain transparency

Tracking and authenticating products across the supply chain to ensure provenance and reduce fraud.

Real estate ownership

Tokenizing property ownership, simplifying transactions and enabling fractional ownership of real-world assets.

Loyalty programs

Rewarding customers with NFT-based tokens, creating transferable and tradeable loyalty points.

Key Takeaway

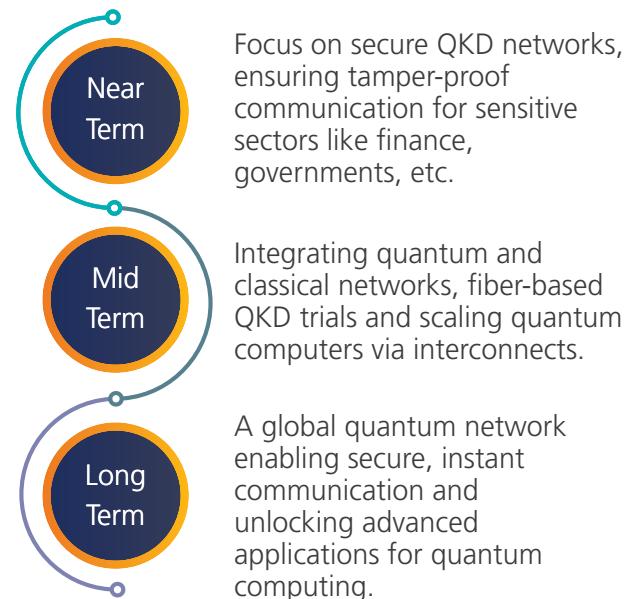
NFTs foster decentralization of controls and empower creators of assets, offering tremendous potential in the digital economy. Their integration with AI, AR/VR and IoT can unlock new possibilities in enterprise applications. However, if challenges such as high energy consumption and regulatory uncertainties are handled carefully, NFTs offer a novel way to establish ownership, prove identity, and create value in the digital realm.

Cloud and Infrastructure

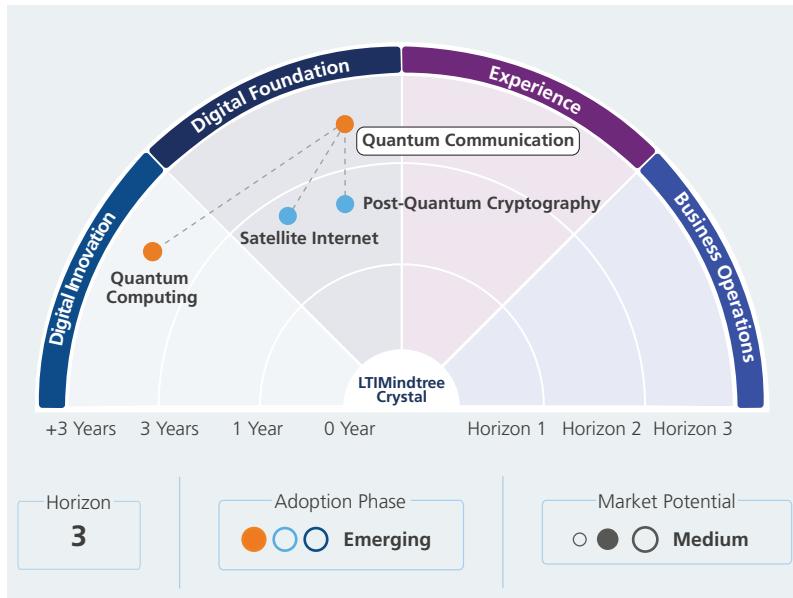
Quantum Communication

Quantum communication is an emerging technology leveraging quantum mechanics principles to enable secure data transfer. It uses quantum states like supersposition and entanglement for transmitting information. The quantum communication market is projected to reach USD 24 billion by 2040, driven by the need for secure data transfer in sectors like banking and supply chains. Post-quantum cryptography and quantum communications will replace current protocols, with widespread adoption in the near future.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Secure transactions

Prevents eavesdropping, enhances transaction security.

Critical infrastructure protection

Deploy quantum-secure communication links for operational command center.

Secure global communications

QKD-enabled satellites for secure intercontinental data transmission.

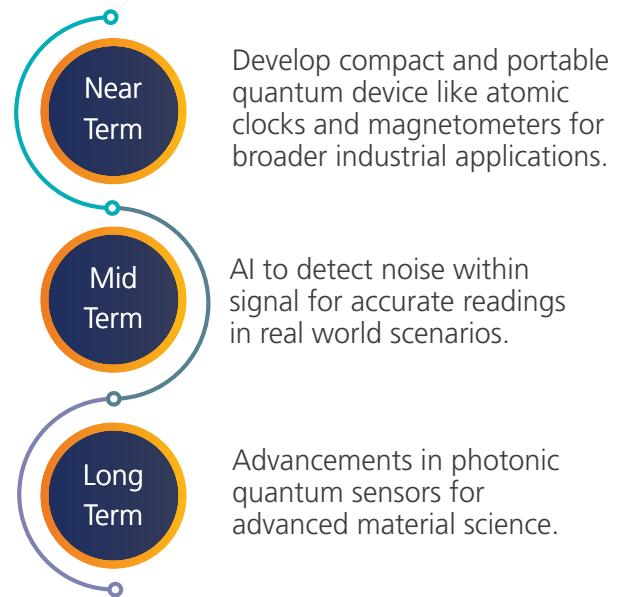
Key Takeaway

Quantum communication holds immense growth potential, particularly for industries like cybersecurity, finance, and critical infrastructure. Its ability to offer unbreakable data security through quantum mechanics will revolutionize secure communication. However, challenges such as developing stable, scalable systems, addressing environmental noise, and infrastructure development remain. As this technology matures, significant investment in research and development will drive its integration into existing networks, unlocking new opportunities for secure global communication.

Quantum Sensing

Quantum sensing leverages principles of quantum mechanics to achieve highly sensitive measurements of physical properties like time, magnetic fields, etc. Currently, quantum sensing is being used on an experimental basis for atomic clocks, Light Detection and Ranging (LiDAR) systems, etc. This adoption is primarily driven by the demand for ultra-precise sensors across industries. Its ability to calculate at atomic and subatomic levels makes this technology indispensable for next-generation measurement techniques.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Precision navigation

Improved precision in location tracking and mapping.

Environmental monitoring

Detect minute changes in environmental conditions, such as temperature, pressure, and magnetic fields.

Urban infrastructure management

Quantum gravity sensors monitor the integrity of underground infrastructure like subway systems, tunnels, water lines, etc. enabling proactive maintenance of smart cities.

Key Takeaway

Quantum sensing's ability to operate at atomic and subatomic levels offers unprecedented opportunities in industries that need ultra-precision measurements. Quantum sensing offers unparalleled sensitivity with the potential to transform nearly all industries. However, challenges such as high costs and the need for specialized skillsets remain significant barriers to widespread adoption. The future of quantum sensing lies in AI advancements for real-time insights and scalability for mass-market applications.

Did You Know?

JavaScript was created in just 10 days in 1995 by Brendan Eich at Netscape!

Now, with generative AI advancing rapidly, could an AI design a powerful scripting language in just one day? The future of coding might be closer than we think!

A 100 MW data center can guzzle as much electricity as 50,000 homes—but here's the real shock: By 2030, data centers could surpass 10% of global electricity consumption!

The future, however, is shifting—AI-driven cooling, renewable energy, and carbon-aware computing are redefining sustainability. Could the next wave of cloud infrastructure not just reduce its footprint but become carbon-negative?



Segment 3 **Experience**

Sub-segments: Interactive



Interactive

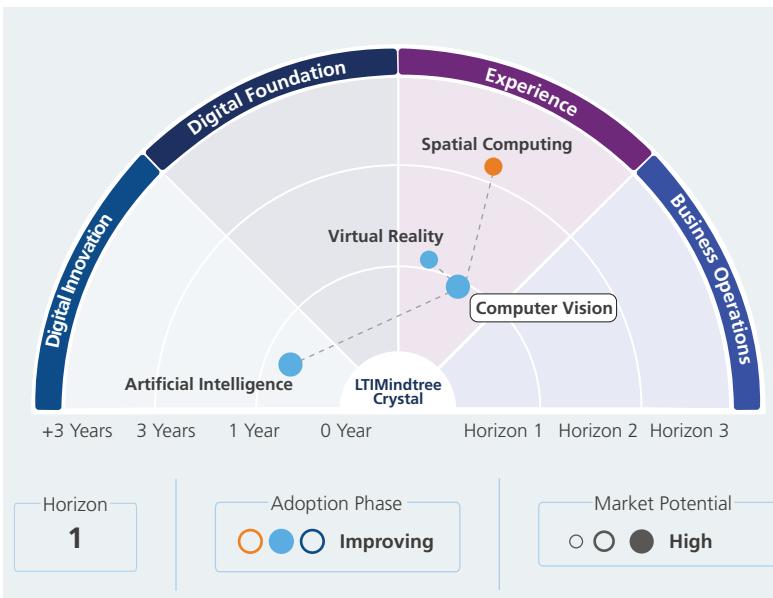
Computer Vision

Computer vision, a branch of AI, leverages machine learning and neural networks to extract meaningful information from digital images, videos, and other visual inputs. A Statista Market Insights survey predicts that the global computer vision market will grow at a CAGR of 10.5%, reaching a market volume of USD 46.96 billion between 2024 and 2030.

Technology Advancement

- Near Term:** Transformers, originally for NLP, now excel in computer vision. Vision transformers will outperform Convolutional Neural Networks in image classification.
- Mid Term:** Combine visual data with text and audio to build comprehensive AI models, enhancing autonomous vehicles and smart assistants.
- Long Term:** Quantum computing in computer vision will exponentially boost processing power, enabling real-time analysis of vast datasets.

Radar View & Related Trends



Key Use Cases

Security and surveillance

Improving security systems by using facial recognition and anomaly detection to spot potential threats.

Optical character recognition (OCR)

Transforms scanned documents, PDFs, and camera images into editable, searchable data across various formats.

Business intelligence

Analyzes social media images to evaluate customer trends and detects quality defects before product shipment.

Key Takeaway

In the future, computer vision technologies will be easier to train and extract more information from images. It will be crucial for developing Artificial General Intelligence (AGI) and Artificial Superintelligence (ASI), enabling these systems to process visual data even better than humans. From 2024 to 2030, nearly half of the market value will come from its image recognition segment.

Interactive

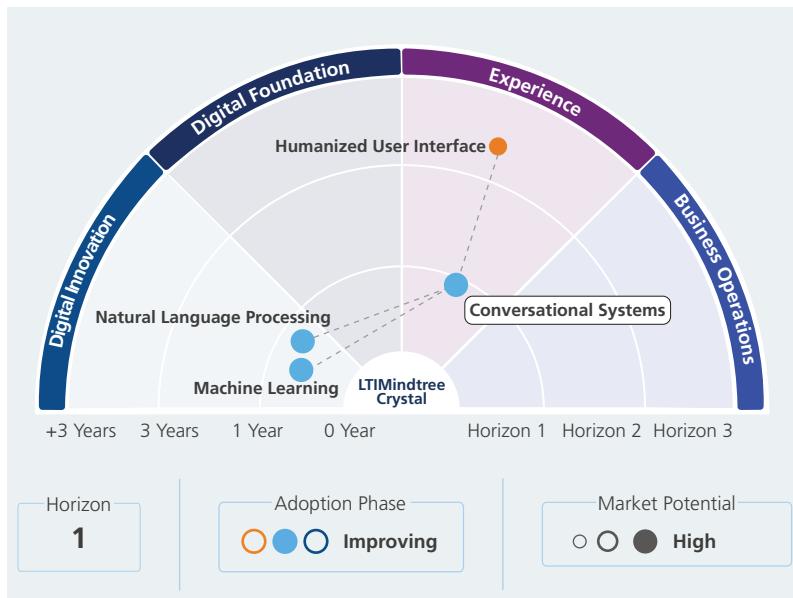
Conversational Systems

Conversational systems are intelligent machines capable of understanding language and engaging in written or verbal communication with customers. Conversational AI is transforming business operations by automating routine tasks, which enhances customer service, improves engagement, and increases efficiency. The technology allows companies to manage high volumes of inquiries effectively, freeing human agents to handle more complex tasks and ultimately improving overall customer satisfaction while optimizing operational efficiency.

Technology Advancement

- Near Term:** These systems will become more adept at recognizing and responding to enhanced emotional intelligence.
- Mid Term:** Organizations are expected to leverage multiple specialized bots for specific tasks, enhancing customer support efficiency.
- Long Term:** Higher AI-driven personalization, offering tailored experiences based on user preferences and past interactions.

Radar View & Related Trends



Key Use Cases

Improved customer service

Deliver instant responses, resolve common issues, reduce wait times, and boost customer satisfaction.

Streamlined account information

Manage accounts, perform transactions, and get financial advice, making banking services more accessible and efficient.

