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HARMAN
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VIRTUAL CARE -

The New Paradigm of Healthcare Delivery

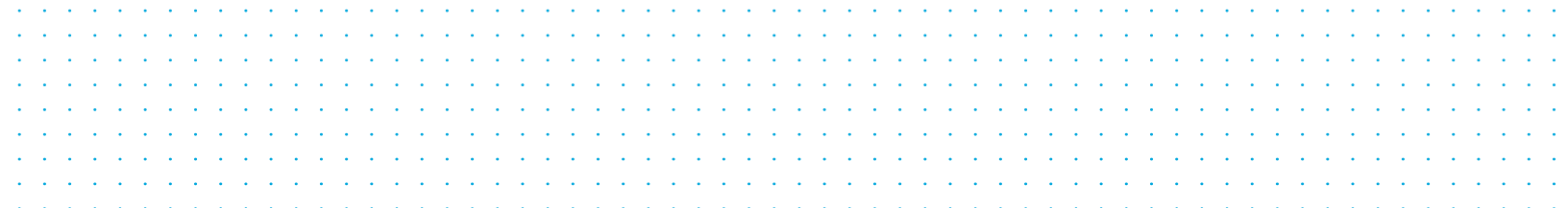
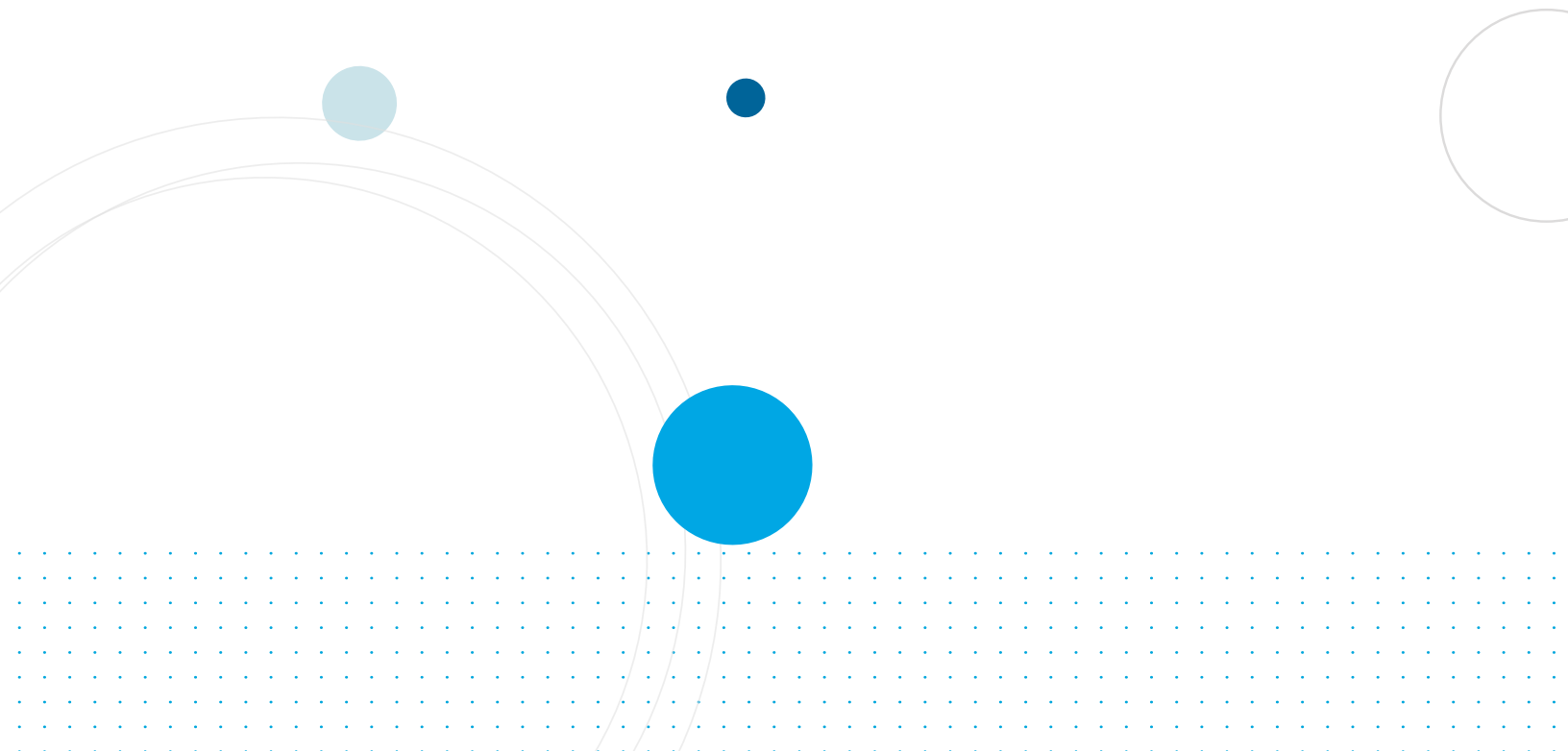


