

HCLTech | Supercharging
Progress™

Tech Trends 2023

Business and Industry
trends edition

Brought to you by
HCLTech Brand and Thought Leadership Unit



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Introduction

2023 could hopefully be our first truly post-pandemic year, but, it won't be without its challenges.

The clouds of recession hang over some economies, while the energy crisis, the war in Ukraine and climate change related uncertainties are still looming large. Despite this, we believe that 2023 will overcome or make significant progress on many, if not all these hurdles, by embracing the two key lessons inherited from the pandemic years—resilient optimism and widespread digitalization.

We believe that we are still at a nascent stage of the digital revolution. Rapid digitalization during the pandemic years has led to the development of new enterprise workflows, increased efficiency of operations and the ability to rapidly pivot, but what is still left to be maximized is its massive potential for enabling innovation, the opportunities of its business incubatory powers and the sheer speed of operational scale it brings to the table.

We believe that 2023 will mark the start of a new phase in digital revolution—a phase when technology and digitalization will not be mere enablers of a business plan, but the business itself!

The one trend that we hope to take precedence over others this year is technology-led sustainability acceleration. Technology has an important role to play when it comes to environmental sustainability. Technology solutions can play an essential role in environmental sustainability: reducing the energy consumed by IT systems and processes, deploying analytics across value chains for better traceability of carbon footprints and building newer, smarter and more sustainable products.

Gartner expects that by 2025, 50% of CIOs will have performance metrics tied to the sustainability of the IT organization. This year will undoubtedly be critical for establishing and activating roadmaps to meet these long-term objectives.

“So many worlds, so much to do, so little done, such things to be,” wrote Lord Tennyson. This seems to succinctly sum up the mood as we prepare the technology agenda for 2023 to supercharge growth—sustainably.



“

The one trend that we hope to take precedence over others this year is technology-led sustainability acceleration.

Technology trends to watch out for in 2023

01. Digital Business >

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01

Digital Business

Top Trends in Digital Business



Anand Birje
President,
Digital Business Services

As we head towards another year where digital adaptability will drive business success, what will be the key that unlocks new value and better customer experiences? The answer lies in these three trends:

1. Operating model transformation –

Today, CXOs are seeking a seamless collaboration between business and technology teams to orchestrate a continuous modernization journey. The overarching goal is to build a comprehensive digital experience strategy that encompasses every aspect of the business by directing both teams to collaborate, ideate, plan and execute the transformation. As a result, organizations

are moving away from the waterfall method of annual enhancement in favor of a significantly more agile operating model. Here, business and IT teams can collaborate around products and value chains instead of functions and applications. It's no surprise then that agile working methods and continuous transformation ability have driven 75% of Fortune 500 enterprises to either embark on an IT operating model change journey or to plan for one.

2. AI-driven decision-making, including ESG -

AI is helping enterprises make informed decisions faster than ever before.

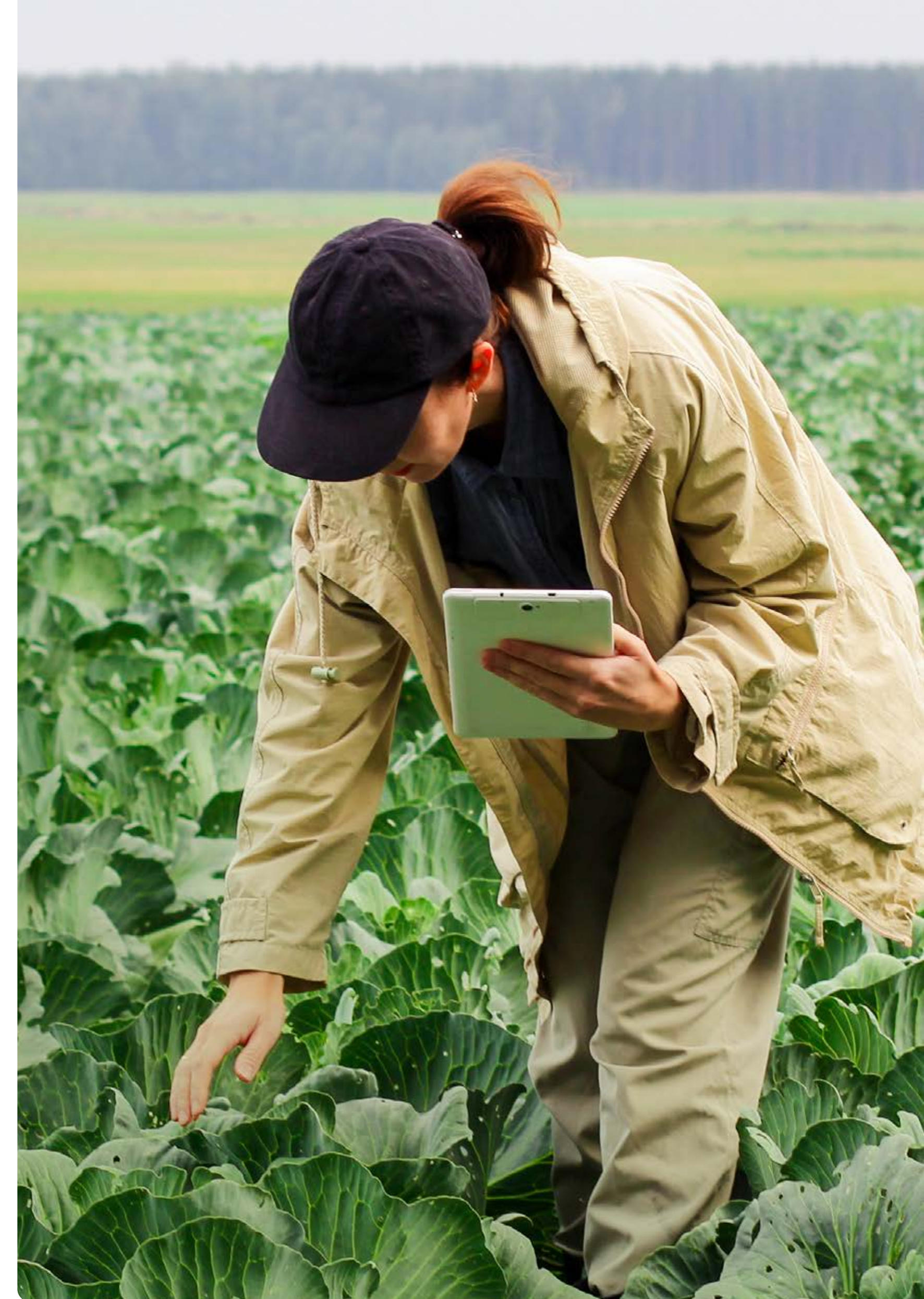
Enterprises have leveraged AI to make qualitative decisions that usually need human intelligence and time. The next phase of holistic transformation includes sustainability. A quest towards net-zero operations by leveraging the circular economy requires a more comprehensive analytics strategy to track and measure progress. This is where disruptive technologies like AI are making their foray by unlocking operational stability, observability, proactive application management, risk mitigation and issue resolution. AI is leading decision-making – from operations to ESG strategies.