Troubleshooting

Provides personalized B2B & B2C experiences integration of mobile wallet features, real-time order tracking features

Key Takeaway

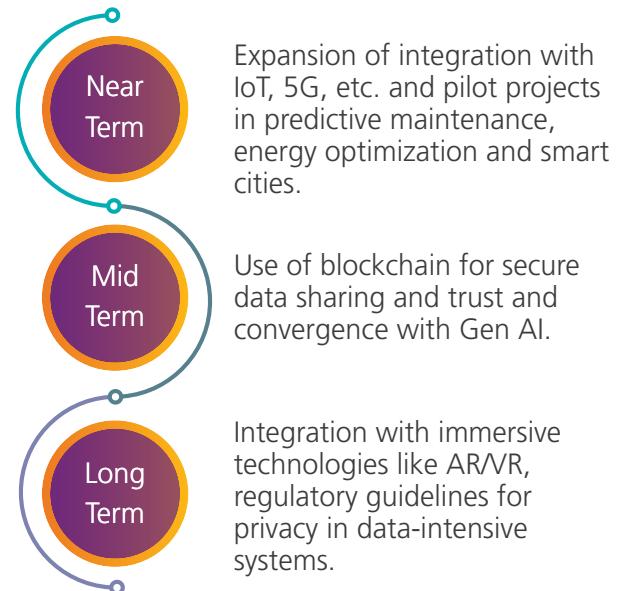
The market for conversational systems is rapidly evolving, with increasing demand for both customer and employee interactions. Recent advances in deep learning and generative AI models like GPT have enhanced AI's conversational abilities, enabling more nuanced and human-like interactions. A leading research and advisory firm predicts that by 2026, conversational AI will save USD 80 billion in human agent costs.

Interactive

Digital Twins

Digital twins have emerged as a transformative technology, reshaping industries by enabling real-time monitoring, simulation, and optimization of assets and systems. This technology has seen widespread adoption in manufacturing, oil and gas, and healthcare sectors, enhancing operational efficiency, predictive maintenance, and sustainability efforts. Recent advancements integrate digital twins with IoT and 5G technologies, facilitating improved decision-making processes.

Technology Advancement



Key Use Cases

Asset lifecycle management

Simulation of physical assets to optimize performance and predict maintenance needs.

Training and immersive experience

Uses of AR/VR integrated twins for realistic training simulations and decision-making exercises.

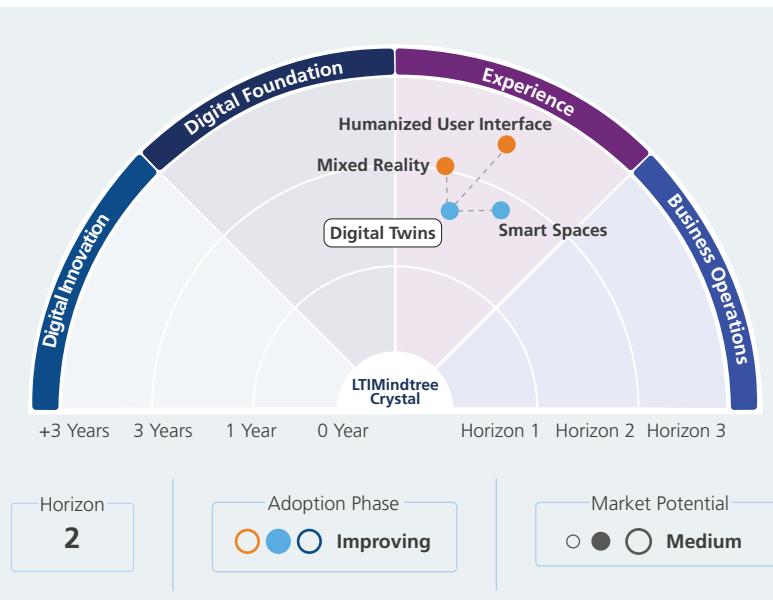
Predictive maintenance

Simulates potential failure scenarios, predicts risks, and improves safety standards.

Key Takeaway

The integration of digital twins with AI/ML, IoT, and 5G significantly enhances predictive capabilities, scalability, and decision-making across various industries. This innovative technology is transforming traditional operations by facilitating data-driven processes, reducing downtime, and fostering innovation at an unprecedented pace and scale. Nevertheless, challenges such as high computational demands and regulatory frameworks need to be addressed meticulously. Looking ahead, digital twins will play a pivotal role in enabling autonomous systems.

Radar View & Related Trends

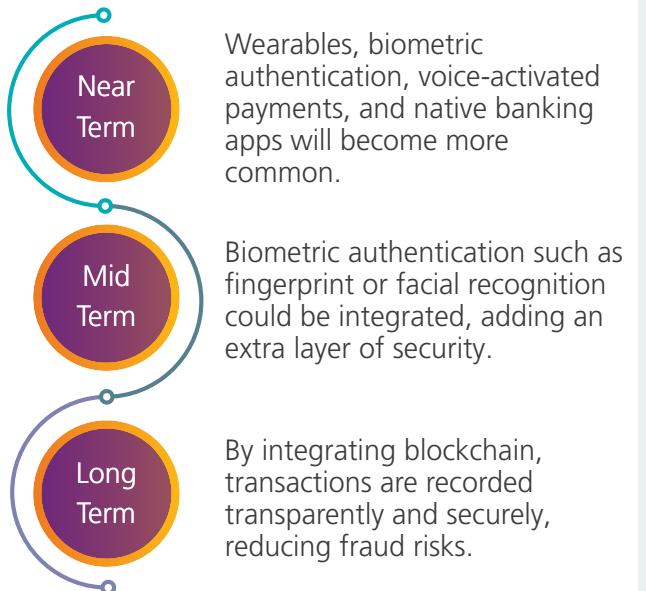


Interactive

No-touch Transactions

No-touch transactions are a secure way to pay for goods and services without using cash or swiping a card. A seamless payment experience is the biggest driver for its adoption, followed by convenience and safety. Mobile wallets and security features like tokenization and encryption have increased user trust. Integration into wearable devices and biometric methods will further embed contactless payments into daily life. Originally popular in retail and public transit, contactless payments now extend to many industries for their touch-free ease.

Technology Advancement



Key Use Cases

Enhanced shopping experience

Seamless payments by card-tapping on contactless-enabled terminals.

Cashless travel

Ensure payments in multiple modes, streamlining the process and reducing wait times.

Improved customer dining experience

Settle dining bills without the need for carrying and securing cards and cash.

Key Takeaway

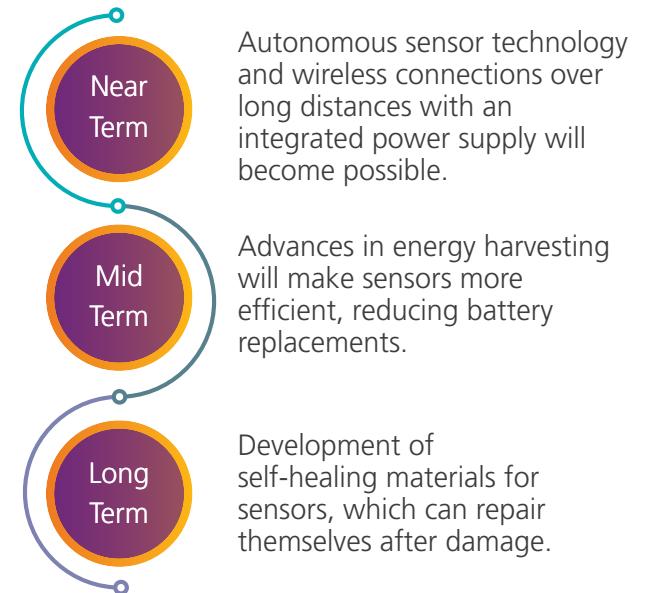
With ongoing technological advancements and increasing consumer preference for enhanced experience, convenience and safety, the growth of no-touch transactions is promising. Furthermore, the integration of blockchain, biometric and wearables into daily transactions would revolutionize the no-touch payments landscape. As businesses and consumers embrace these innovations alike, the future of no-touch payments looks set to be more interconnected and intelligent, driving a seamless and secure payment experience.

Interactive

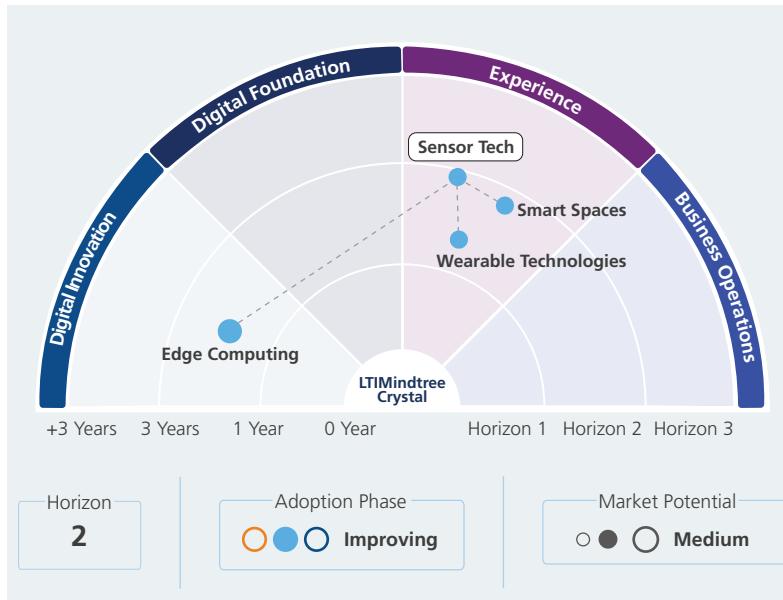
Sensor Tech

Sensor technology encompasses devices that detect environmental changes and convert them into measurable signals for analysis and action. By 2030, sensors are expected to operate with minimal power consumption, possibly utilizing ambient energy harvesting techniques. The integration of AI with sensor technology will facilitate local data processing and interpretation, significantly reducing latency and enabling more accurate and timely real-time decision-making.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Advanced driver assistance systems (ADAS)

Sensors will play a crucial role in enhancing safety features like lane-keeping assistance, adaptive cruise control, and automated emergency braking.

Infrastructure monitoring

Monitor the health of bridges, roads, and buildings, detecting structural issues early to prevent accidents.

Smart grids

Improve power grids by monitoring energy use and distribution for better efficiency and reliability.

Key Takeaway

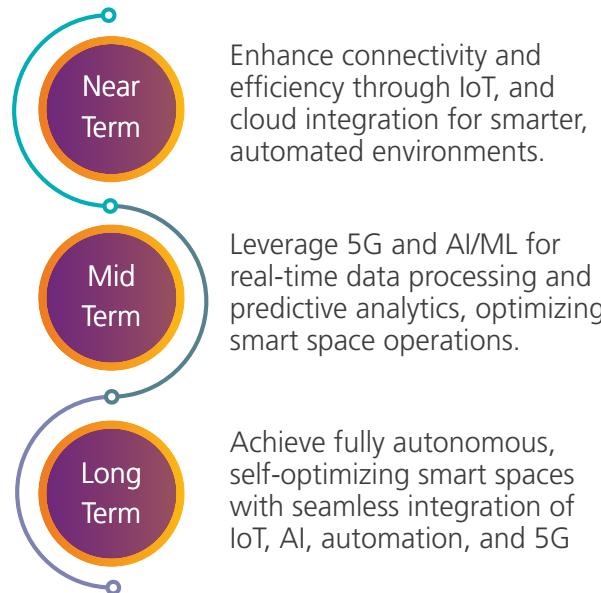
The integration of AI with sensor networks is projected to be important for environmental monitoring, facilitating real-time responses to natural disasters and environmental hazards. As AI progresses, its combination with sensor networks is expected to create systems that are more intelligent, adaptable, and responsive to changing conditions. Improvements in precision, power efficiency, quantum integration, and AI-driven sensor networks are anticipated to drive innovation across various sectors.

Interactive

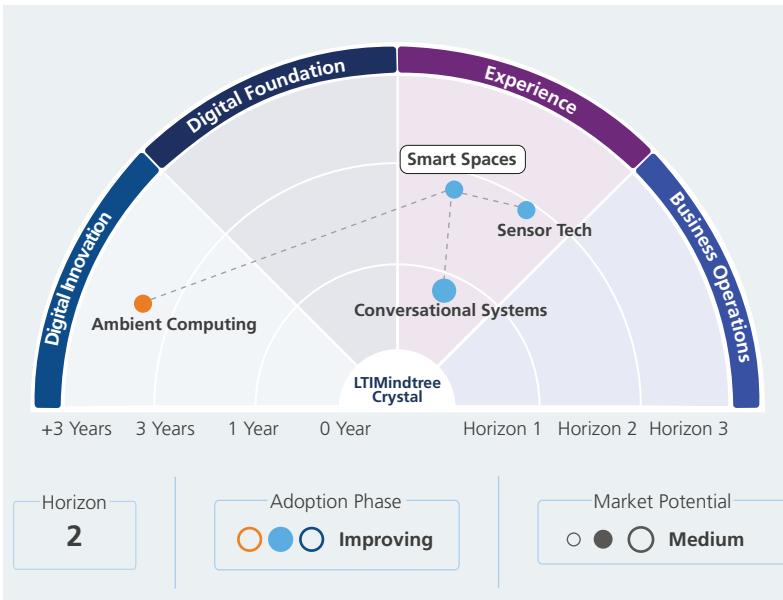
Smart Spaces

Smart spaces leverage IoT, sensors, and AI to create interconnected environments that enhance efficiency, comfort, and convenience. These spaces optimize resource management across industries like banking, manufacturing, and real estate, driving operational excellence and sustainability. Emerging technologies such as digital twins and ML are accelerating adoption, enabling smarter decision-making and improved user experiences. As smart space applications grow, they offer significant business value and new opportunities for innovation.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Energy management

Optimize energy usage through intelligent lighting, heating, and cooling systems.

Workplace optimization

Automate space utilization and adjust settings for productivity and comfort.

Smart infrastructure

Enhance traffic flow, waste management, and public services with data-driven systems.

