# CYIENT



## ENABLING DIGITAL TRANSFORMATION FOR MEDICAL DEVICE OEMs

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Improve operational efficiency, design safer patient-centric devices, create immersive user experience

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Advanced technologies, such as artificial intelligence, big data, IoT, augmented and virtual reality, and Industry 4.0, have the potential to disrupt the medical device industry.

Adoption of these new-age technologies can improve affordability, accessibility, and quality—completely changing the way healthcare is currently delivered. As medical device firms try to keep pace with the evolving landscape, they grapple with numerous challenges.

Some of these include applying new technologies to derive tangible business outcomes, lack of experienced internal resources with the right skill sets, and ensuring return-on-investment.

### **Our Digital Engineering Solutions**

### Our digital solutions for MedTech industry include:



### **Predictive Asset Maintenance**

For medical capital equipment, downtime and reactive maintenance can be a costly affair. Lack of consistency in predicting field-failures can lead to interrupted service supply. These challenges can be overcome by leveraging our proprietary predictive asset solution. The solution allows advanced prediction of asset failure, reducing asset downtime and improved asset availability.



### **Augmented and Virtual Reality Solutions**

Applying AR and VR technology to MedTech use cases, one can overlay digital information to provide data-enhanced experience for users. Virtual reality technology enables immersive experience where users can interact with computer generated 3D models. Whether it is to support technicians in equipment maintenance or aiding medical students in learning human anatomy, the applications of AR and VR technologies are numerous.



### **Wearables Technology**

We have in-depth capability in design and development of wearables that enable remote patient monitoring by capturing vitals including pulse rate, SPO2, respiration rate, ECG and blood pressure. From designing medical-grade sensors, ICs, power management and connectivity modules, to developing algorithm for screening and diagnostics, we offer complete suite of solutions for our clients.



### Cybersecurity

With the advent of Internet-of-Things and improved connectivity of devices, there is an increased risk of cyber threats associated with these features. At Cyient we have helped our clients run robust verification and validation programs that include threat modeling to assess device vulnerabilities. Our solutions help to embed device security right at the design phase so that devices are safe and compliant with FDA guidelines.



### **Connected Factories**

Utilizing disruptive technologies such as IoT, automation, and analytics, we help connecting factory assets, delivering actionable insights. Our solutions allow garnering real-time insights that lead to error-reduction, improved operational performance, reduced downtime, and cost savings.

### **Business Benefits**

Our digital offerings have delivered tangible benefits for our clients and their customers. The key areas of impact include:



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### **Success Stories**

# Designed Miniaturized Components for Wireless Healthcare Monitoring



**The Problem:** Transmit only remote wireless sensor devices have found many unique applications in the Medical segment, including wireless healthcare monitoring: EEG, EMG, ECG, and oximeter, swallow-able, non-invasive, endoscopy camera. To enable many of these markets an ISM transmitter that can operate for months or even years using a single cell battery is required.

**The Solution:** Cyient developed an ultra-lowpower RF ISM transmitter in 0.25µm CMOS with an active power consumption of 2.6mW - 10 times lower than any other product available today. The transmitter's low operating voltage - as low as 0.9V - and wide supply voltage range makes it possible to power it from a single alkaline battery. Further, the combination of low voltage and low power consumption enables battery-less applications.

**Impact:** An entire module based on the device fits into 1 cubic centimeter - including controller and external components - making it well suited for all kinds of portable applications.

### Ensured Cybersecurity of Connected Medical Devices





**The Problem:** The client, a US based manufacturer of patient monitoring devices, converted their four legacy product lines into connected devices. They wanted to conduct a third-party independent verification and validation to ensure the devices comply with FDA's guidelines for cybersecurity for Networked Medical Devices.

**The Solution:** Cyient team conducted a thorough source code and architecture review identifying key vulnerabilities. Based on code and product review, the team then generated a test strategy document incorporating, verification and validation plan, as well as V&V execution. In addition, the team performed threat modelling to identify potential risks. Cyient team also supported the client development team in identifying and implementing possible mitigations in design phase and avoid costly re-work.

**Impact:** The team successfully completed V&V to ensure compliance with FDA's Cybersecurity Guidelines within stipulated timelines. The four product lines received 510(k) approval.



### The Cyient Advantage

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With in-depth engineering expertise and added domain capabilities, Cyient is uniquely positioned to help firms implement their digital engineering strategy. Our team of data scientists, system architects, engineers, and MedTech domain experts has the right skill sets to solve problems that can be addressed through leveraging advanced technologies. In addition, we have made significant investment in our infrastructure including setting up an innovation center and testing labs that enable experimentation and timely adoption of emerging technology. Moreover, our ecosystem of partnerships with academia, hospitals, CROs and incubation hubs allows us to deliver holistic solutions to our clients.

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### About Cyient

Cyient (Estd: 1991, NSE: CYIENT) is a global engineering and technology solutions company. As a Design, Build, and Maintain partner, for leading organizations worldwide, we take solution ownership across the value chain to help clients focus on their core, innovate, and stay ahead of the curve. We leverage digital technologies, advanced analytics capabilities, and our domain knowledge and technical expertise, to solve complex business problems.

With over 15,000 employees in 20 countries, we partner with clients to operate as part of their extended team in ways that best suit their organization's culture and requirements. Our industry focus includes aerospace and defense, healthcare, telecommunications, rail transportation, semiconductor, geospatial, industrial, and energy.

For more information, please visit www.cyient.com

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