3. Holistic transformation with cloud -

With all eyes on supply chain management, future-facing enterprises are accelerating cloud adoption to create powerful new operating models. Business leaders seek solutions that include demand sensing, integrated planning, data-driven visibility, automation and reconfiguration of systems for greater agility. The goal is to identify core value chains and make substantial technology investments to reimagine and modernize them.



Organizations are moving away from the waterfall method of annual enhancement in favor of a significantly more agile operating model.



02

Engineering and R&D

Top Trends in Engineering and R&D



Vijay Guntur
President,
Engineering and
R&D Services

Technology-led business model transformation will remain a key theme this year too with increased thrust on leveraging digital engineering to redesign, reinvent and redeploy core products, solutions and value propositions.

Following are the three trends that will define Engineering and R&D in 2023:

1. **Industry 4.0 and smart operations** -

Smart operations are helping create efficiencies by integrating technology with connectivity and automation to deliver intelligent insights to stakeholders across the industrial value chain. Industry 4.0 is a key component of smart

operations and refers to the technology-driven transformation of cyber and physical systems. This transformation is characterized by modern themes of interconnectivity, digitalization and automation and is made possible through tech developments in fields like IoT, additive manufacturing, cloud computing, edge computing, analytics, robotics, cybersecurity, AI/ML and AR/VR.



Healthcare is being consumerized, creating opportunities for new entrants from non-healthcare industries to invest and offer convenience at a low cost to disrupt industry incumbents.

2. Intelligent mobility - Digital technologies have significantly disrupted the transportation industry. The term Autonomous, Connected, Electric and Shared Mobility (ACES), coined by the Center for Automotive Research, refers to four key technology-driven mobility themes that are already enabling alternate mobility, new business and revenue models for enterprises and the entry of new market participants in the transportation sector. Software-defined vehicles, integrating aspects of connectivity within automobiles, and the shift to electrification across the industry are driving a large portion of the Engineering and R&D spend. Increased spending on ACES will be accompanied by a drastic reduction in the spend on traditional engineering—in Internal Combustion Engines, for example.

3. Digital healthcare - Healthcare remains one of the primary focus areas of every economy. The advent of digital technologies and their applications across medical use cases is enabling widespread investment and focus from governments and businesses alike. Digital health innovations in the form of Software-as-a-Medical-Device (SAMd), mobile health apps and wearable sensors, are bringing new approaches to managing health disorders with the consent of regulatory authorities. In addition, healthcare is being consumerized, creating opportunities for new entrants from non-healthcare industries to invest and offer convenience at a low cost to disrupt industry incumbents. Traditional healthcare providers must transform and adapt to the digital world to compete with these tech-first companies revolutionizing patient care.

03

Cloud

Top Trends in Cloud



Kalyan Kumar

Chief Technology Officer
and Head, Ecosystems,
and Chief Product Officer,
Products & Platforms

Continuous cloud modernization is a trending ambition, as businesses recognize the need for cloud to keep pace with changing business requirements.

The exponential increase in cloud adoption is due to its emergence as a business platform that has evolved from a cost-saving to a money-making mechanism, significantly increasing organizational revenues and profit.

Three trends will further accelerate its adoption in 2023:

- 1. Multiplicity and portability** – Multiplicity is an enterprise trend that captures the need to utilize multiple clouds, selected for specific features and functions. This presents new management challenges and requires the management of conversations and data exchanges among the applications on multiple clouds. HCLTech is enabling more customers to realize the value of multiple clouds by closing the management gap with operational best practices. Practices like Site Reliability

Engineering (SRE) are enabling customers to confidently adapt to the dynamic landscape of multiple clouds. Cloud multiplicity introduces more choices for business success.

– Portability ensures flexibility in this environment.