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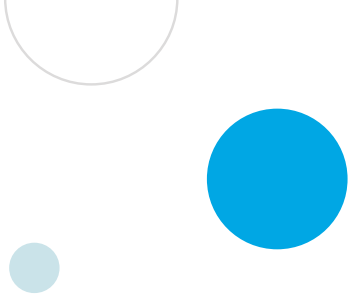


Introduction

Globally, the healthcare industry is going through a wave of accelerated growth. Healthcare spending is projected to increase at an annual rate of ~5% from 2019-2023. Some of the key contributing factors to this trend are the growth in the aging population, rising prevalence of chronic diseases, higher labor costs owing to workforce shortage, and the expansion of healthcare systems in developing markets. Rising healthcare costs and the increased focus on patient outcomes has led the healthcare system to increase its efforts on exploring new methods of care delivery. With a shift from volume-based to value-based care, preventive care is emerging as a key focus area for delivering quality patient outcomes. This is leading to a gradual shift in the cost paradigm of healthcare delivery. Virtual care is fast emerging as an important tool in driving this shift and delivering on the desired outcomes. By ensuring access to care, reducing costs, and improving patient engagement, virtual care enables healthcare stakeholders to proactively reach out to patients and ensure seamless and timely healthcare services.

The evolution of virtual care has been slow over the years. As of January 2020, only 24% of the U.S hospitals¹ had a virtual care program in place. The current health crisis, however, has created an urgent need to treat patients beyond hospital premises and prevent overcrowding in emergency rooms. Advancements in low latency video conferencing, complex edge computing, Artificial Intelligence (AI), etc., have enabled effective and efficient data collection, increased accessibility to care through remote consultations, improved patient-physician collaborations, and enhanced patient experiences; thereby, increasing the acceptance of virtual care among patients, providers, and payers alike. A recent study has forecasted the post-COVID 19 telehealth market growth² at 64%, as opposed to the anticipated 32% pre-COVID 19 annual growth rate. 2020 marks the beginning of unprecedented acceleration in the adoption of virtual care, and is poised to revolutionize care delivery.





In view of the global healthcare emergency, various agencies within the federal Department of Health and Human Services in the U.S have announced the relaxation of regulatory restrictions connected to the provision of telehealth services. These initiatives are making it easier for hospitals and health systems to ramp up virtual care options –

- In March 2020, Centers for Medicare & Medicaid Services (CMS) announced the temporary, but sweeping change around the approval of and reimbursement for telehealth services
- Following which, a temporary abolishment of most of the interstate physician and nurse licensing restrictions was announced to enable cross-state provider access
- In April 2020, the Office for Civil Rights (OCR) notified to exercise its enforcement discretion for telehealth remote communication technologies, and not impose penalties for violations of Health Insurance Portability and Accountability Act (HIPAA) privacy rules



In Europe, the healthcare emergency has prompted some governments to loosen existing regulations to deal with the rapid influx of cases.

- The French government has relaxed the reimbursement rules for patients using telemedicine facilities. Consultations will now be reimbursed in full by National Health Insurance as opposed to the previous cap of 70%
- Germany's new legislation that came into effect at the start of the year allowing reimbursement for online consultations has proven to be a critical move in dealing with the crisis



As the key decision-makers from the providers, payers, and pharmaceutical communities set out to deploy and leverage virtual care, they must address the following factors:



This whitepaper captures the impact of virtual care on the healthcare ecosystem, by reflecting on its journey to becoming an integral part of care delivery. The integration of technologies such as AI, Cloud, Edge Computing onto a common patient monitoring platform will be a key driver for accelerated adoption of advanced virtual care solutions. The paper highlights HARMAN's contribution to the evolving healthcare ecosystem through its Remote Care Platform (RCP), and its capabilities as a tool for virtual care.



