

RTI CUSTOMER SNAPSHOT

Mevion Medical Systems

HIGH-QUALITY PROTON THERAPY WITH A SMALL FOOTPRINT

HIGHLIGHTS

During proton therapy treatment, a patient receives a highly targeted dose of radiation, which lowers the amount of radiation exposure to nearby healthy tissue and reduces or eliminates short- and long-term treatment complications.

Mevion's series of products, the MEVION S250i and MEVION S250-FIT* with HYPERSCAN pencil beam scanning, delivers high-quality, robust Intensity Modulated Proton Therapy (IMPT) treatments at hyper-speed without compromising patient safety.

RTI Connex helps Mevion manage thousands of parameters that control the aim and duration of the 250 Mega-electron-volt proton beam, enabling precise, real-time interaction between operators and the proton beam control system.

ABOUT MEVION

Located in Littleton, Massachusetts, Mevion Medical Systems exists to deliver on the promise of proton therapy for cancer centers, clinicians, and patients worldwide. Mevion invented compact proton therapy and is continuing to transform the industry and patient care with the MEVION S250 Series™.

CHALLENGE

In a **recent study**, researchers found those who received proton therapy experienced fewer serious side effects than those who received traditional radiation. In spite of the promise of proton therapy to help many patients, it is only now becoming widely adopted. Which factors have slowed its adoption?

To date, hospitals across the United States have spent millions of dollars building proton therapy centers. However, proton therapy systems have been big, bulky, and cumbersome — with some cancer centers requiring rooms that take up as much

“Mevion is transforming proton therapy worldwide by providing access to superior proton therapy to as many cancer patients as possible. RTI Connex is helping us accomplish this important goal by providing data-centric communication to feed real-time data to clinical applications for fast and accurate treatment.”

— **Thomas Shelley** —
 Manager of Global Software Engineering,
 Mevion Medical Systems

space as a football field to house them. Historically, proton therapy has been too expensive and complex for most cancer centers to pursue.

In addition to the size, cost, and complexity concerns associated with proton therapy, cancer centers must also consider compliance and connectivity requirements, which can vary based on markets and are constantly evolving. For example, DICOM is an international standard allowing many cancer centers to transmit, store, retrieve, print, process, and display medical imaging information. Like many others, this standard continues to evolve and failure to stay current with connectivity requirements can create numerous technical, regulatory, and business concerns.

Along with these factors, cybersecurity is a priority for cancer centers, which must ensure reliable operation of complex equipment and secure large patient data. At the same time, systems must be designed for quick data access and processing of machine parameters to help clinicians achieve the best-possible outcomes for patients.

SOLUTION

Mevion introduced an innovative compact and modern proton therapy platform, providing cancer centers and their patients access to superior proton therapy. Dating back to the first Mevion clinical treatment in 2013, Mevion has implemented more compact proton therapy systems than any other manufacturer worldwide. Thus far, leading cancer centers have used Mevion's efficient single-room systems to treat more than 10,000 patients with compact proton therapy.

The MEVION S250i™ uses HYPERSCAN™ pencil beam scanning technology, which enables the delivery of high-quality, robust-IMPT and offers a smaller and better clinical system compared to all traditional and compact options. RTI Connex® is used to manage thousands of parameters that control the aim and duration of the 250 Mega electron volt proton beam, enabling precise real-time interaction between the operators and the proton beam control system.

Mevion started using Connex software to manage the control system layer, which includes multiple subsystems for collecting and handling data-in-motion. Based on the Data Distribution Service (DDS™) standard, Connex enables seamless and reliable data sharing, as well as reliable, secure, and interoperable connectivity across distributed applications. With Connex, applications can access the data they need, exactly when they need it.

BENEFITS

Connex allows Mevion to collect real-time data about every single proton pulse it delivers down to the millisecond, across Windows, Linux, and varied computing platforms. Connex

manages the unique requirements for data flow to hospital enterprise systems as well as across device applications and subsystems that exchange therapy data along with thousands of machine parameters. This helps operators perform and replay treatment deliveries, generate insights, and ultimately achieve the best-possible patient outcomes.

Connex gives Mevion a reliable and scalable system for managing data flow, along with powerful tools and developer resources to optimize the integration of distributed applications. Machine operators leverage this connectivity to power applications and devices that work together as part of a single, integrated system. And by simplifying development and providing a framework for modular and scalable device architectures, Connex empowers Mevion to efficiently develop next-generation applications as their system evolves.

*Note: The MEVION S250-FIT Proton Therapy System is not yet available for clinical use.



We have set a very high standard to safely complete a full treatment in the shortest amount of time, making it easier to fit more individual treatments into a single day.”

— **Thomas Shelley** —
Manager of Global Software Engineering,
Mevion Medical Systems

ABOUT RTI

Real-Time Innovations (RTI) is the infrastructure software company for smart-world systems. Across industries, RTI Connex® is the leading software framework for intelligent distributed systems. RTI runs a smarter world.

RTI is the market leader in products compliant with the Data Distribution Service (DDS™) standard. RTI is privately held and headquartered in Silicon Valley with regional offices in Colorado, Spain, and Singapore.

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