Making choices is only possible when cloud platforms, application design and architectures are adept at moving applications, workloads and data from one cloud service to another. Portability enables the business to move data between clouds without expecting to re-enter data and makes it possible to switch a cloud-based application between different CSPs or migrate applications across internal cloud infrastructures. When portability is required, HCLTech is enabling our clients to select non-proprietary and open standards, making them easily portable among similar cloud vendors or architectures.

2. Cloud native – In 2023, cloud native technology adoption will continue to grow with acceleration in domains including application design, software engineering and IT operations. This trend goes well beyond modernizing application code. Cloud native is driving the movement to container-based platforms, powered by Kubernetes, and the adoption of heavily automated approaches for deploying and operating solutions. Cloud native platforms will also drive accelerated adoption of edge computing and 5G networks. As more organizations prioritize cloud as a business platform, they are designing and developing core business applications as cloud native. HCLTech provides a Lab experience for clients that want to upskill technical teams and accelerate the design and development of cloud native platforms and solutions.

3. Cloud as the data hub – Innovative businesses are investing in data and analytics, featuring AI. Cloud multiplicity builds the case for managing data across clouds and accounts for the increased demand for 5G, the connective tissue enabling multiplicity and edge computing. This defines the role of cloud as the enterprise data hub. Digital business models are creating more data and driving the demand for analytics, which offers insights to increase operational efficiency, improve the customer experience, provide for regulatory transformation, reduce business costs and enable sustainable business practices. Cloud as the data hub is critical for businesses to thrive. The ability to process intensive Data/AI workloads within edge-based environments reduces cloud traffic, while removing some dependencies on legacy and proprietary approaches.

04

Digital Foundation

Top Trends in Digital Foundation



Jagadeshwar Gattu
President,
Digital Foundation
Services

Digital Foundation services are the bedrock of the enterprise digital transformation journey. With rapidly changing business perspectives, digital foundation paradigms will continue to transform the way we live and work.

Here are the identified trends that will shape the technology landscape in 2023:

- 1. A digitally powered experiential hybrid and sustainable work model** - The shift towards a digitally powered hybrid work model will enhance the demand and accelerate the adoption of collaboration tools and productivity technologies based in the cloud. As companies prepare to enable employee collaboration from anywhere and at any time, they will prioritize cloud-

based platforms for experience management, communication, content sharing and audio video conferencing. Gartner has projected that the global expenditure on desktop-as-a-service will touch \$2.6 billion by 2023. Sustainable workplaces will be a prominent trend in 2023. With the focus on balancing people, the planet and profit for long-term success, sustainable workplaces will support enterprise operations by leveraging advanced technology to create a safe and green work environment.

Through initiatives like Green IT, controlling electricity consumption, shifting to solar energy and going paperless, among many others, these workplaces will help enterprises to reduce their carbon footprint. Also, teaching green skills to the employee base and driving sustainable behavior change management will go a long way in creating sustainable workplaces.

2. Edge networks and Secure Access Service

Edge (SASE) - As enterprises prepare to limit bandwidth usage, settle latency problems and resolve privacy issues to streamline operations, the adoption of edge networking is taking the IT industry by storm. By enabling data processing nearer to where it is generated, at greater volumes and speed, edge helps enterprises to better manage and utilize physical assets and create immersive, human experiences. With edge computing projected to be worth \$155.90 billion by 2023 by tech analysts, the edge network is a trend that will dictate the digital foundations of 2023. SASE is a network architecture that

provides the benefits of SD-WAN and security platforms to generate secure networks. Taking the benefits of SD-WAN to the next level, SASE will provide scalability and better management in a more secure manner. It supports remote workforces by simplifying security and network management by combining necessary security and network services, like secure web gateways and firewall-as-a-service into a single platform. As cited by industry analysts, the global SASE market is projected to reach \$5.36 billion by 2027—it's an emerging technology to look out for.

3. Hyper-personalized customer experience (CX) -

Cloud-native companies augment business value by leveraging AI to deliver superior CX. As these businesses started in 'digital' their baseline customer experience is omnichannel. They can provide unique and personalized experiences for every touchpoint in the customer journey. In 2023, customer journey optimization tools that weave data threads from marketing, sales and customer services will be top priority for enterprises.



05

Cybersecurity



Top Trends in Cybersecurity



Jagadeshwar Gattu
President,
Digital Foundation
Services

Holistic cybersecurity is essential for a safe and secure future. In 2023, organizations will need to safeguard supply chains and increasingly connected systems to build cyber resilience into their current and future business strategies.

The trends that will redefine the organizational cybersecurity priorities and imperatives in 2023 cover the arc of proactive defence to sustainable future:

1. Safeguarding critical supply chains and connected systems (OT/IoT) - As the supply chain gets more connected and digitized, it requires an increasing reach of cybersecurity controls and monitoring. The rapid increase in Industry 4.0 initiatives and global IoT device penetration

marks a significant spike in potential attacks on a global scale.

All connected systems must be considered new attack vectors, be it personal smartwatches or security cameras or connected cars and manufacturing automation systems. And while new industry regulations and NIST CSF best practices provide the required actions, business leaders may have to take bold steps to align their OT/IoT cybersecurity posture to manage the risks facing their supply chains.



Focused cyber-resilience investments in modern automated tools, people skills and empowered techniques will pave the way for organizations to build a stronger foundation for digital transformation.

2. Building cyber-resilience for a digital future -

An organization's ability to provide goods and services, irrespective of disruptive events such as cyberattacks, global pandemics or geo-political conflicts, relies heavily on its ability to recover its core business processes and critical business data. Focused cyber-resilience investments in modern automated tools, people skills and empowered techniques will pave the way for organizations to build a stronger foundation for digital transformation.