Virtual Care – One Solution Multiple Benefits

Gaining momentum over the last few years, virtual care is now proving to be a critical tool disrupting the healthcare sector. Virtual care, a component of Telehealth, encompasses all modes of care delivery apart from in-person clinical interactions – this includes video visits, secure messaging, e-consultations, etc. that are leveraged to gain remote access to health-related services and information. In the past, barriers such as lack of awareness and the human preference for in-person visits have impeded the adoption of virtual care among patients. While considerable technological advances have been made in this field, a wide-scale adoption is impeded by concerns such as patient privacy, care quality, compensation for physician time, etc. However, the recent crisis has pushed healthcare providers to address these issues in an accelerated fashion and roll-out solutions to provide consultations, offer medical advice, diagnose problems, run preventive care programs, etc. Notable methods of patient-provider engagement that enable accessible and affordable medical assistance are as follows:

Live Video Conferencing

Two-way video-based interaction between a patient and provider



Remote Patient Monitoring (RPM)

Real-time patient data shared with provider to monitor patient health remotely



Mobile Health (mHealth)

Use of smart devices and the health-based software apps to support continued healthcare



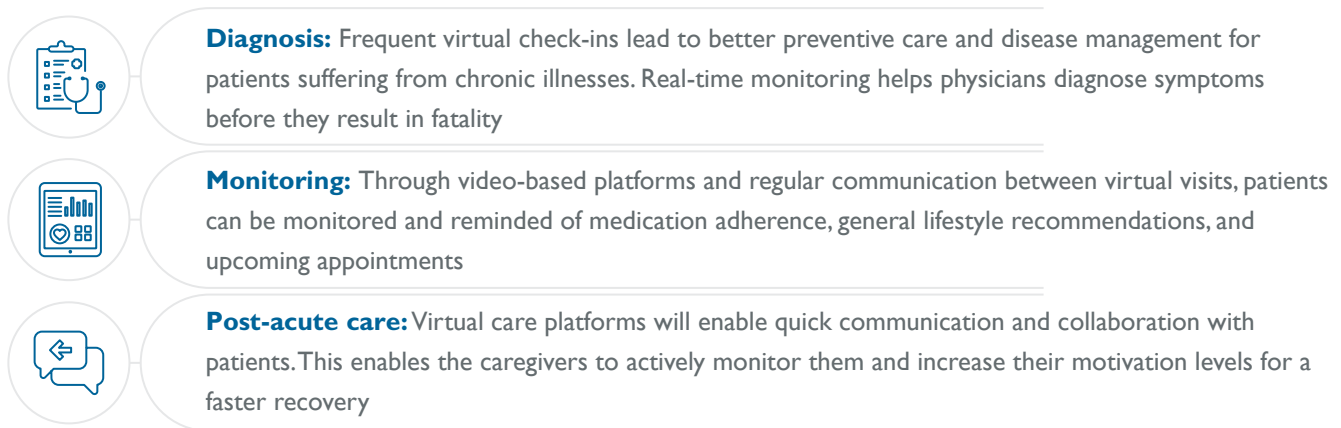
A survey among the U.S physicians shows that as of 2019, 22% of the physicians³ have experience in video visits, as compared to a meagre 5% in 2015. On the other hand, studies show that the adoption⁴ of telehealth among US consumers has also seen a steep increase from 11% in 2019 to 46% in May 2020. This rise in telehealth adoption can be attributed to the extensive cancellation of physical visits to healthcare centers.

Playing the role of a catalyst, virtual care is integrating workflows, blurring geographical barriers, and delivering a better experience for both patients and healthcare stakeholders. As regulations relax and technologies advance, virtual care is poised to unlock deep-seated benefits to the entire healthcare ecosystem.