Key Takeaway

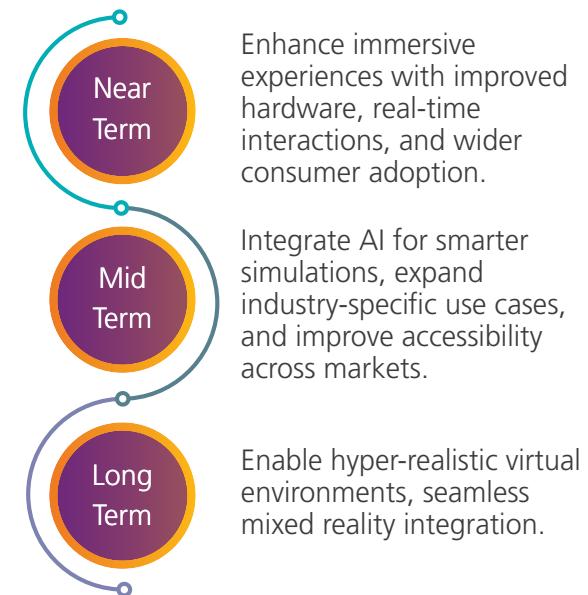
Smart spaces are revolutionizing how we interact with our environments, from homes to workplaces and beyond. By integrating IoT, AI, and advanced technologies, these spaces offer enhanced efficiency, personalization, and sustainability. However, it is crucial to address challenges with an ethical and inclusive approach. The future of smart spaces lies in creating interconnected, intelligent, and sustainable environments that improve the quality of life and drive business growth.

Interactive

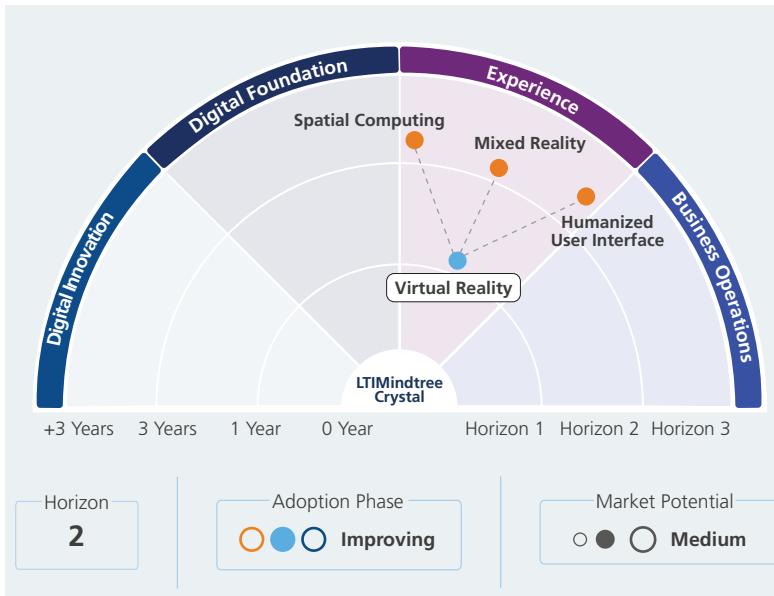
Virtual Reality

Virtual Reality (VR) leverages computer modeling and simulation to create immersive 3D environments for interaction. Despite economic challenges, investor interest in AR/VR has surged, driven by advancements like Google Glass, PokéMon Go, Microsoft HoloLens, and Apple Vision Pro. As adoption increases, sectors such as education, healthcare, retail, manufacturing, and entertainment are pioneering innovative applications and expanding practical use cases.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Remote collaboration

Enable immersive virtual meetings and team collaboration across locations.

Training simulations

Provide realistic, risk-free training for various industries, from healthcare to manufacturing.

Virtual tourism

Offer immersive travel experiences through virtual exploration of global destinations.

Key Takeaway

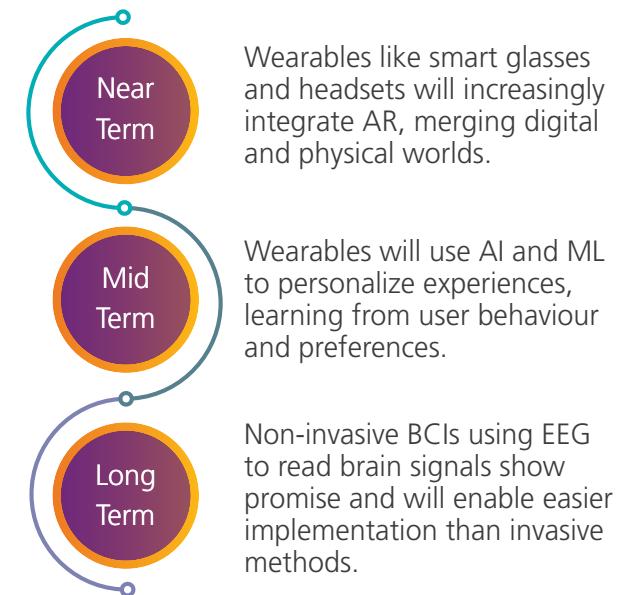
The future of VR holds promise beyond gaming, with enterprise and consumer markets set to expand. However, challenges such as high costs, limited accessibility, and the need for scalable infrastructure could slow adoption. As VR transitions from niche to mainstream, businesses that focus on user-centric design, while addressing these barriers, will emerge as leaders. Overcoming these hurdles will be essential to unlocking the full potential of VR in the digital landscape.

Interactive

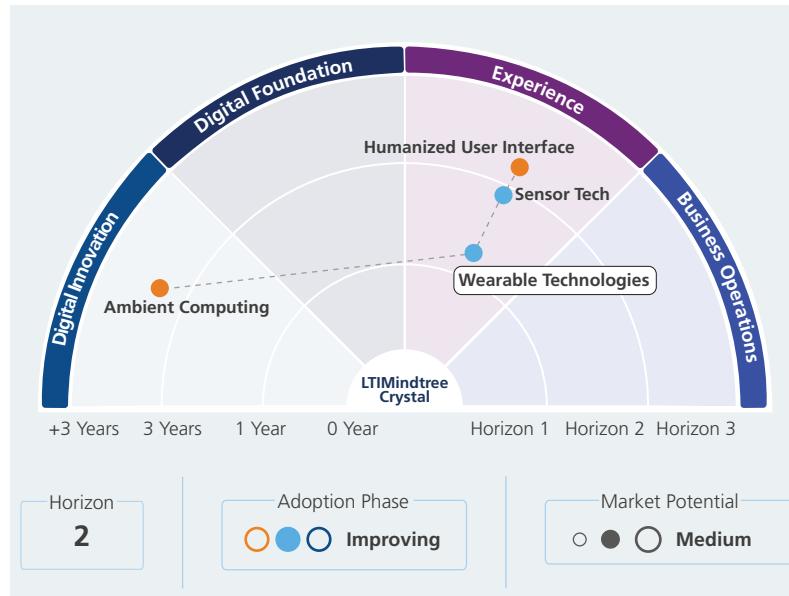
Wearable Technologies

Wearable technology leverages intelligent, connected and purpose-specific devices worn on users' bodies. These devices can appear as jewellery, accessories, medical tools, and various types of clothing or clothing elements. The most sophisticated examples of wearable technology include AI hearing aids, VR/AR headsets, etc. Advancements in materials science are revolutionizing wearables, enhancing functionality, integration, and use.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Workplace safety

Wearables can track environmental conditions and worker health to improve safety in dangerous settings.

Navigation

GPS-enabled wearables help with navigation and location tracking.

Health monitoring

Wearables can monitor vital signs, sleep patterns, and physical activity, offering valuable health insights.

Key Takeaway

In 2024, the wearable market saw shipments of approximately 560 million devices, with earwear leading at nearly 350 million units. Smartwatches, combining smartphone and fitness tracker features, were the second most profitable segment. Market growth is driven by the demand for compact, all-in-one devices, AR/VR integration, and affordable designs, offering significant opportunities for wearable technology expansion.

Interactive

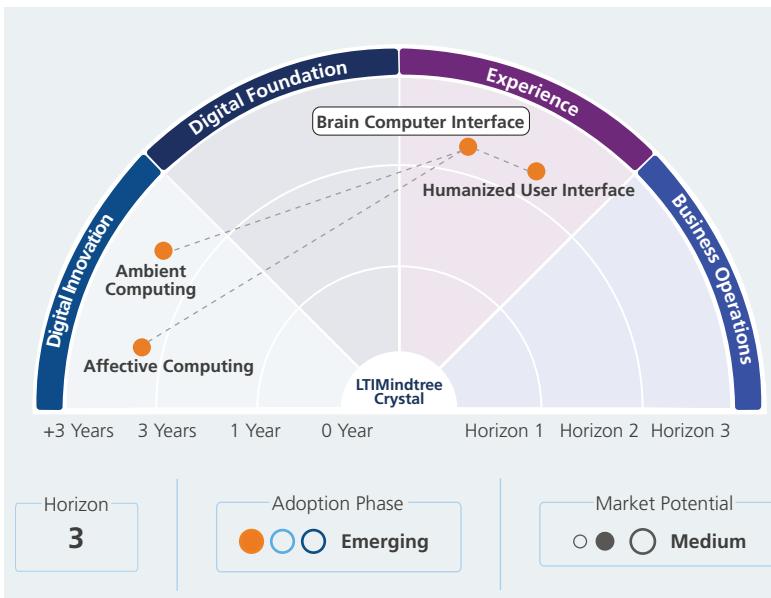
Brain Computer Interface

Brain-computer Interface (BCI) technology captures brain activity and converts it into signals to control devices like prosthetics, computers, or robots. Primarily used in medical and research settings to aid individuals with disabilities, BCI is becoming more accessible and affordable. Consumer-grade devices, such as Muse and NeuroSky headsets, are now available. Advances in AI and ML are enhancing the accuracy and responsiveness of BCIs.

Technology Advancement

- Near Term:** Enhanced algorithms for signal processing and ML are expected to increase reliability and usability of BCI.
- Mid Term:** Non-invasive BCIs are anticipated to become more common, thanks to their reduced risk and affordability.
- Long Term:** Development of BCI systems to interpret brain activity for speech-impaired individuals.

Radar View & Related Trends



Key Use Cases

Medical rehabilitation

Restore function to patients with neuromuscular disorders like cerebral palsy or those paralyzed by conditions such as a paralytic stroke.

Smart home control

Control smart home devices using thoughts, primarily for individuals with mobility challenges.

Neuro controlled prosthetics

Control prosthetic limbs, enabling movement for amputees or persons with severe motor disabilities.

Key Takeaway

The brain-computer interface market is on a growth trajectory due to technological advancements, increased funding, and demand for innovation. AI and VR are crucial in enhancing BCI applications by processing complex brain signals into commands, enhancing their overall functionality and responsiveness. As technology evolves, BCIs may become integral to daily life, providing new digital interactions.

Interactive

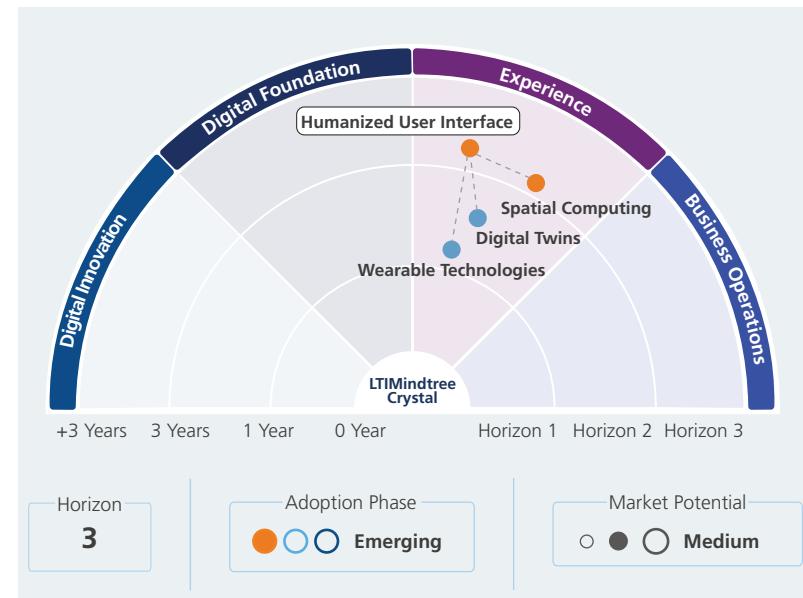
Humanized User Interface

Humanized User Interface (HUI) brings a personal touch to digital interactions, enhancing relationships beyond automated processes. Traditionally, business interfaces have been complex, requiring specific skills. Users often find pressing buttons, turning knobs, and typing on keyboards frustrating and inefficient. Humanizing digital experiences foster value and connection, improving user experience, enhancing operational efficiency, reducing errors, and accelerate training. By adopting a conversational tone, personalization, empathy, and responsiveness, businesses can enhance customer satisfaction, loyalty, and advocacy.

Technology Advancement

- Near Term:** Improved consistency and usability for multi-lingual voice commands, gestures and text-to-speech.
- Mid Term:** Emotionally intelligent immersive interfaces, offering a blend of voice, text, gesture and AR/VR.
- Long Term:** Adaptive human-like interfaces with deep contextual and cultural understanding.

Radar View & Related Trends



Key Use Cases

Interactive data visualization

Creating dynamic visual representations of data that users can manipulate to gain insights.

Knowledge discovery and search

NLP-driven search engines to understand natural language.

Multimodal assistance

Seamless interaction with business dashboards using chatbots and gestures.

