



Advanced Networking Technologies Improve Healthcare Delivery and Train the Next Generation of Medical Practitioners

Canada boasts a majestic and diverse terrain that features boreal forest, the Appalachian and Rocky Mountain ranges, Arctic landscape, the Canadian Shield, flat prairie lands, and the Great Lakes. With a population of about 33 million scattered across nine million square kilometres of land, Canada faces many challenges to provide vital services to citizens in all areas of the country. With new technologies and applications such as the Health Service Virtual Organization (HSVO) Network-Enabled Platform (NEP), distance presents less of a barrier to the delivery of high-quality healthcare, education and other critical services—and particularly for citizens in remote regions of Canada.

HSVO is a unique research platform that combines software, hardware, databases and advanced networking and computing technologies in a single online system. It pools leading-edge medical resources—data, devices and expertise—and connects them to healthcare practitioners, university professors, scientists and students located in multiple locations across the country, on demand. With leadership from the Northern Ontario School of Medicine (NOSM) at Lakehead University, HSVO has established a multidisciplinary research team that includes McGill University, the National Research Council Canada Institute for Information Technology, the Communications Research Centre Canada, the Stanford University School of Medicine, iDeal Consulting, and Innovation in Learning, Inc.

With an injection of \$2 million from CANARIE's Network-Enabled Platforms (NEP) program, HSVO is creating a platform that enables people and services to work together in a fluid and structured way. It will provide a range of services for geographically dispersed teams, and create novel and cost-effective ways to train Canada's next generation of healthcare providers. The platform provides a menu of scenarios that support different types of learning, training or healthcare situations. For example, a user can visualize 3-dimensional data or tomographic images, implement narrative-based or mannequin-based simulations, or reference physiological algorithms. Leveraging lightpaths (direct, 1 gigabit 'point-to-point connections') provided by CANARIE, the platform operates seamlessly between different locations, providing high quality and uninterrupted service for all users.

"When training medical students in remote locations across Northern Ontario, it can be challenging to expose them to the range of encounters and learning opportunities they need to develop as expert and well-rounded practitioners," says Dr. Rachel Ellaway, Project Leader of HSVO and Assistant Dean at NOSM. "Leveraging the advanced networking capability delivered by CANARIE and ORION (Ontario's Research and Innovation Optical Network), HSVO allows learners at all stages (including qualified practitioners engaging in continued professional development) to work with some of the best resources in the world, without leaving the communities they serve."

Dr. Ellaway believes that HSVO has the potential to improve healthcare delivery in Canada, particularly to patients in rural areas through the use of network-enabled platforms. "By helping to expand the range and quality of access to, and integration of, information and collaborative services in our communities we can bring the best resources, skills and knowledge together no matter where they are located," she says. "By leveraging advanced networking technologies we can introduce new services that don't just improve quality of healthcare, they transform it."

Once complete, the HSVO platform will be used by NOSM and McGill for distributed learners, faculty and healthcare practitioners. As this promising innovation attracts attention from healthcare organizations and professionals around the world, one thing is clear: this is just the beginning.