Healthcare Providers – Adapt for Relevance

The adoption of virtual care among providers has been slow due to concerns around medical errors and maintenance of patients' private information. However, the increasing demand for convenience and access to healthcare by patients has led to increased interest levels among providers. The growing prevalence of chronic diseases, the aging population, and continuous shortages in healthcare professional labor have further led to increased investments in virtual care. In 2019, about 88% of hospitals⁵ in the U.S were investing or planning to invest in Remote Patient Monitoring (RPM) solutions to support their organization's transition to value-based care. 2020 health crisis, however, has forced some providers with no telehealth capabilities to quickly adapt and conduct a majority of visits virtually, in a span of a few weeks. It is further predicted that the virtual visits will exceed 1 Bn¹ in 2020 alone, including 900 Mn related to COVID-19.

Healthcare providers across geographies are now exploring ways to incorporate virtual care in their mode of care delivery, right from diagnosis, monitoring to post-acute care.



The alignment of payers with the value-based care model in terms of incentives for favorable outcomes, is also proving to be a boost for virtual care adoption among providers. By positively impacting patient outcomes and satisfaction, providers are poised to leverage virtual care and reap multiple benefits. The following are some of the advantages that are nudging hospitals to accelerate their efforts towards the implementation of virtual care services:



There has been an increase in the adoption of preventive and continuous care among the general population, and virtual care is key to achieving these outcomes. This scenario presents an opportunity for providers to increase their value proposition for patients through advanced virtual care measures such as Tele-ICU and home hospitals. While the potential for virtual care to be the 'new normal' is tremendous, concerns around accurately diagnosing patients and ensuring data security, are areas that need to be addressed.

Healthcare Payers – Innovation is Inevitable

Healthcare insurance companies, for a long time, have majorly covered costs related to acute medical needs, with telehealth as an add on. As preventive care gains popularity, payers too, have started modifying their services to cover a wider range of patient treatments such as virtual care. In light of the health crisis, some of the prominent payers including UHG, Aetna, Anthem, Cigna, Humana, Well Care, and more are taking active initiatives to enable wider adoption of telehealth services. They are tailoring health plans to waive costs associated with coronavirus testing, and are eliminating copayments, deductibles, and coinsurance for a defined period. With relaxed regulations by the Office of Civil Rights for third-party applications such as Skype, Zoom, etc., payers are seen to expand their own telehealth channels to include a broader range of virtual care platforms for patient-provider interactions. They are enabling in-network medical providers to connect with their patients through alternative audio-only or video-conferencing platforms hosted on or linked through their own websites or apps. Virtual care and RPM are slowly becoming tools for the payers to differentiate themselves from their competition. Some of the benefits that the payers are realizing through support for virtual care are:

Reduced possibility of readmissions thereby reducing costs



Improved Payer Quality Score



Increased member satisfaction and loyalty

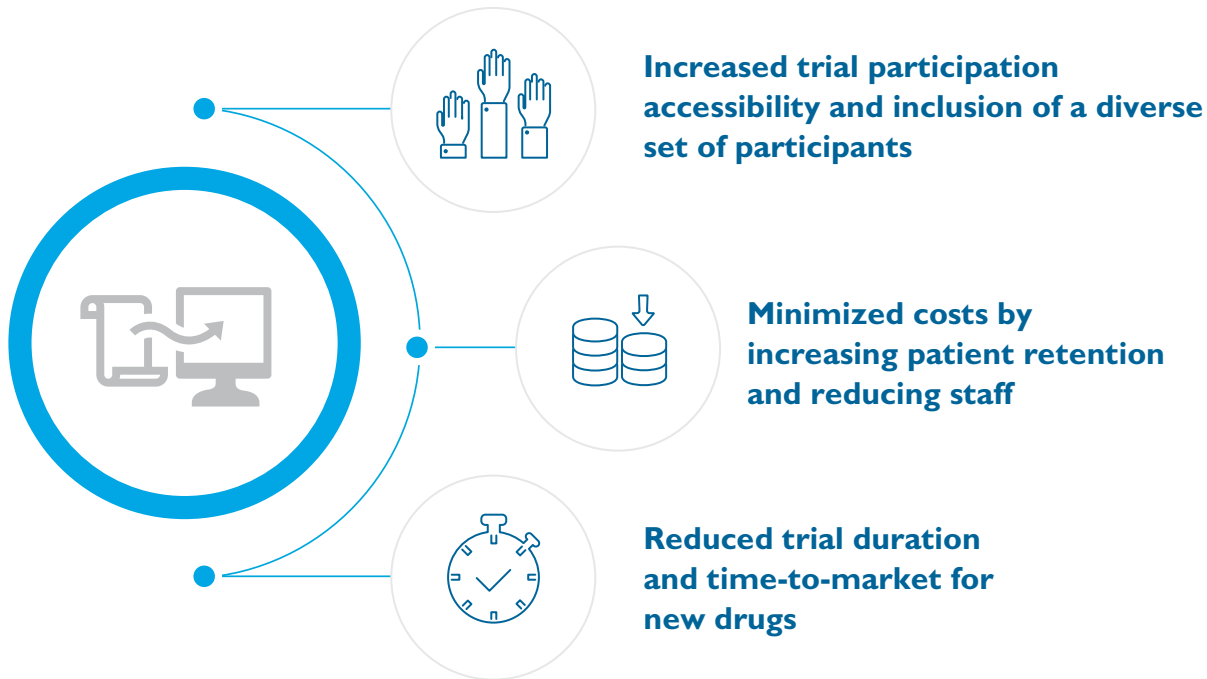


While virtual care is proving to be critical in delivering care and ensuring continuity in care during this crisis, some payers are also looking to include virtual care in their portfolio. Payers such as Aetna, Blue Cross Shield of Tennessee, and UPMC, have been pursuing the establishment of parity between telehealth and in-person visits. The others are focusing on tailoring health plans to incentivize value-based healthcare, and leveraging their payer-provider networks to deliver on virtual care. The industry is hopeful that Centers for Medicare and Medicaid Services (CMS) will continue the expansion of telehealth regulations, thus allowing payers to continue to reimburse for the services even after the public health emergency has ended.



Virtual Clinical Trials – Digitize to Accelerate

The frequently encountered challenges of clinical trials are patient recruitment, and patient dropout before the end of the trial, and inconsistency of trial feedback from patients. Recent studies suggest that approximately 56%⁶ of U.S. clinical research study sites and 81% of European sites are less likely to continue clinical trials for the enrolled patients and comply with study protocols and schedules. However, as a response measure to the current crisis, the digitalization of clinical trials has been accelerated across the board. Backed by regulators advocating greater use of technology, the industry has accelerated efforts to enact virtual clinical trials (VCTs). By leveraging telehealth technologies like RPM and wearable mHealth devices, VCT gives the patients a choice to participate in the trial from their preferred environment, improves patient adherence and compliance, and boosts participant's retention by educating and engaging them in the process. Some of the advantages of virtual trials are:




Insights collected through RPM technologies enable continuous real-time data collection which is enhanced by virtual connectivity. This will ultimately ease the process of monitoring and management, thereby greatly saving the time and efforts of the investigators, clinical research coordinators, and participants.

Coming a long way from being considered a complementary part of care, virtual services and telehealth, now present large opportunities to modernize the care delivery system. Research shows that there has been a gap between consumers' interest in telehealth (76%) vs. its actual usage (46%). The onus lies on healthcare providers and payers to fill this gap. Technology can enable convenience and facilitate accessibility for greater adoption of virtual care. Wearables aided by wireless technology, and other breakthrough technologies like AI/ML, edge computing, and cloud, are collectively playing a key role in realizing the full benefits of virtual care.


As the awareness and adoption of virtual care platforms increase, privacy and security concerns will need to be addressed on priority. Virtual care platforms need to leverage the latest advancements in technological and data-transfer security, to comply with HIPAA regulations. Although the Office of Civil Rights (OCR) has temporarily eased regulations to include third-party applications as part of telehealth platforms, a healthcare organization must consciously continue to invest in secured platform services to stay compliant and provide telehealth services for the coming years.

HARMAN RCP – Remote Patient Monitoring and Elderly Care Solution


Remote patient monitoring has proven to be an effective way to move from episodic to preventive care. But given the sensitivity and criticality of healthcare operations, virtual care solutions need to be administered with utmost precision, and adhere to accuracy standards. Remote patient monitoring systems can be prone to hacking, breach of privacy, and other security issues. HARMAN's focus was to solve these problems by presenting an edge services delivery platform for remote patient care with high performance, connectivity, data and device manageability, and security. This gave rise to HARMAN RCP, a platform designed for remote care of patients.