Key Takeaway

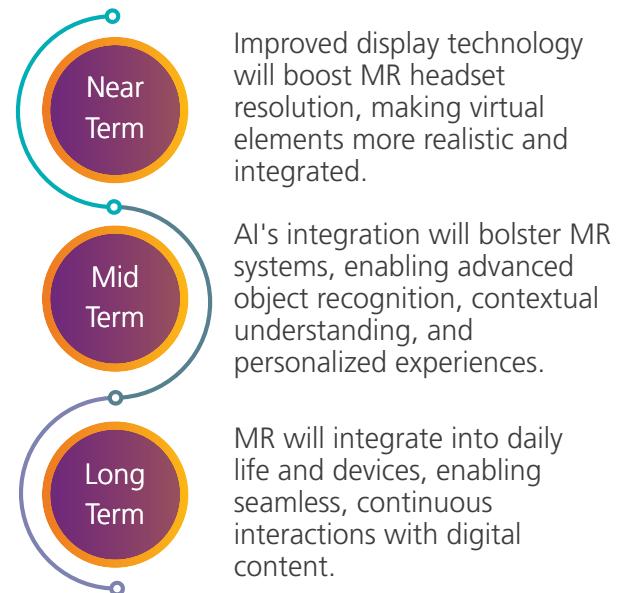
HUI offers enterprises the opportunity to bridge the skill gap of employees to effectively leverage complex technologies like AI, ensuring that the workforce is well-equipped to handle advanced systems and drive innovation. HUI is also impacting end users' and customers' experiences by integrating humanized AI solutions, making interactions personalized, empathetic, and emotionally resonant, thereby transforming the digital landscape into a more engaging and meaningful environment.

Interactive

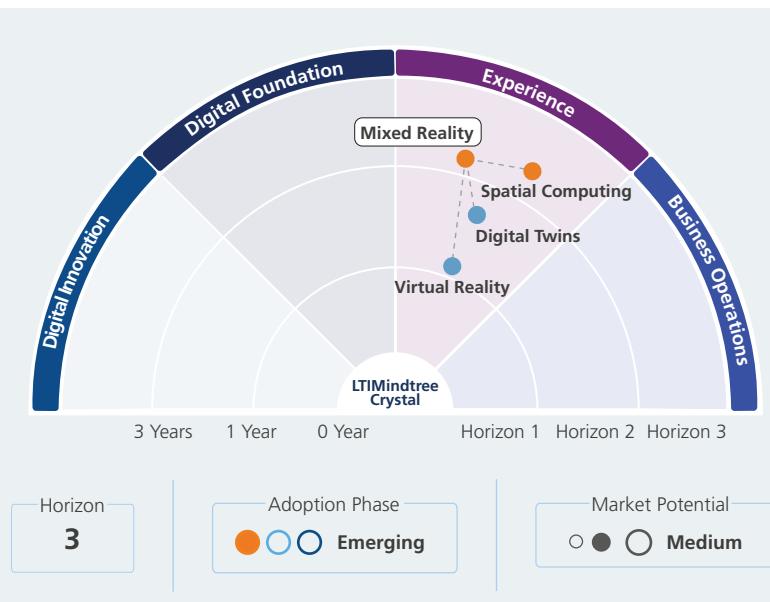
Mixed Reality

Mixed Reality (MR) is a modern technology that combines Virtual Reality (VR) and Augmented Reality (AR) to create immersive experiences. It enables natural and intuitive 3D interactions between humans, computers, and the environment. This new reality leverages advancements in computer vision, graphics processing, display technologies, input systems, and cloud computing. According to Gartner, the market for head-mounted displays is expected to reach USD 370 billion by 2034.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Remote collaboration

MR enables virtual meetings, enabling team members to interact with 3D models and whiteboards as in-person.

Gaming and entertainment

MR enhances gaming by merging virtual elements with the real world, creating immersive, interactive environments.

Healthcare

MR aids medical training, surgical planning, and patient care with detailed 3D visualizations of anatomy and procedures.

Key Takeaway

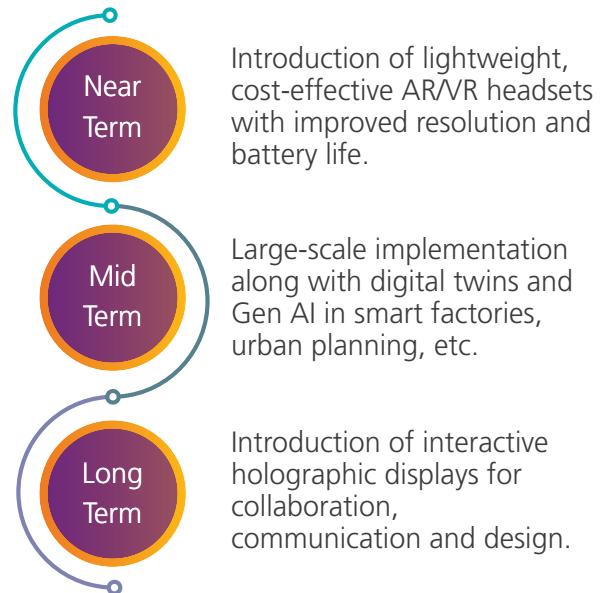
Mixed Reality (MR) combines the semi-digital features of AR with the fully virtual environments of VR. According to IDC, the mixed and extended reality headsets industry will grow from 6.7 million units in 2024 to 22.9 million in 2028, with a CAGR of 36.3%. MR devices are projected to dominate, accounting for over 70% of the volume in 2028.

Interactive

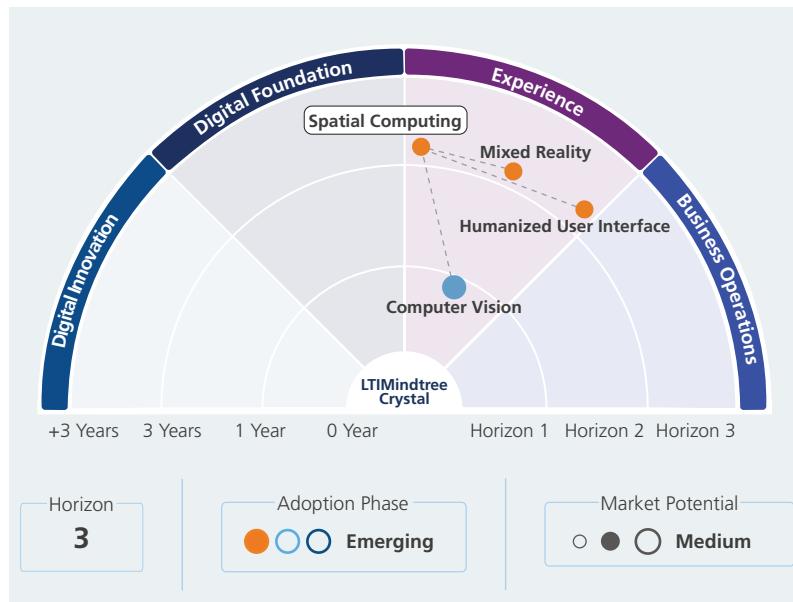
Spatial Computing

Spatial computing redefines how humans interact with digital information, particularly with machines in real-world environments. This technology facilitates dynamic 3D visualization of real-time products, and industrial spaces, and fosters cross-team collaboration. The spatial computing market is expected to reach USD 300 billion by 2030 at a CAGR of 30%. Although currently in a nascent phase, spatial computing provides unparalleled visualization and interaction capabilities that enhance efficiency, learning, and problem-solving skills.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Remote collaboration

Collaborative design using holograms and 3D visualization.

Immersive learning

Transforms trainings and education through interactive AR/VR lessons, virtual labs, etc.

Smart cities

Facilitates urban planning, traffic management and resource optimization using spatial data.

Key Takeaway

Spatial computing is a gamechanger in enabling efficiency, precision and creativity. However, challenges like high costs, data privacy concerns, etc. must be handled mindfully. As the ecosystem evolves and collaboration strengthens, the true potential of spatial computing will reshape industries, improving decision-making and redefining how we interact with technology and spaces.



Segment 4

Business Operations

Sub-segments: Platform Operations | Enterprise Automation

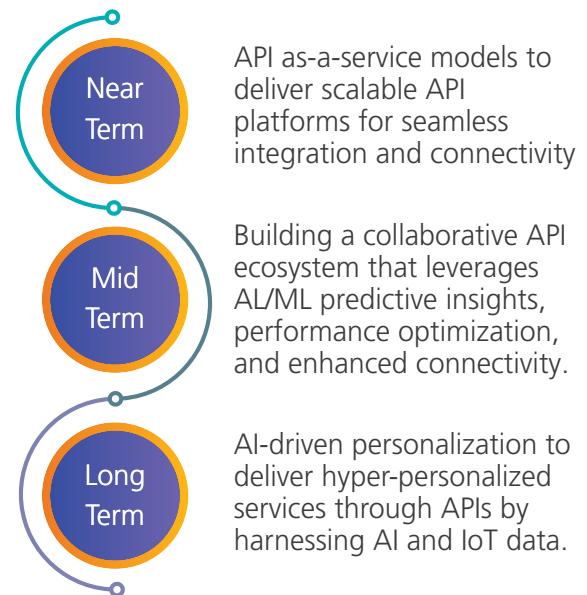


Platform Operations

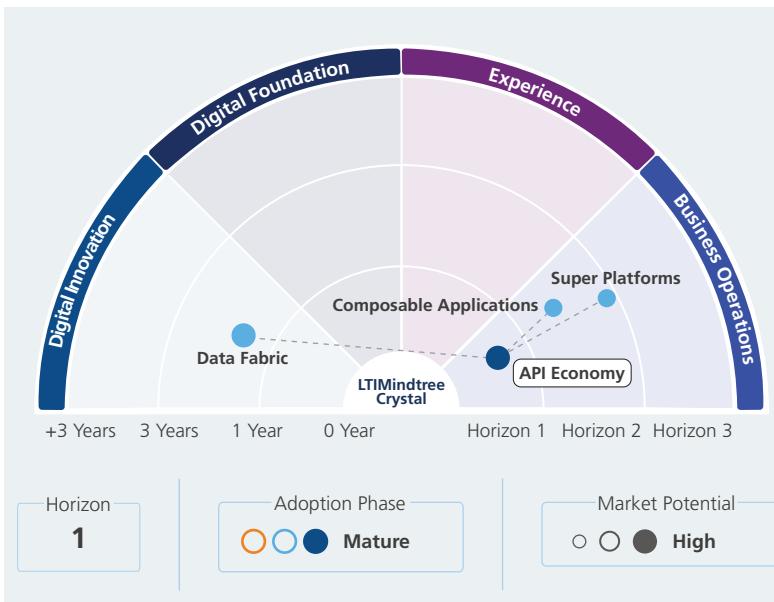
API Economy

The API economy is transforming industries by enabling seamless connectivity between software applications. It drives innovation, efficiency, and scalability by allowing businesses to leverage third parties or internal services. APIs enhance productivity, foster reusability, and reduce complexity. As digital ecosystems expand, integration requirements grow more complex, and with the adoption of hybrid systems, we are convinced of aggressive APIfication of technology ecosystems.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Ecosystem collaboration

Facilitate real-time integration across systems for enhanced collaboration and quicker decisions.

Operational efficiency

Improve operational efficiency by streamlining integrations and automating workflows, reducing redundancies, and enabling seamless data exchange.

Personalized customer experience

Deliver tailored services by integrating user data and preferences across different platforms, enhancing customer experience.

Key Takeaway

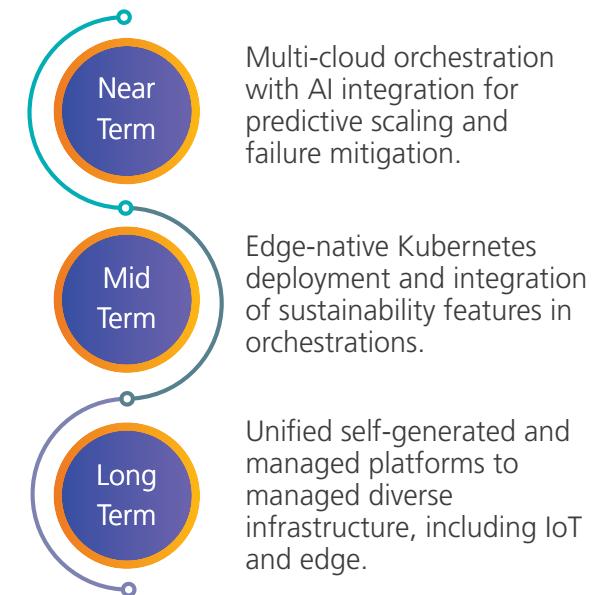
The API economy fosters innovation and seamless platform integration, tackling costly data silos through interoperability, reusability and scalability. Leveraging AI models and collaborative tools ensures scalable, high-quality APIs, empowering businesses to innovate, enhance efficiency, and stay competitive in the digital landscape. Adopting API-first strategies to launch programs like India Stack and ONDC, is driving the vision of open networks. These initiatives focus on accessibility and social inclusion, aiming to establish a level playing field for all members of the digital ecosystem.