3. Securing the hybrid business and hybrid workforce -

Hybrid working environments and remote work are the latest challenges to enterprise security. As workers rely more on unsecured personal devices and home networks, the risk of exposure to phishing and ransomware attacks becomes more likely. Addressing this risk requires migration from traditional approaches to a more modern "Zero-Trust" cybersecurity approach that protects connections, users, devices, workloads and data by continuously validating trust.

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01

Manufacturing



Top Trends in Manufacturing



Ajay Bahl
Chief Growth Officer,
MEGA Verticals

The manufacturing Industry is at the cusp of a massive transformation across its entire value chain, including process, technology and people.

Industry 4.0 has paved the path for manufacturing to develop an ecosystem of increased connectivity and technological improvements, while addressing the ever-rising expectations of customers whose behavioral patterns are rapidly changing.

As we start 2023, the outlook for this industry is not about establishing transformation goals, but realizing the goals that have been established through technological advancements and preparing the ecosystem for the massive ensuing change.

Here are three key trends to watch out for in 2023:

1. **Servitization or Product-as-a-Service -**

Consumers' expectations are changing. They want diversity, personalization and usage-based 'pay-as-you' and 'pay-how-you' business models based on outcomes and usage, rather than ownership. Manufacturers are transforming from mass production to mass personalization to address the needs of this B2Me world. The shift from a product-centric to a customer-centric approach requires

an adjustment to the entire value chain. Manufacturers are also realizing improved profitability with value-added services over core product selling. Digital technologies play a crucial role in establishing these business models on how manufacturers interact with customers from when the product is sold through to the value services provided.

2. Sustainable and smart manufacturing –

Sustainability is becoming the cornerstone of evolution for the manufacturing industry, driven by compliance and regulatory requirements. The focus is to establish guardrails with a zero incident culture and reduce energy consumption during the manufacturing process. Sustainability initiatives are also being undertaken to create a circular economy culture and establish innovation as the core to building products. Manufacturers will also need to integrate technologies to cohesively handle IT and OT

operations to make processes more efficient and productive. Smart factories in 2023 will enable a digitized shop floor that continuously collects and shares data to an ecosystem that provides insights through connected machines, devices and production systems, while optimizing the feedback loops to ensure customer-centric products and services.

3. Automated and agile supply chains – In 2023, it will be essential to apply the human behavioral aspect of problem-solving and the automation of various processes to the troves of data that is collected from the entire value chain. AI and ML technologies will continue to help manufacturers better predict trends and perform actions to enable efficiency and accuracy. To establish reliable supply chain networks, AI/ML-based demand sensing and planning will help manufacturers achieve the objectives.

Organizations will also look to accelerate digital strategy, channels of distribution and supply chains for enhanced scalability and speed, while ensuring increased visibility into the end-to-end supply chain network. This is paving the way for a Supply Chain Control Tower and digital dashboards with process visibility. In addition, analytics-based insights are becoming necessary elements to create resilience and responsiveness.



Manufacturers are transforming from mass production to mass personalization to address the needs of this B2Me world.

02

Lifesciences and Healthcare



Top Trends in Lifesciences and Healthcare



Shrikanth Shetty
Chief Growth Officer,
Americas,
Life Sciences and
Healthcare Industries

The care delivery organizations and ecosystem partners like health insurance providers, pharmaceutical companies, medical device manufacturers and allied services have faced unique challenges and opportunities in the pandemic years.

2023 will be an important tipping point in their quest for digital transformation. Business models are nimbler, expectations are more realistic, transformative technologies are more accessible and risk thresholds are redefined.

Here are three key predictions for the healthcare and life sciences industries in 2023:

- 1. Patient centricity** – Today, patients expect more than lip service. They require and deserve personalized care. Patient centricity has taken a very strong hold post-pandemic. Saying a “patient is a consumer” is no longer taboo. Patient experience and engagement programs have scaled and accelerated beyond a mobile app or a basic patient portal. Direct-to-patient models by pharma and medical device companies are on a rapid rise.



We anticipate the adoption of healthcare centric/customized CRMs and robust, digital patient/physician contact center constructs to go up considerably in 2023 in a bid to lay a very solid foundation for higher CSAT/PSAT ratings.

2. Care beyond the traditional models -

The healthcare ecosystem as a whole—consumers, providers and supporting industries, and even unrelated industries, such as retail and high-tech—have started shifting beyond the hospital or clinic. Care consumption models are also moving to non-traditional and on-demand services. In 2023, investments in these, especially home healthcare and telehealth variants, will take a more definitive shape and pave the way for disruption of traditional business models and the competitive landscape.

3. Healthcare data democratization accelerated by interoperability -

The availability of a wide array of Fast Healthcare Interoperability Resources (FHIR) and other APIs, combined with compliance requirements, has set the stage to achieve a truly interoperable healthcare ecosystem. This will most certainly make healthcare data democratization across clinical, operational and financial data assets more feasible, while also ensuring the privacy and security of such data.



Patient centricity has taken a very strong hold post-pandemic. Saying a “patient is a consumer” is no longer taboo.

03

Telecom, Media and Entertainment

Top Trends in Telecom, Media and Entertainment



Anil Ganjoo

Chief Growth Officer,
Americas,
TMT and RCPG Industries

2023 will see an expansion of the telecom industry, with global connectivity (including 5G deployments) creating new business opportunities and fundamentally restructuring the telecom, media and entertainment sectors.