HARMAN RCP is a comprehensive remote patient monitoring and elderly care solution that helps ease the burden on all the stakeholders in the healthcare ecosystem – including patients, providers, and payers. It offers the capability to collect health data such as blood pressure, body temperature, pulse rate, glucose, pulmonary function, etc., from a range of continuous-compliant, Bluetooth-enabled medical devices, as well as other data collection sensors and wearables.




HARMAN RCP enables seamless workflow integration with Electronic Medical Records (EMR)/ Health Information System (HIS) and other 3rd party cloud integrations for easy access to existing healthcare workflows, patient data, and eliminates documentation, thus enabling seamless healthcare delivery for all stakeholders. RCP cloud services act as a health data AI platform with data analytics and cognitive rules engine, allowing meaningful information, trends, and insights to be spawned from the patient data and visualized on web-based dashboards.




HARMAN RCP ensures secure data transfer from edge to cloud thereby protecting the data from costly cyberattacks. It also creates a distinct separation of patient data from non-patient data, for additional security.


Along with the functionalities aimed at healthcare providers, remote monitoring platforms must also focus on patient comfort and experience. By providing a continuous and instantaneous connection between the patient and the physician, HARMAN RCP assures enriched patient experience.



HARMAN has built a rich repository of medically approved video content, which can be accessed by patients, through its RCP. These videos contribute to patient awareness, education, and overall engagement. It also guides them on how to manage their disease condition better.



Through voice-assisted care powered by the HARMAN eNOVA voice assistant platform, patients can receive answers to simple queries on managing symptoms, nutrition suggestions, exercise nudges, and medication reminders.



HARMAN RCP also allows integration with 3rd party telemedicine companies to enable consultation via videoconferencing, and in the process enhances the companies' remote monitoring capabilities.

About the Authors



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Nikhil Kulkarni is Principal with Zinnov. Having 12+ years of rich experience in management consulting, he has advised leadership teams of customers in formulation of business and operations strategy. He has spearheaded multiple client engagements in strategy, consulting, and sales enablement for global service providers. Nikhil has deep expertise in various hi-tech industries including Software & Internet companies. Previously, Nikhil has been associated with Hewlett-Packard & Fujitsu Consulting. Nikhil has an MBA from Symbiosis Institute of Business Management Bengaluru and a Bachelor's degree in Electronics Engineering from University of Pune.



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Manish Bhasin

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ABOUT HARMAN

HARMAN (services.harman.com) designs and engineers connected products and solutions for automakers, consumers, and enterprises worldwide, including connected car systems, audio and visual products, enterprise automation solutions; and services supporting the Internet of Things. With leading brands including AKG®, HARMAN Kardon®, Infinity®, JBL®, Lexicon®, Mark Levinson® and Revel®. HARMAN is admired by audiophiles, musicians and the entertainment venues where they perform around the world. More than 50 million automobiles on the road today are equipped with HARMAN audio and connected car systems. Our software services power billions of mobile devices and systems that are connected, integrated and secure across all platforms, from work and home to car and mobile. HARMAN has a workforce of approximately 30,000 people across the Americas, Europe, and Asia. In 2017, HARMAN became a wholly-owned subsidiary of Samsung Electronics Co., Ltd.

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ABOUT ZINNOV

Founded in 2002, Zinnov is a global management and strategy consulting firm, with presence in Silicon Valley, Houston, Bangalore, and Gurgaon. Over the past 16 years, Zinnov has successfully consulted with over 250+ Fortune 500 customers to develop actionable insights that help them in their transformation journeys. With core expertise in Product Engineering and Digital Transformation, Zinnov assists clients by:

- Providing research and strategy consulting for Technology Service Providers in the areas of Product Engineering and Digital Transformation;
- Enabling companies to develop and optimize a global engineering partner strategy to achieve higher throughput, innovation, productivity, and cost savings;
- Growing revenue for companies' products and services in India and other emerging markets;
- Helping MNCs expand and/or consolidate their globalization footprint.

With their team of experienced professionals and research teams, Zinnov serves clients from across software, semiconductor, consumer electronics, automotive, storage, telecom & networking, healthcare, banking, financial services, and retail verticals in US, Europe, Japan, and India.