Platform Operations

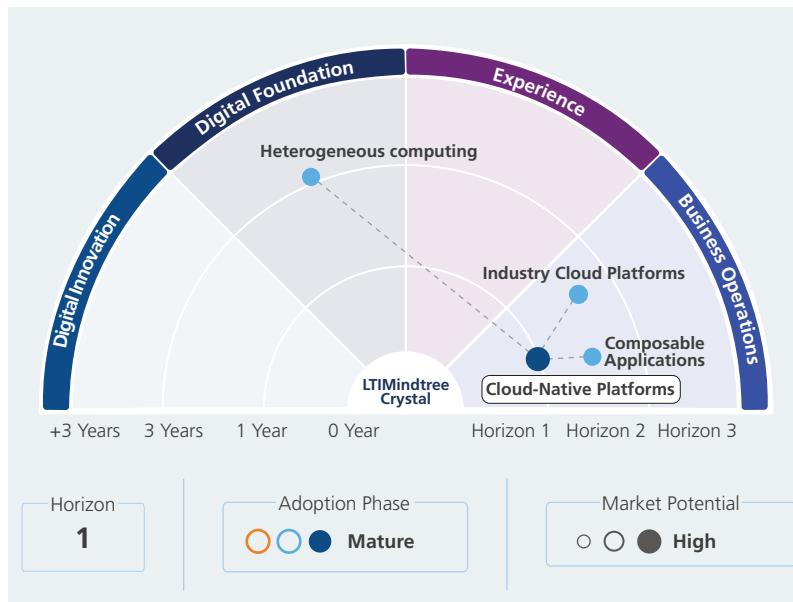
Cloud-native Platforms

Cloud-native platforms drive rapid innovation and scalability with elastic, resilient architectures. Developers manage applications using containerized microservices and orchestration, creating dynamic environments and seamless infrastructure management. This enhances IT capabilities and supports continuous integration and delivery. Cloud-native platform adoption has surged, allowing businesses to build, deploy, and scale applications efficiently. This reduces complexity and improves repeatability, fostering faster time-to-market, better customer experiences, agility, and innovative thinking within organizations.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Application modernization

Transforming monolithic legacy systems into microservice-based architectures.

High performance computing

Containerized workloads leveraging fractional GPUs for AI/ML model training and inference.

SaaS application delivery

Cost-effective auto-scaling for user demand in multi-tenant deployments.

Key Takeaway

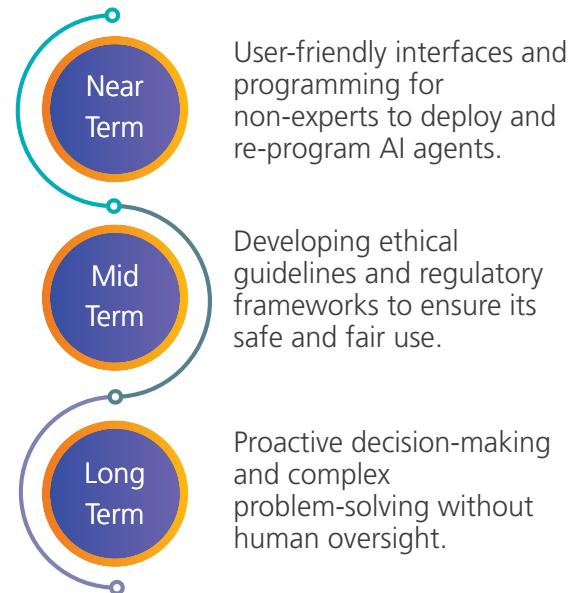
While cost savings and efficiency remain important, security, complexity, sustainability and reliability are now top concerns for adopting cloud-native practices. Despite its growing adoption, standardization is lacking, causing issues with repeatability and scalability in application development and deployment. There is an urgent need for platforms that offer consistent, repeatable patterns to manage cloud-native complexities and streamline application production.

Enterprise Automation

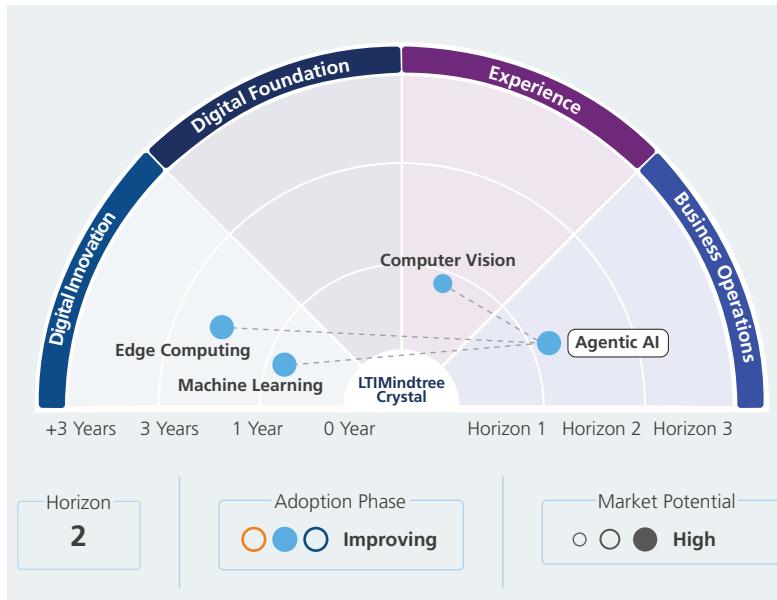
Agentic AI

Agentic AI is used to automate repetitive and time-consuming tasks, helping create a more dynamic and responsive work environment, and enabling human workers to focus on tasks that require creativity and critical thinking. With the advancement of Agentic AI, bots are expanding their capabilities from responding queries to executing complex tasks. This requires robust algorithm design to detect events in real-time and execute tasks at optimal speeds. Agentic AI is evolving from simple, task-oriented bots to more sophisticated, autonomous agents.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Arbitrage bots

Enabling peer-to-peer transactions in decentralized exchanges without relying on traditional intermediaries.

Customer service

Process customer data into a knowledge graph, transcribing conversations in real-time, and analyzing them to interpret the results.

AIOps

Collect and aggregate data from various IT components to detect events in real-time and execute tasks at optimal speeds.

Key Takeaway

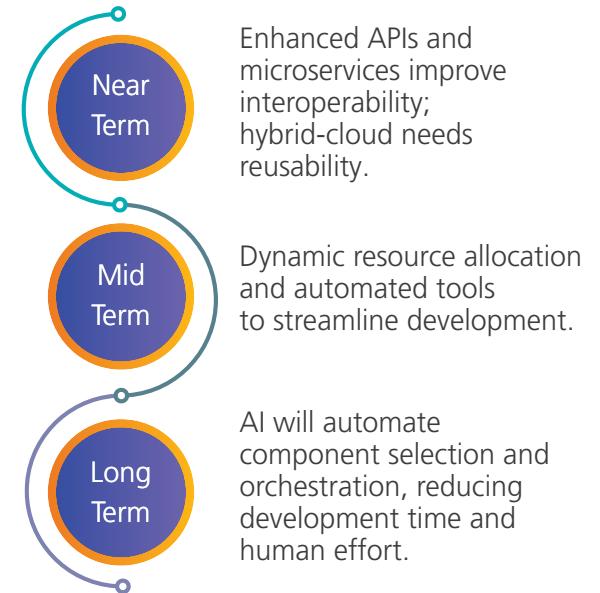
Agentic AI-powered bots will be capable of operating independently, making decisions with real-time data and pre-defined objectives. They will be able to anticipate needs and act without explicit instructions, collaborating with other AI agents for complex tasks spanning various business components. However, developing such advanced bots requires sophisticated governance framework to handle algorithm bias.

Platform Operations

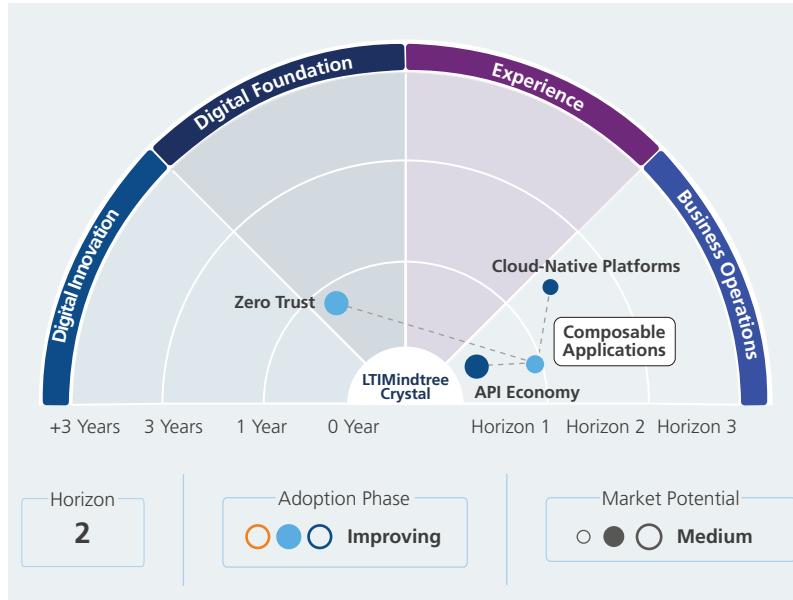
Composable Applications

Assembled from interchangeable components, composable applications facilitate rapid adaptation, scalability, and innovation. The core advantage lies in the ability to swiftly assemble and reassemble components to address evolving business requirements. Enhanced APIs, microservices, and reusable business services from a shared component catalog are integral to composable applications. According to Gartner, by 2025, 60% of new software-as-a-service (SaaS) designs will support both UI-first and API-first access, establishing composability as a standard practice.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Customer relationship management (CRM)

Uses permanent ledgers to efficiently track and trace supply chain issues back to their source.

Workflow automation

Integrating workflow components to build adaptive, integrable and reusable workflows to suit dynamic and ever-changing business needs.

Content management systems (CMS) modules

Developing and integrating CMS modules to manage diverse content without re-deploying entire applications.

Key Takeaway

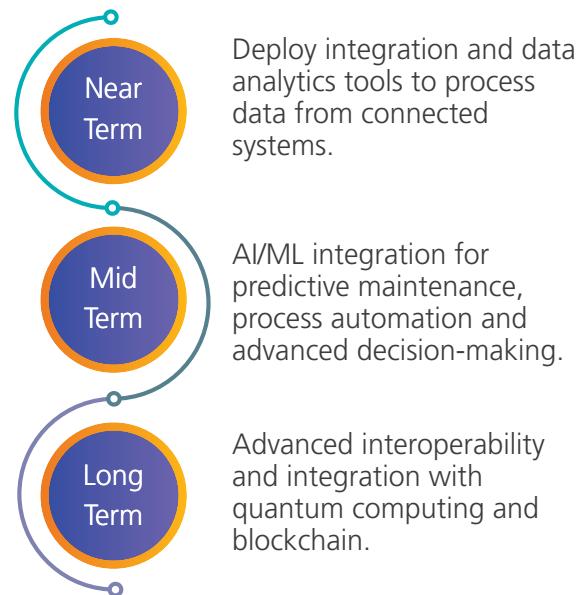
The rise of microservices and API-driven functionalities is leading to composable applications. However, challenges like interoperability, data consistency, security, reliability, inadequate testing for integrations, and component management persist. We anticipate that architectural best practices will evolve to address these issues, moving towards more robust composable architectures.

Platform Operations

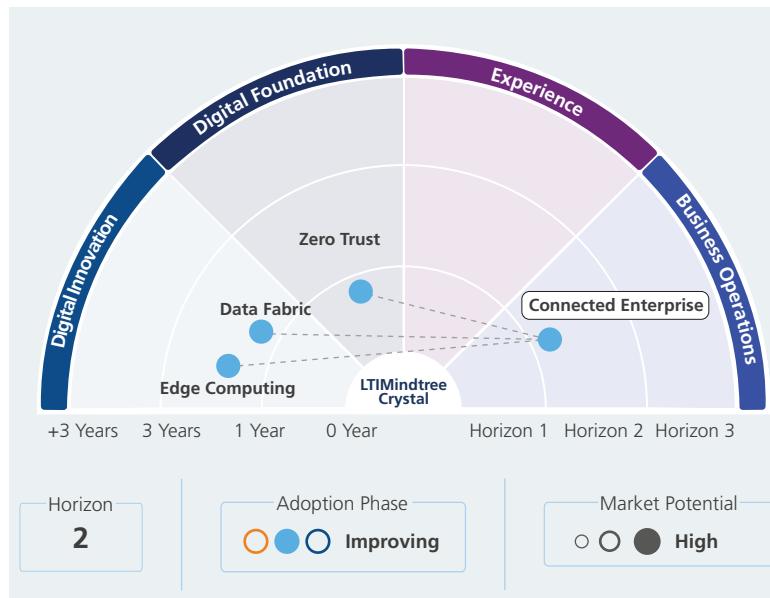
Connected Enterprise

A connected enterprise aims at seamless business operations by integrating people, and systems. In today's hyper-competitive world, its importance lies in breaking down silos, enabling real-time decision-making, and fostering collaboration among stakeholders. Technologies like 5G, Internet of Things (IoT), AI, and edge computing create a new value chain and digital touchpoints. Together, these technologies enable a connected enterprise to work with all its components in synergy for better decision-making and greater efficiency.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Real-time asset monitoring

Enables predictive maintenance and optimizes operational aspects.

Hyper-personalization

Personalize customer experience, driving loyalty and revenue based on data collected from connected systems.

Remote operations and monitoring

Enables businesses to manage dispersed assets through connected devices and dashboards.

Key Takeaway

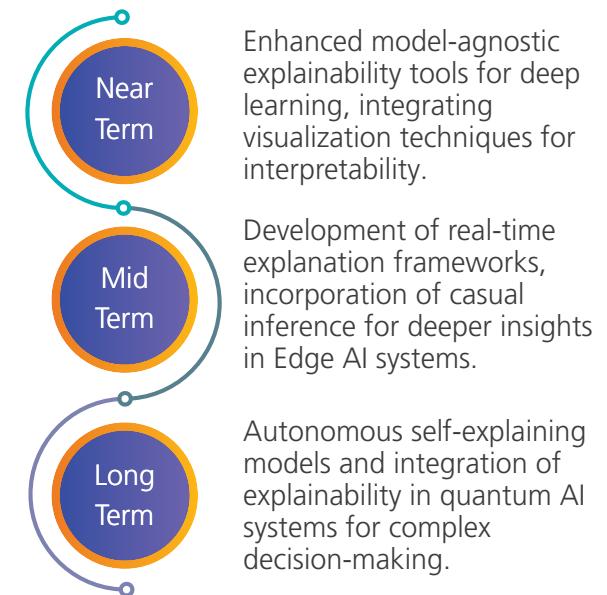
A connected enterprise enables organizations to become more agile with data-driven ecosystems by integrating IoT and cloud technologies. With advancements in technologies such as AI and digital twins, the connected enterprise is poised to unlock new possibilities, including autonomous operations. However, challenges such as cybersecurity and high initial investments persist, necessitating strategic planning and robust governance to address them. As organizations overcome these challenges, the connected enterprise will emerge as a key driver of digital transformation and sustainability.