The enhanced connectivity will promote greater cloud adoption in Telecom, Media and Entertainment (TME) enterprises as well as enable the benefits of IoT and edge computing. These changes in infrastructure will empower consumers

to interact in the metaverse through AR/VR technologies and enable autonomous vehicles as Media and Entertainment enterprises secure global collaboration.

Three critical trends will headline these industries in 2023:

1. 5G monetization – After investing billions of dollars in 5G infrastructure and application transformation, telecom companies will begin monetizing their investments in 2023. This monetization will not be limited to consumer business alone, as TM Forum predicts as much as 50% of all 5G-related telecom revenue will come from enterprise businesses. A key component of this is edge computing, which delivers the autonomy and resiliency of local computing with required applications and storage, whether in cars or cell towers. The manufacturing, energy, transportation, public sector and healthcare industries will lead this execution through widespread public as well as private 5G deployments that address specific enterprise-level needs for applications and storage. In 2023,

we will witness the emergence of several 5G applications: drone-based delivery, autonomous vehicles, UHD streaming and AR/VR implementation in stores, casinos, stadiums and theme parks. Additionally, telcos will introduce B2B2X, 5G-based value-add services for end consumers that can be utilized by SMBs and enterprises alike—especially in the gaming entertainment industry, which is expected to exceed \$17.5 billion in revenue by 2030, fuelled by the growth of 5G smartphones and tablets.

2. M&E in the metaverse – The metaverse is expected to add \$5 trillion to the global economy by 2030, while ushering in a new era of customer experience. In 2023, we will see enterprises experiment with use cases for the metaverse. For example, in a remote education scenario, educators can create activities for learners by leveraging collaboration with immersive AR/VR equipment. Another

example is an entertainment setting in which content creators will offer targeted content that can be funded by consumers directly and even customized to include their avatars. In fact, direct-to-avatar (D2A) services can sell directly to the digital identities of customers in the virtual world. As a non-conforming technology in every sense, the metaverse also supports the ownership of decentralized assets, like NFTs, through blockchain technology, ultimately diminishing the share held by big corporations. NFTs can democratize art and business, enabling individuals and small companies to monetize their offerings rapidly. At its core, the metaverse prioritizes customer experience, and several of the largest M&E companies have already established strong footholds to attract new customers. The year ahead will witness all M&E enterprises investing in building a significant metaverse presence. With a sustained industry focus on enhancing the

adaptability and affordability of AR/VR devices –especially by digital CSPs like Meta, Google and Microsoft, 2023 will also witness broader consumer acceptance of these devices for personal media and entertainment services.

3. Virtual production and global collaboration in

M&E - The transition to digital capture methods for content creation has accelerated the delivery of elements, enabling more time for creative decisions. The global virtual production market was valued at \$1.6 billion in 2021 and is expected to expand at a compound annual growth rate of more than 17% from 2022 to 2030. Over 350 virtual production stages were built in 2022. These are special purpose-built sound stages with large LED walls and ceiling installations that display high-resolution

content captured by digital cameras or rendered in real-time through game engines, like Unreal Engine and Unity. This reduces the need to travel to onsite locations in many cases and increases the ability to control lighting. For example, imagine shooting at a sunset location for hours with the perfect light every time, saving up to 75% on production costs. Virtual art departments can create sets and environments that would otherwise be economically prohibitive, like those for Disney's Mandalorian series and The Lion King feature film. In a virtual set, props and backgrounds can be manipulated in real-time through game engines, which also enables real-time VFX creation, reducing the time and cost for heavy VFX films, standard TV series and even commercials.



As TM Forum predicts as much as 50% of all 5G-related telecom revenue will come from enterprise businesses.

04

Retail, Consumer and Packaged Goods

Top Trends in Retail, Consumer and Packaged Goods



Anil Ganjoo

Chief Growth Officer,
Americas,
TMT and RCPG Industries

Some of the new-age industry catalysts in the Retail and CPG ecosystem for 2023 and beyond will emerge through business functions that outline how the 'consumer experience' needs to be re-defined or refreshed.

Conversational commerce, data science/ data-driven business intelligence and sustainable consumerism are three core trends that will define 2023 in this space. The proliferation of these trends rests heavily on how Retail and CPG companies embrace and prioritize them to gain competitive advantage.

Below is a snapshot of these top three trends that will yield distinct business results:

- 1. Conversational commerce** - Global sales via social media platforms and native applications were estimated at \$900 billion in 2022. According to a McKinsey report, social commerce sales will reach about \$4 trillion by 2026. To capitalize on this growth, retailers

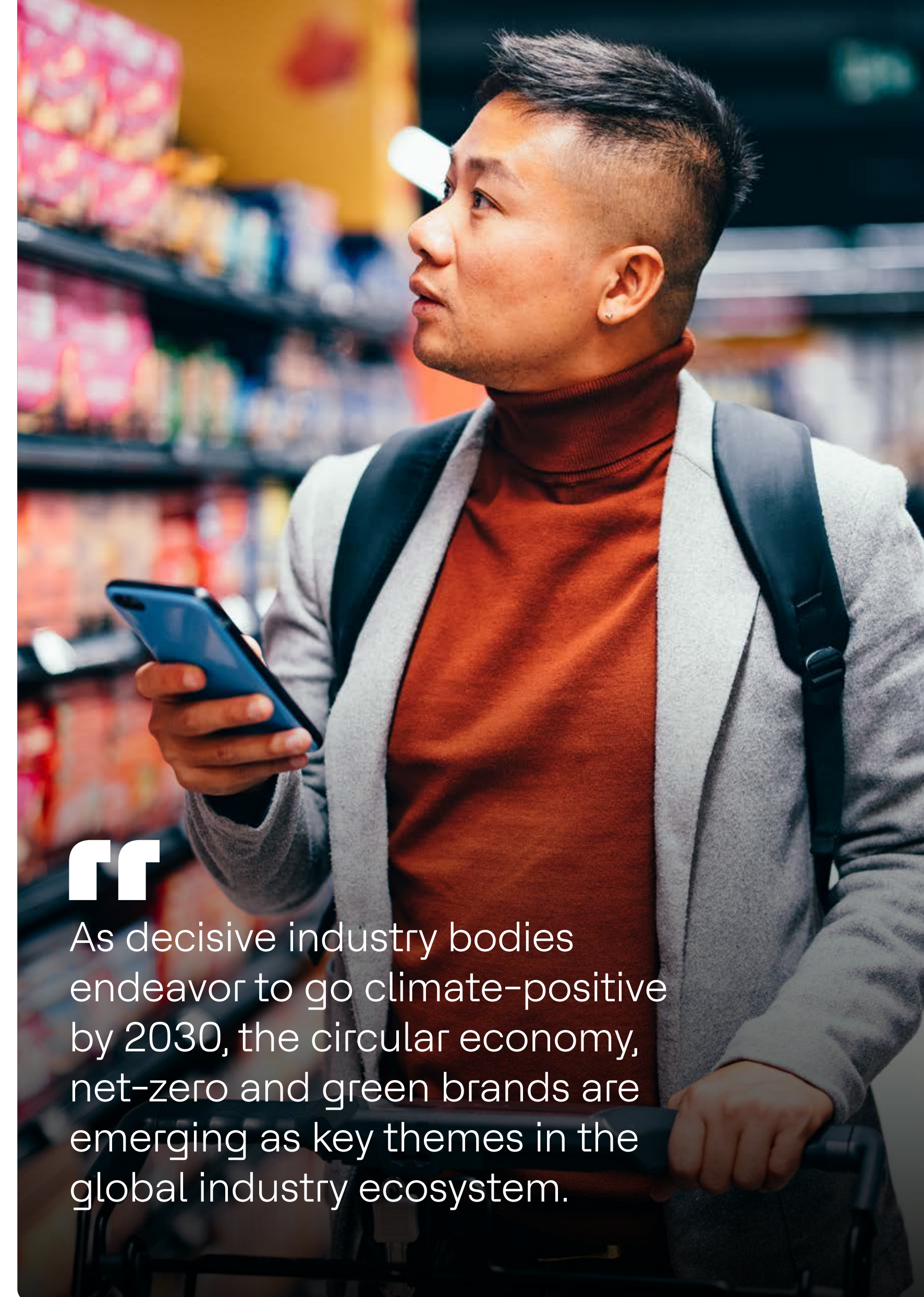
and CPG manufacturers will largely have to embrace a technology shift. They will have to move from in-store shopping to omnichannel shopping, which is tightly integrated with multi-channel adaptations, personalization, BOPIS (Buy Online, Pick-up In-store), rapid check-out payment gateways and automation-led customer service. It's about being omnipresent wherever your consumer is present.

2. Data science and data-driven business

intelligence - According to a Nasscom report, global big data market revenue is forecasted to hit the \$103 billion mark by the year 2027. Increasingly, personalization is used as a tool when traditional consumers make their final buying decisions. But, Retail and CPG enterprises will have to rethink their strategic priorities to capture consumers at a young age or earlier purchasing stages.

Predictive analytics, enhanced data lakes and augmented, data-driven decisive intelligence, that gains insight into the modern consumer, are essential to making headway into this emerging consumer segment.

3. Sustainable consumerism - As industry bodies endeavor to go climate-positive by 2030, the circular economy, net-zero and green brands are emerging as key themes in the global retail ecosystem. Additionally, with growing sustainability awareness and the utility value of the products gaining more traction in the buying decisions of the consumers, it will become imperative for Retail and CPG enterprises to re-imagine themselves as organizations of sustainable values and a net promoter of green business segments, such as green supply chains, green procurements, green manufacturing, green data centers and green IT.



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As decisive industry bodies endeavor to go climate-positive by 2030, the circular economy, net-zero and green brands are emerging as key themes in the global industry ecosystem.

05

Financial Services

Top Trends in Financial Services



Srinivasan Seshadri
Global Head,
Financial Services

The Financial Services sector has always been a frontrunner in adopting new digital technologies and leveraging them for revenue growth and operational efficiencies. 2023 will add a new chapter in this sector's progressive pact with technology.

Despite the market uncertainties, the financial services industry delivered exceptional results in 2022 with banking profitability hitting a 14-year high and revenues growing by \$345 billion. The stability in this sector can in no small way be attributed to the bold bets it continues to place on technology. In the year ahead, as the industry explores new operating models and better risk management to address a changing business environment, I expect these three trends to underline its key growth strategies:

1. **Deglobalization forcing new operating models -**

Geopolitical uncertainty, rising energy costs and protectionism are forcing the financial services industry to re-shore and near-shore operations to mitigate risk and boost resilience.