Enterprise Automation

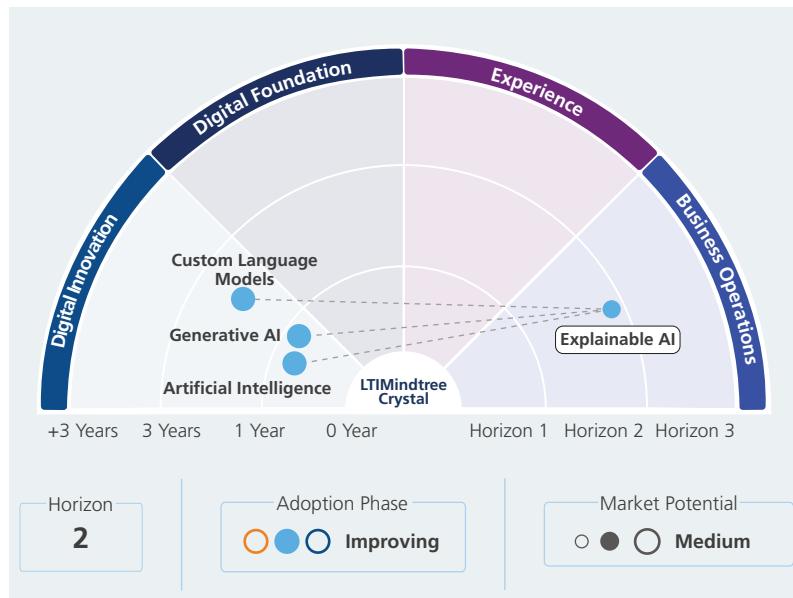
Explainable AI

Explainable AI refers to AI systems designed to provide clear, understandable and interpretable insights into how decisions are made. It addresses explainability concerns of AI models, enhancing trust and accountability. Gartner predicts that by 2026, over 60% of large organizations will use explainable AI in business-critical decisions. Through explaining decisions, AI systems can undergo more accessible audits and testing, facilitating the identification and correction of errors and biases within the systems.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Predictive maintenance

Root cause analysis of machine failures and explainability for efficient machine maintenance.

Explainable diagnostic

Interpretable diagnostic in imaging science and risk prediction models for life-threatening diseases.

Transparent financial credentials

Explainable credit score analysis, fraud detection explainability and rationale in algorithmic trading.

Key Takeaway

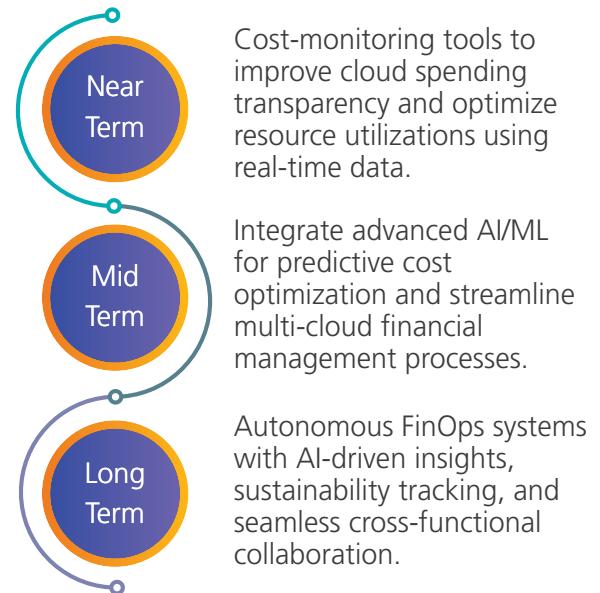
Explainable AI could act as a gamechanger because it bridges gap between complex AI models and human understanding, enabling trust, transparency and upholding ethics. It is critical for most of the industries as it addresses explainability challenges. Despite these positives, it is facing challenges like lack of standardized frameworks and model inaccuracy. As explainable AI evolves, it can drive responsible AI adoption, making AI systems more user-friendly and impactful.

Platform Operations

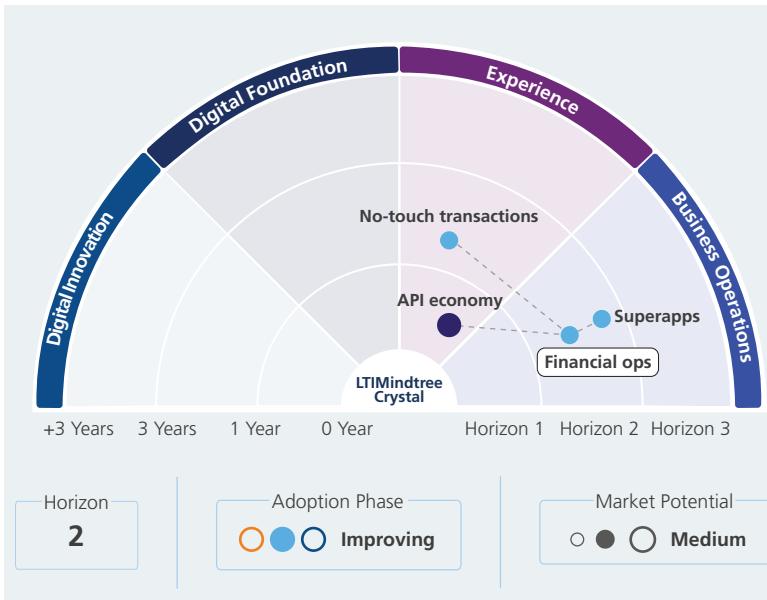
Financial Ops

FinOps is a strategic framework that unites engineering, finance and business teams to maximize cloud value through financial accountability and data-driven decisions. It goes beyond cost monitoring to align cloud expenses with business goals, optimize ROI, and drive operational efficiency. As FinOps evolves, leveraging AI, empowering teams, enhancing cost governance, and prioritizing sustainability are key to achieving financial operational excellence in today's dynamic cloud landscape.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Budget forecasting

Predict cloud spending using AI for accurate financial planning.

Multi-cloud governance

Manage costs across diverse cloud environments with unified visibility.

Sustainability tracking

Optimize cloud usage to reduce environmental impact and energy consumption.

Key Takeaway

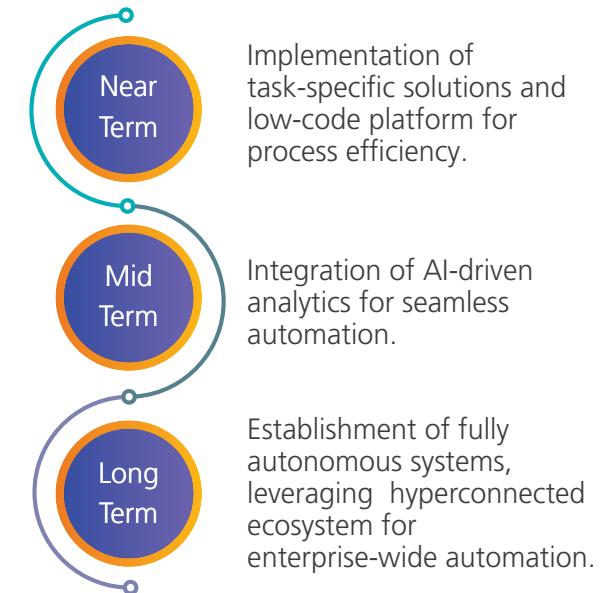
FinOps, powered by AI, is transforming cloud cost management into a strategic advantage. By automating analysis, predicting resource needs, and identifying hidden costs, businesses gain real-time visibility and control. As AI evolves, FinOps tools will enable proactive cost optimization and capacity planning. Organizations investing in FinOps today will align cloud spending with business growth, ensuring quality, efficiency, and measurable ROI in an evolving cloud landscape.

Platform Operations

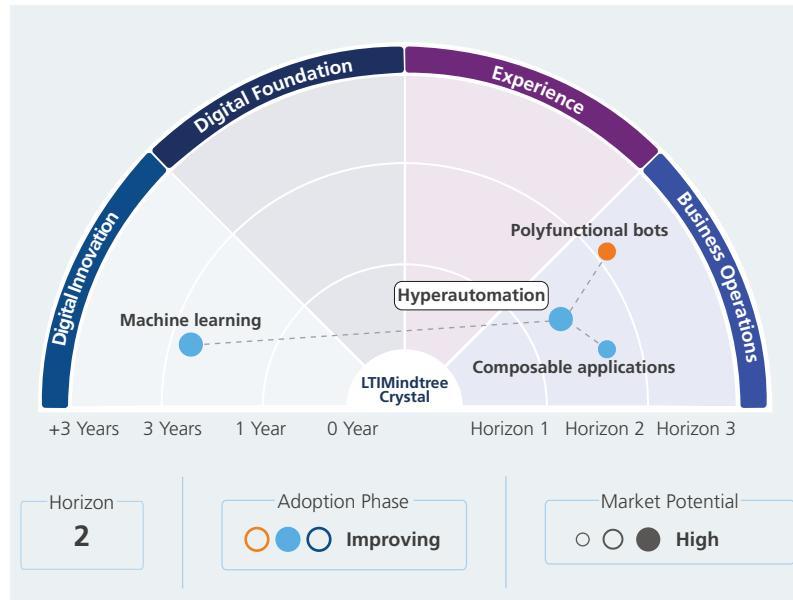
Hyperautomation

Hyperautomation is a strategic approach that leverages advanced tools like Robotic Process Automation (RPA), low-code platforms, and process mining to automate and optimize business and IT processes at scale. Driving operational excellence and digital transformation enhances accuracy and efficiency. With 90% of large enterprises adopting hyperautomation, its growing demand underscores its critical role in fostering resilience and innovation across industries.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Cognitive process automation

Automating decision-making with AI-driven insights and analytics.

Self-healing systems

Proactively resolving IT issues using predictive algorithms.

Digital twin workflows

Synchronizing physical operations with real-time virtual simulation.

Key Takeaway

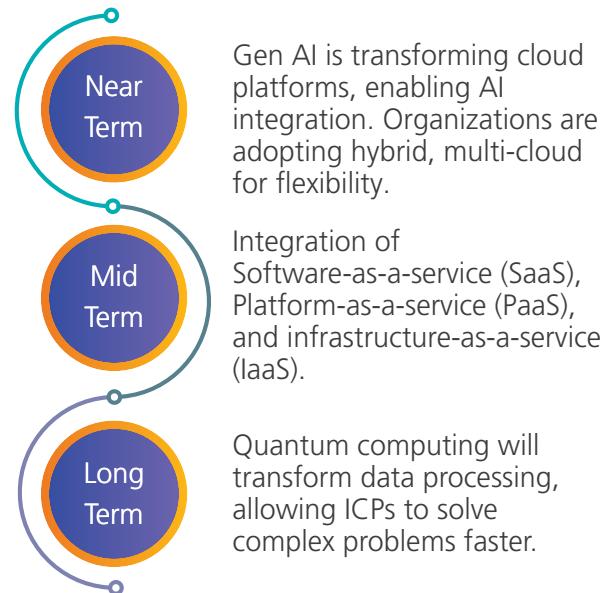
Hyperautomation is a game-changer for industries aiming to reduce manual intervention and improve efficiency. By integrating AI, ML, and automation tools, businesses can achieve higher accuracy, agility, and operational performance. As this transformative technology evolves, embracing hyperautomation is essential to remain competitive in today's digital landscape. Combining automation with human expertise unlocks unprecedented potential, driving success and innovation across domains.

Enterprise Automation

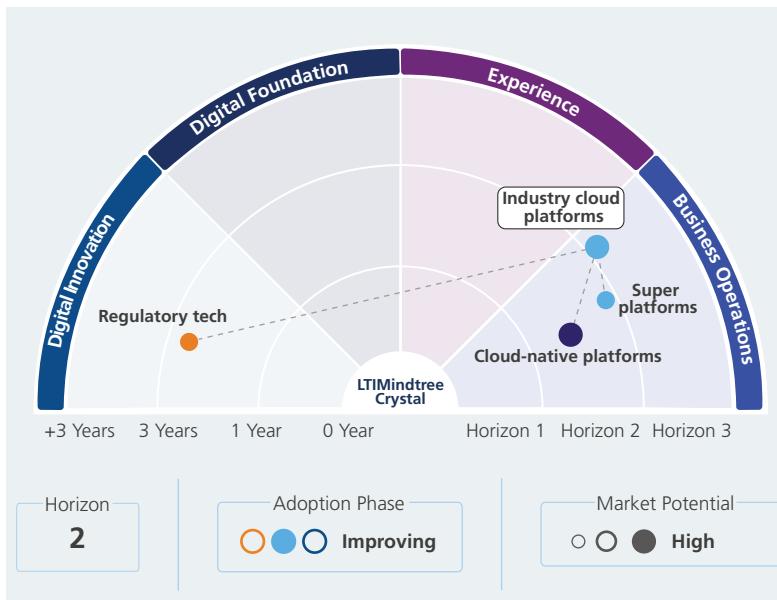
Industry Cloud Platforms

Industry Cloud Platforms (ICPs) are customized cloud solutions tailored to specific industries, offering adaptable and industry-relevant capabilities. They combine the underlying building blocks of cloud services-as-a-platform with composable capabilities. This enables organizations to enhance existing processes and embark on differentiated transformation and innovation initiatives, addressing mission-critical priorities. The key differentiator for ICPs is their focus on enhancing existing processes and enabling industry-specific transformation and innovation.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Resource optimization

Optimizing resource management to lower expenses and enhance productivity.