For example, 2022 saw Citibank selling its retail banking and credit card businesses in South East Asia and India to securitize growth in closer-to-home markets. The growing trend of re-shoring and near-shoring will see the

emergence of new partnerships and products. Global financial services firms will increase their quantum of investments in digital with one eye on the faster integration of new value chains and the other on improved operational efficiencies.

2. AI-enabled digital transformation - AI, backed by big data and analytics, has become central to the front office in offering a differentiated customer experience. Simultaneously, it is finding its way into middle-office operations for processes such as Know Your Customer (KYC) and Anti-Money Laundering (AML), and into the back office to support underwriting by helping create more accurate risk profiles and strengthening decision-making. Also, sophisticated data and analytics capabilities infused with modern cloud native computing are being composed to enable real-time customer offers. Overall, AI is unlocking greater efficiencies and helping tap into new cost-saving opportunities.

3. Embedded finance and banking as-a-service (BaaS)

- Customers are opting for new purchase paradigms, such as Buy-Now-Pay-Later. This has led to a growth in embedded finance, where customers can make payments from within any app without switching to a banking app. This improved customer experience and convenience can lead embedded finance to capture 25% of worldwide SMB banking. Embedded finance could have a transaction value of \$7 trillion by 2026 in the U.S. alone and account for 10% of all transactions. Banks are also offering BaaS—a broader bundle of offerings in lending, insurance, investments and banking that go beyond payments—distributed to end-consumer via embedded finance partners in diverse industries such as retail, healthcare, travel and entertainment. These services, using pay-for-use models, leverage APIs to exchange data between banks and non-traditional financial service providers to enable faster and more efficient transactions.



Global financial services firms will increase their quantum of investments in digital with one eye on the faster integration of new value chains and the other on improved operational efficiencies.

06

Travel, Transport, Logistics and Hospitality



Top Trends in Travel, Transport, Logistics and Hospitality



Ajay Bahl
Chief Growth Officer,
MEGA Verticals

As we head into 2023, passenger travel continues to spring back from the lows of 2020, even as the transportation and logistics segment sees a 20% dip in volumes from the e-commerce-led surge in demand, which peaked in the summer of 2022.

Staff and labor shortages caused by the rapid furloughs, the great resignation and changing demographics continue to pose challenges for the sector. The cargo volumes are expected to normalize again towards the second half of 2023. The industry will continue to deal with resulting bullwhip effects in the supply chain over a longer time frame.

Against this macro backdrop, the top three trends to watch out for in this sector are:

- 1. Data science and data-driven business intelligence** - Data provides critical insights into operations. The right democratization, governance and monetization approaches to data will unlock significant business value

and enable new business models and revenue streams in this sector. Analytics, coupled with artificial intelligence, machine learning and digital twin simulations will enable the path to better operational efficiency, hyper-personalized passenger experiences and end-to-end visibility across entire ecosystems landscapes. Intelligently exposing selective data to different stakeholders across the ecosystem will allow for better control tower-led optimizations across supply chains and cooperation with competitors in a meaningful manner.

2. Pervasive automation – The industry is adopting automation to address labor shortages and improve enterprise productivity. The mechanisms include a wide variety of tools and technologies, such as Robotic Process Automation (RPA), cognitive brokers (chatbots), AI and ML algorithms with predictive capabilities, computer vision and wearables-based technologies, such as Exoskeletons to assist warehouse workers,

autonomous vehicles and drones on the warehouse floor. Other robotic technologies in the warehouse include Automated Storage and Retrieval Systems (ASRS), Palletizer/De-Palletizers and Cobots for pickup and stow operations. These technologies also help improve worker safety and retention. In addition, while autonomous vehicles are already in use in warehouses and light rail, the trucking, freight railroad and airline segments are gearing up for meaningful adoption in a big way as well.

3. Connected ecosystems and experiences –

Successful digital businesses orchestrate connected, hyper-personalized user experiences across ecosystems, considering user persona, preferences and behavior. In the transport, logistics, travel and hospitality context, this is a critical enabler for hyper-personalized customer experiences, loyalty management, connected assets strategy, predictive asset management, near real-time financial settlements and self-

healing supply chains. This is also a critical element to transparently enable circularity, net neutrality, and other sustainability choices for the enterprise as well as end-consumers.



Intelligently exposing selective data to different stakeholders across the ecosystem will allow for better control tower-led optimizations across supply chains and cooperation with competitors in a meaningful manner.



07

Aerospace and Defense

Top Trends in Aerospace and Defense



Ajay Bahl
Chief Growth Officer,
MEGA Verticals

The Aerospace & Defense (A&D) industry is experiencing drastic changes and still adapting to the turbulence of the past few years.

The COVID-19 pandemic, supply chain challenges and specific product issues from the OEMs, such as the 737 Max issue have all created significant turbulence in the industry. In addition, geopolitical conflicts have ramped up production demand and increased the pressure on critical programs to backfill inventories across the U.S. & NATO allies.

Today we are observing an industry-wide strong focus on Owner/Operator-Produced Parts (OOPP) and Used Serviceable Material (USM) as options for obtaining parts that are in short supply, but in high demand. As more technologies emerge, there will also be an explosion in Urban Air Mobility (UAM), drones and electric aircraft startups. We also predict increased M&A activity, uptick in space related initiatives and advancements in supersonic technologies.

Three top trends will particularly stand out in the Aerospace & Defense Industry in 2023:

1. Improved factory operations – Most A&D companies in the past few years have spent their IT dollars on improving ERP systems and engineering applications, with small investments in new tools and new applications to manage the factory and shop floor. In truth, the SAP systems and engineering applications will not differentiate an A&D company. These keep them up with their competitors and help build the necessary foundation blocks for the factory systems. Instead, the A&D industry will focus on improving, tracking, monitoring and streamlining the processes of a factory to differentiate them in 2023. This will enable them to produce products faster with higher quality. It can also help them innovate and build more unique products. In this new world, having a complete view of the factory and all its necessary inputs, including finance, supply

chain, engineering and planning, will create an environment where they can best optimize production and not just sub-optimize a given process at the expense of another process or area. Companies need a holistic vision and understanding of all the interdependencies to deliver improved factory operations in 2023.

2. Digitalizing supply chains – The supply chain remains crucial because all major components and programs are sourced from different suppliers and resources from around the world. An A&D supply chain, especially in Boeing and Airbus, can be one of the world's most complicated supply chain networks. Raw materials are another specific concern area because many raw materials, like titanium, are hard to get and are mined in countries that are affected by geopolitical challenges. Creating digital solutions to better plan, predict and react to potential supply chain challenges are extremely important.

With improved digital tools that give more visibility and provide tighter integration with suppliers and customers, the supply chain can be much more efficiently and proactively managed.

3. Application modernization and data management – All the big A&D companies have thousands of numerous old legacy applications they need to modernize. To take advantage of new tool sets and new technologies like AI, ML and VR, they need a more modern application landscape and foundational pieces, such as S/4, in place. The A&D industry will also need strong data management skills to cope with the huge influx of data from these new tool sets in order to make meaningful decisions with all the data.

08

Energy and Utilities

Top Trends in Energy and Utilities



Ajay Bahl

Chief Growth Officer,
MEGA Verticals

The energy and utilities industry experienced significant disruption in 2022 and this will persist in 2023.

It is forecasted that global energy consumption will grow by just 1.3% in 2023 amid a slowing economy and high energy prices. Waning gas supplies and extreme weather events will force many countries to fall back on fossil fuels, delaying the green energy transition. This will be the second consecutive year of sluggish consumption growth.

Over the past couple of years, the energy and utility industry's focus has been on building the capabilities organizations would need to compete in a digital economy. We expect this theme to further precipitate this year

as organizations focus on delivering value faster and better and in the backdrop of continued macro volatility.

With this context, the top three trends we expect to significantly impact this industry in 2023 are:

- 1. Sustainable technology** – As environmental and social changes gain importance in executive agenda, embracing sustainable technology and practices has become an integral theme of business strategies. Utility and energy teams are focusing on the underlying technologies

that will help their organizations and customers prioritize on environmental, social and governance issues. Traceability, analytics, renewable energy and AI are among the tools that can help drive sustainability agendas.

2 Digital immunity - Security is a top priority for businesses, across industry verticals. Most CXOs are well aware of the consequences of the failure to protect their organizations. In order to achieve the status of being digitally immune, organizations need to embrace data-driven insights in 2023, which will help to improve visibility of utility operations, automate incident response and identification, improve notification to appropriate respondents and fast-track resolutions, leading to increased stability of systems. This will require utility and energy providers to build new capabilities in the areas of observability, augmented

testing, chaos engineering, auto-remediation and site reliability, and package them up into a preconfigured element for developers, enabling them to optimize the resiliency of the application platforms.

3 Wireless technology and value realization - Proponents of 5G technology billed it as a potential enterprise technology disruptor. While applications in specific areas have shown value, Gartner expects no single technology will dominate the landscape of the wireless solutions needed in the energy and utilities. This industry must be prepared to embrace a spectrum of wireless solutions for many different environments and to enable pure connectivity.



Traceability, analytics, renewable energy and AI are among the tools that can help drive sustainability agendas.

Technology Trends in conclusion

Digital Business

1. Operating model transformation
2. AI-driven decision-making, including ESG
3. Holistic transformation with cloud

Engineering and R&D

1. Industry 4.0 and smart operations
2. Intelligent mobility
3. Digital healthcare

Digital Foundation

1. A digitally powered experiential hybrid and sustainable work model
2. Edge networks and Secure Access Service Edge (SASE)
3. Hyper-personalized customer experience (CX)

Cloud

1. Multiplicity and portability
2. Cloud Native
3. Cloud as the data hub

Cybersecurity

1. Safeguarding critical supply chains and connected systems (OT/IoT)
2. Building cyber-resilience for a digital future
3. Securing the hybrid business and hybrid workforce

Industry Trends in conclusion

Manufacturing

1. Servitization or Product-as-a-Service
2. Sustainable and smart manufacturing
3. Automated and agile supply chains

Lifesciences and Healthcare

1. Patient centricity
2. Care beyond the traditional models
3. Healthcare data democratization accelerated by interoperability

Telecom, Media and Entertainment

1. 5G monetization
2. M&E in the metaverse
3. Virtual production and global collaboration in M&E

Retail, Consumer and Packaged Goods

1. Conversational commerce
2. Data science and data-driven business intelligence
3. Sustainable consumerism

Financial Services

1. Deglobalization forcing new operating models
2. AI-enabled digital transformation
3. Embedded finance and banking as-a-service (BaaS)

Travel, Transport, Logistics and Hospitality

1. Data science and data-driven business intelligence
2. Pervasive automation
3. Connected ecosystems and experiences

Aerospace and Defense

1. Improved factory operations
2. Digitalizing supply chains
3. Application modernization and data management

Energy and Utilities

1. Sustainable technology
2. Digital immunity
3. Wireless technology and value realization

Appendix

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