Enhanced security and compliance

Focus on industry-specific security and regulatory compliance.

Fuel industry innovation

Using pre-built tools and data models, businesses innovate and experiment quickly.

Key Takeaway

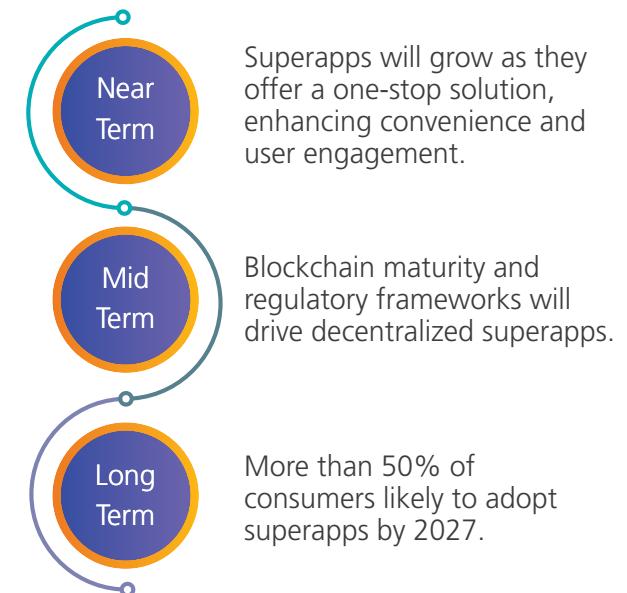
Industry cloud platforms leverage advanced software components like packaged business capabilities, industry-aware data fabrics, and composable tooling to surpass traditional cloud solutions and deliver extra value. Gartner predicts that by 2027, over 70% of the enterprises will adopt these platforms to speed up their business initiatives.

Platform Operations

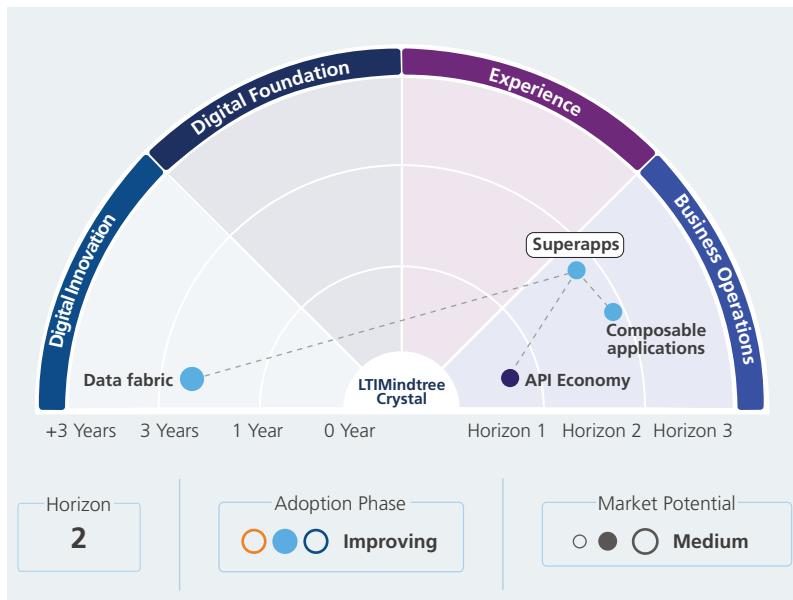
Superapps

A superapp is a single application that offers multiple diversified services for personal or commercial life. Superapps signify a major advancement in mobile applications. In contrast to traditional apps that concentrate on a single function or service, a superapp is a multifunctional platform that integrates various features and services into a unified interface. Presently, the superapps adoption is low in certain regions, however Gartner predicts that over 50% of the world will use superapps by 2027.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Integrated payment

Mobile payment capabilities, digital wallet features, loans, and credit service.

Quick-commerce and hyperlocal integration

Uniform customer experiences allowing consumers to shop across product categories.

Uberization of services

Combining flights, accommodations, car rentals, and activities into one platform allows users to plan and book their trip in a streamlined manner.

Key Takeaway

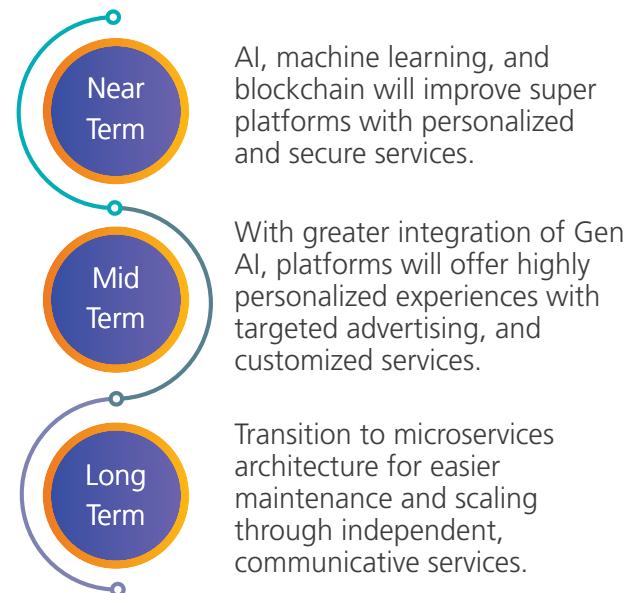
Superapps are poised to become a powerful tool for businesses to serve customers like never before. They promise an uncluttered experience through minimal apps. As users become more tech-savvy, superapps have the potential to serve multiple purposes and solve several issues, leading to greater demand. They will spark innovation, boost user engagement, and open new business opportunities in a competitive market.

Enterprise Automation

Super Platforms

Super platforms are expansive digital ecosystems that integrate diverse services like social networking, e-commerce, and digital payments into a single interface. They aim to maximize user engagement and convenience by offering a seamless, personalized experience through advanced technologies such as AI, machine learning, and blockchain. The potential of super platforms is vast, driven by service expansion, technological advancements, global reach, and localized integration of emerging technologies.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Unified commerce experiences

Unified shopping, payment, real-time delivery tracking and customer interaction experiences.

Embedded payment gateways

Consumers can store financial information from various providers and manage all their transactions from one place.

Engage multi-service options

Users can access various services from one platform, enhancing overall sales.

Key Takeaway

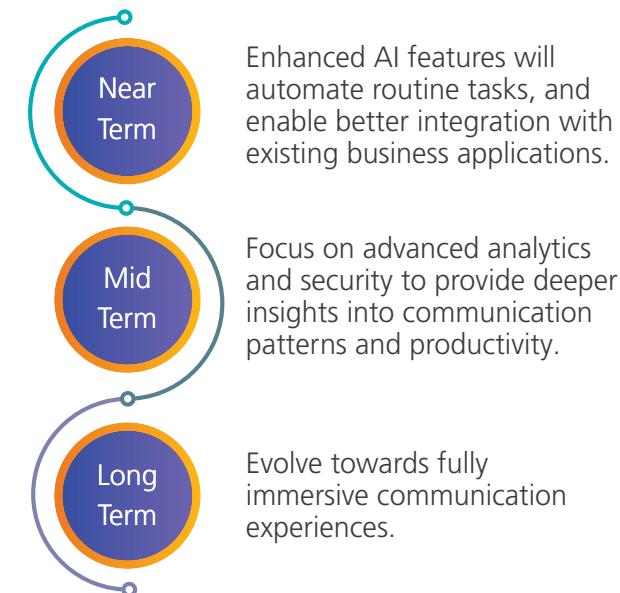
Super platforms will continue to revolutionize our digital interactions, driving even greater connectivity and efficiency in our daily lives. As these platforms evolve, they will likely integrate more advanced technologies, offering seamless and personalized experiences that cater to our diverse needs. This ongoing transformation promises to enhance convenience, foster innovation, and create new opportunities for individuals and businesses alike.

Platform Operations

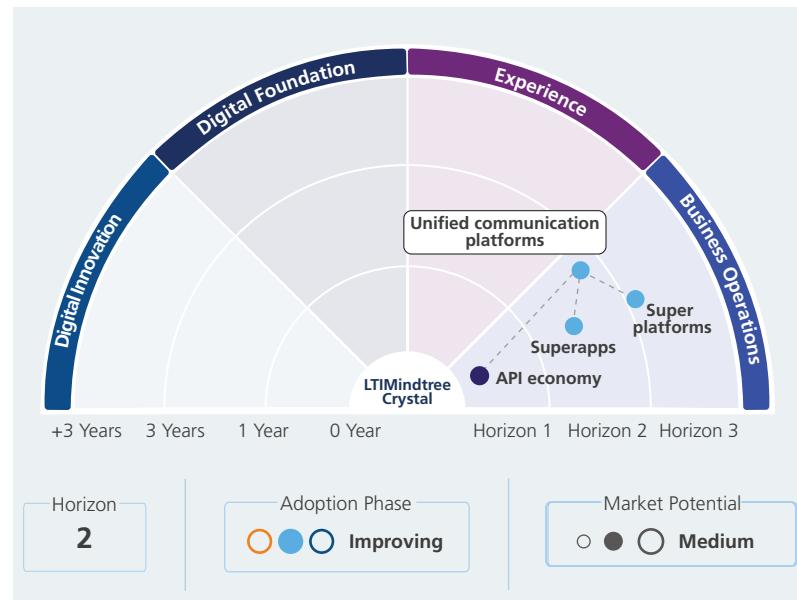
Unified Communications Platform

A unified communications (UC) platform combines VoIP, messaging, email, and video conferencing into one system to streamline operations and boost productivity. According to Gartner, global UC spend is expected to generate a CAGR of 2.4% from 2023 to 2028, with workplace transformation initiatives and hybrid work that are shaping investments. AI plays a crucial role by analyzing communication patterns, suggesting optimal meeting times, and predicting issues, thus aiding efficient team planning.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Interactive learning environments

Create virtual classrooms and facilitate remote learning, breaking down geographical barriers to education.

Enhancing customer experience

Offer personalized shopping experiences through video consultations and instant messaging.

Ensuring secure operations

Encrypted communication channels for confidential discussions with clients and secure document sharing.

Key Takeaway

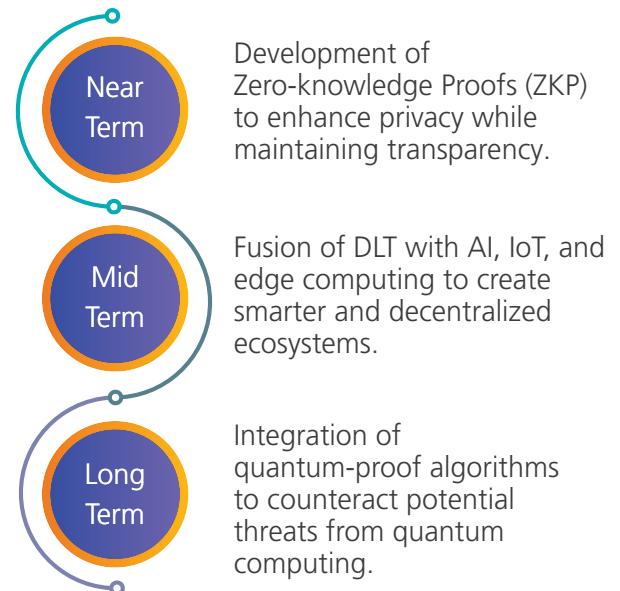
The future of Unified Communications-as-a-service (UCaaS) lies in enabling seamless collaboration irrespective of location. In 2025, an estimated 32.6 million Americans will work remotely. As hybrid work models become standard, advanced features are expected to enhance team interactions significantly. The evolution of UCaaS includes AI-powered threat detection systems that provide real-time security alerts and automated responses.

Platform Operations

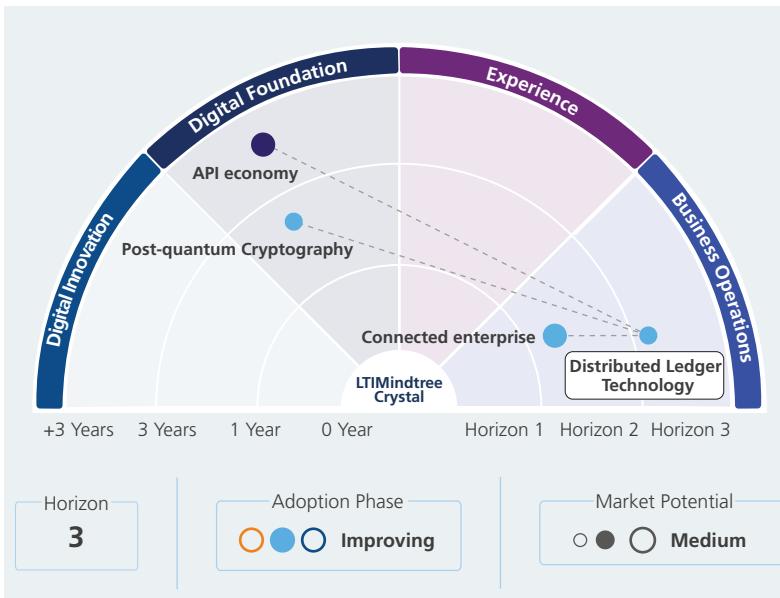
Distributed Ledger Technology

Distributed Ledger Technology (DLT) is a digital system designed to record asset transactions across multiple locations simultaneously. According to a data gathering and visualization firm, the global market for distributed ledgers is primarily driven by supply chain audits. Central banks have started adopting DLT in the form of Central Bank Digital Currencies (CBDCs), leveraging DLT as secure and efficient digital currencies.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Supply chain management

Uses permanent ledgers to efficiently track and trace supply chain issues back to their source.

Financial transactions

Facilitate faster and cheaper financial transactions by eliminating intermediaries.

Voting systems

Votes recorded on a blockchain can be verified publicly without disclosing voter identities.

Key Takeaway

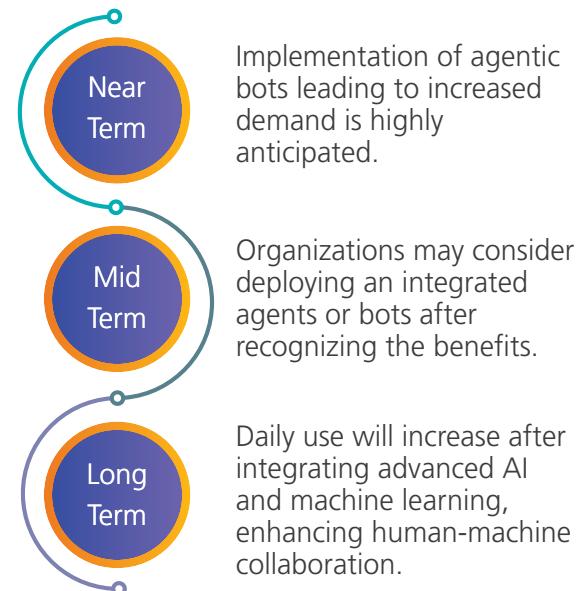
DLT technology is growing and its integration with AI, IoT, and other advanced technologies can significantly enhance operational efficiency. This synergy leads to improved supply chain management through automated workflow documentation and secure data sharing. AI's predictive power and blockchain's scalability optimize the supply chain by enabling prompt data analysis and timely actions such as delay alerts or smart contract execution.

Platform Operations

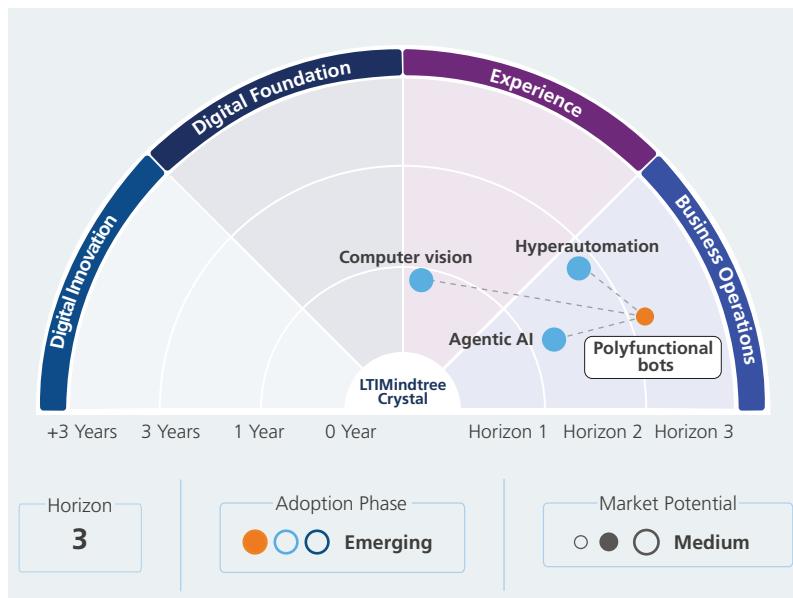
Polyfunctional Bots

Polyfunctional robots are advanced machines designed to perform multiple tasks, often beyond their original programming. They adapt to new tasks through learning and human instruction, eliminating the need for reprogramming. These robots can switch between tasks, making them highly adaptable and collaborative with humans. A leading research firm predicts that by 2030, 80% of humans will interact daily with smart bots, a significant increase from less than 10% today.

Technology Advancement



Radar View & Related Trends



Key Use Cases

Flexible manufacturing

Execute multiple tasks like welding and quality checks during product assembly.

Healthcare

Enhance surgeon capabilities, deliver medications, and monitor patient vitals as needed.

Retail

Help customers manage inventory and checkouts, improving service and efficiency through the adaptability of bots.

Key Takeaway

Polyfunctional bots will significantly enhance operational efficiency and scalability, driving cost savings and productivity across various industries. Vendors are generating significant media attention by offering competitive prices, thereby making advanced robotics more accessible. Although there is considerable variation in pricing and capabilities, early adopters are investigating the potential of these robots to perform multiple tasks, thus offering businesses flexibility and cost-efficiency.

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Glossary



AI	Artificial Intelligence	ESG	Environmental, Social, and Governance	PDF	Portable Document Format
AML	Anti-Money Laundering	FGPU	Fractional Graphics Processing Unit	PIA	Privacy Impact Assessments
B2B	Business-to-Business	FinOps	Financial Ops	PKI	Public Key Infrastructure
IT	Information Technology	FPGA	Field-Programmable Gate Array	PQC	Post-Quantum Cryptography
ADAS	Advanced Driver Assistance Systems	GANs	Generative Adversarial Networks	QKD	Quantum Key Distribution
AGI	Artificial General Intelligence	GPS	Global Positioning System	QSDC	Quantum Secure Direct Communication
AIOps	Artificial Intelligence for IT Operations	GPT	Generative Pre-trained Transformer	RAG	Retrieval Augmented Generation
API	Application Programming Interface	GPUs	Graphical Processing Units	RegTech	Regulatory technology
AR	Augmented Reality	HUI	Humanized User Interface	RoI	Return on Investment
ASI	Artificial Superintelligence	IaaS	Infrastructure-as-a-Service	RPA	Robotic Process Automation
ASIC	Application-Specific Integrated Circuits	ICPs	Industry Cloud Platforms	SaaS	Software-as-a-Service
B2C	Business-to-Consumer	IoT	Internet of Things	SD-WANs	Software-Defined Wide Area Networks
BCI	Brain-Computer Interface	ISAC	Information Sharing and Analysis Centers	SMEs	Small and Medium-sized Enterprises
BERT	Bidirectional Encoder Representations from Transformers	KYC	Know Your Customer	SoC	System-on-Chips
BYOD	Bring Your Own Device	LEO	Low Earth Orbit	TPU	Tensor Processing Units
CAGR	Compound Annual Growth Rate	LiDAR	Light Detection and Ranging	UC	Unified Communications
CBDC	Central Bank Digital Currencies	LLM	Large Language Models	UCaaS	Unified Communications-as-a-Service
CMS	Content Management System	MEC	Mobile Edge Computing	UI	User Interface
CPS	Cyber-Physical System	ML	Machin Learning	USD	United States Dollar
CPUs	Central Processing Units	MR	Mixed Reality	VAE	Variational Autoencoders
CRM	Customer Relationship Management	NFT	Non-Fungible Tokens	VoIP	Voice over Internet Protocol
D2D	Device-to-Device	NLP	Natural Language Processing	VPN	Virtual Private Network
DAO	Decentralized Autonomous Organization	NPU	Neural Processing Units	VR	Virtual Reality
DLT	Distributed Ledger Technology	NTN	Non-Terrestrial Networks	ZKP	Zero-Knowledge Proof
DPA	Data Protection Authority	OCR	Optical Character Recognition		
EEG	Electroencephalography	OT	Operational Technology		

References

- How The API Economy is Changing in 2024, Steve Rodda, Nordicapis, May 22, 2024:
<https://nordicapis.com/how-the-api-economy-is-changing-in-2024/>
- Blockchain: It's More Than Just Crypto, Martha Bennett, Forrester, February 23, 2023:
<https://www.forrester.com/what-it-means/ep306-blockchain-myths/>
- CNCF Ecosystem Gaps, The Cloud Native Computing Foundation (CNCF), November 2024:
https://www.cncf.io/wp-content/uploads/2024/11/CNCF_2024_Ecosystem-Gaps-Survey-Report_v2.pdf
- The Next Generation of Intelligent, Composable Applications, IDC, May 10, 2024:
<https://blogs.idc.com/2024/05/10/the-next-generation-of-intelligent-composable-applications/>
- KPMG Connected Enterprise, Andrian Clamp, Rick Rose, KPMG:
<https://kpmg.com/xx/en/what-we-do/services/advisory/consulting/kpmg-connected-enterprise.html>
- Why FinOps matters, Allan Tan, FUTURECIO, May 2, 2023:
<https://futurecio.tech/the-platformification-of-legal-operations-tech/>
- Gartner Says 30% of Enterprises Will Automate More Than Half of Their Network Activities by 2026, Gartner, September 18, 2024:
<https://www.gartner.com/en/newsroom/press-releases/2024-09-18-gartner-says-30-percent-of-enterprises-will-automate-more-than-half-of-their-network-activities-by-2026>
- The landscape of financial services super-apps, Deloitte, October 2024:
<https://www2.deloitte.com/content/dam/Deloitte/in/Documents/financial-services/in-fs-the-landscape-of-financial-services-super-apps-noexp.pdf>
- Digital Identity by Deloitte, Deloitte:
<https://www.deloitte.com/global/en/services/risk-advisory/services/digital-identity-by-deloitte.html>
- The Future of Green Computing in 2024 and the Rise of AI, Kyle Johnson, Cybernet, June 25, 2024:
<https://www.cybernetman.com/blog/what-is-green-computing-and-how-can-companies-start-applying-it/?srsltid=AfmBOophgx7ME-9uQKMggsNA1pQVozcUMm0S3AXKopFsHqR3JTUA0Oqy>
- What is Heterogeneous Computing and Why It Matters in 2024, EMB Global, June 14, 2024:
<https://blog.emb.global/explore-heterogeneous-computing/>
- Why NFT's are the future of the world, Crispino, Wishup Blog, April 4, 2024:
<https://www.wishup.co/blog/why-nfts-are-the-future-of-the-world/>
- The Rise of Quantum Computing, McKinsey & Company, April 24, 2024:
<https://www.mckinsey.com/featured-insights/the-rise-of-quantum-computing>
- Quantum sensing: Poised to realize immense potential in many sectors, Henning Soller, McKinsey & Company, June 10, 2024:
<https://www.mckinsey.com/capabilities/mckinsey-digital/our-in>
- 8 edge computing trends to watch in 2024 and beyond, Mary K. Pratt, Tech Target, January 18, 2024:
<https://www.techtarget.com/searchcio/tip/Top-edge-computing-trends-to-watch-in-2020>
- Hyper-Personalization: The Future of Customer Experiences, CX University, Mohamed Latib, November 6, 2024:
<https://cxuniversity.com/personalization-technology-marketing/#:~:text=Future%20Implications&text=We%20can%20expect%20to%20see,a nd%20support%20across%20various%20channels.>
- The NLP market is experiencing rapid growth, GlobalNewswire, February 20, 2024:
<https://www.globenewswire.com/news-release/2024/02/20/2831574/0/en/Natural-Language-Processing-Market-to-Reach-USD-453-3-Bn-by-2032-Amid-Growing-Research-on-NLP-Applications-in-Healthcare-Finance-and-Customer-Service.html>
- Global Optical Computing Markets 2025-2035, GlobalNewsWire, November 18, 2024:
<https://www.globenewswire.com/news-release/2024/11/18/2982542/28124/en/Global-Optical-Computing-Markets-2025-2035-Key-Opportunities-in-Data-Center-Acceleration-5G-6G-Communications-Quantum-Technologies-and-Green-Computing-Initiatives.html#:~:text=The%20global%20optical%20computing%20market,immense%20computational%20power%20and%20speed>
- The Future of Brain-Computer Interface Technology, Heena Singh, BCC Research, Nov 26, 2024:
<https://blog.bccresearch.com/the-future-of-brain-computerinterface-technology#:~:text=Emerging%20Technologies%20Shaping%20the%20CI%20Landscape&text=Another%20significant%20technological%20advancement%20is,sensors%20to%20monitor%20brain%20activity.>
- Computer Vision Market to Grow to hit a \$47 Billion Value by 2030, Edge Ai vision alliance, May 30, 2024:
<https://www.edge-ai-vision.com/2024/05/computer-vision-market-to-grow-by-81-and-hit-a-47-billion-value-by-2030/>
- The Future of Conversational AI: Trends for 2024 and Beyond, ChatBot, Jacquelyn Dunham, Apr 18, 2024:
<https://www.chatbot.com/blog/future-of-conversational-ai/>
- Why digital twins is becoming de facto in industrial enterprises, Arun Shankar, INTELLIGENT CIO, September 6, 2024:
<https://www2.deloitte.com/content/dam/Deloitte/us/Documents/regulatory/us-regulatory-future-of-regulatory-productivity-powered-by-regtech.pdf>
- Mixed and Extended Reality Headsets to Drive Strong Growth Through 2028, IDC, September 16, 2024:
<https://www.idc.com/getdoc.jsp?containerId=prUS52598524#:~:text=In%20total%2C%20IDC%20expects%20the,of%20the%20volume%20in%202028>
- The Future of Wearables: Exploring Next-Generation Technological Innovations, Tiffany Chavez, 9Meters, October 10, 2024:
<https://9meters.com/technology/the-future-of-wearables-exploring-next-generation-technological-innovations>