INNOVATION REALIZED:
Studio 1 Labs Inc.

- A collaboration between Studio 1 Labs, the University of Waterloo and York University is building a proof of concept for intelligent bed sheet.
- Using fabric sensors, the device collects patient data such as heart rate, respiration, movement, and other factors, traditionally monitored with multiple devices, and puts valuable data in the hands of doctors.
- SOSCIP is providing the computing power to process data, required by clinical standards, that is collected by the device.

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INNOVATION REALIZED:

Gnowit Inc.

- Queen's University to develop multi-level real-time predictive analytics framework
- Many companies understand the value of leveraging data to extract knowledge for important insights and industry trends, but what happens when there is a continuous flow of large streaming data that can't be processed by humans alone at the required speed, or that comes from multiple and fragmented sources?
- SOSCIP is helping to combine streaming and in-memory data analytics to process data in real time

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INNOVATION REALIZED: IBM Canada & CIMVHR

Machine learning to investigate sympathetic activation of the autonomic nervous system (SAANS)

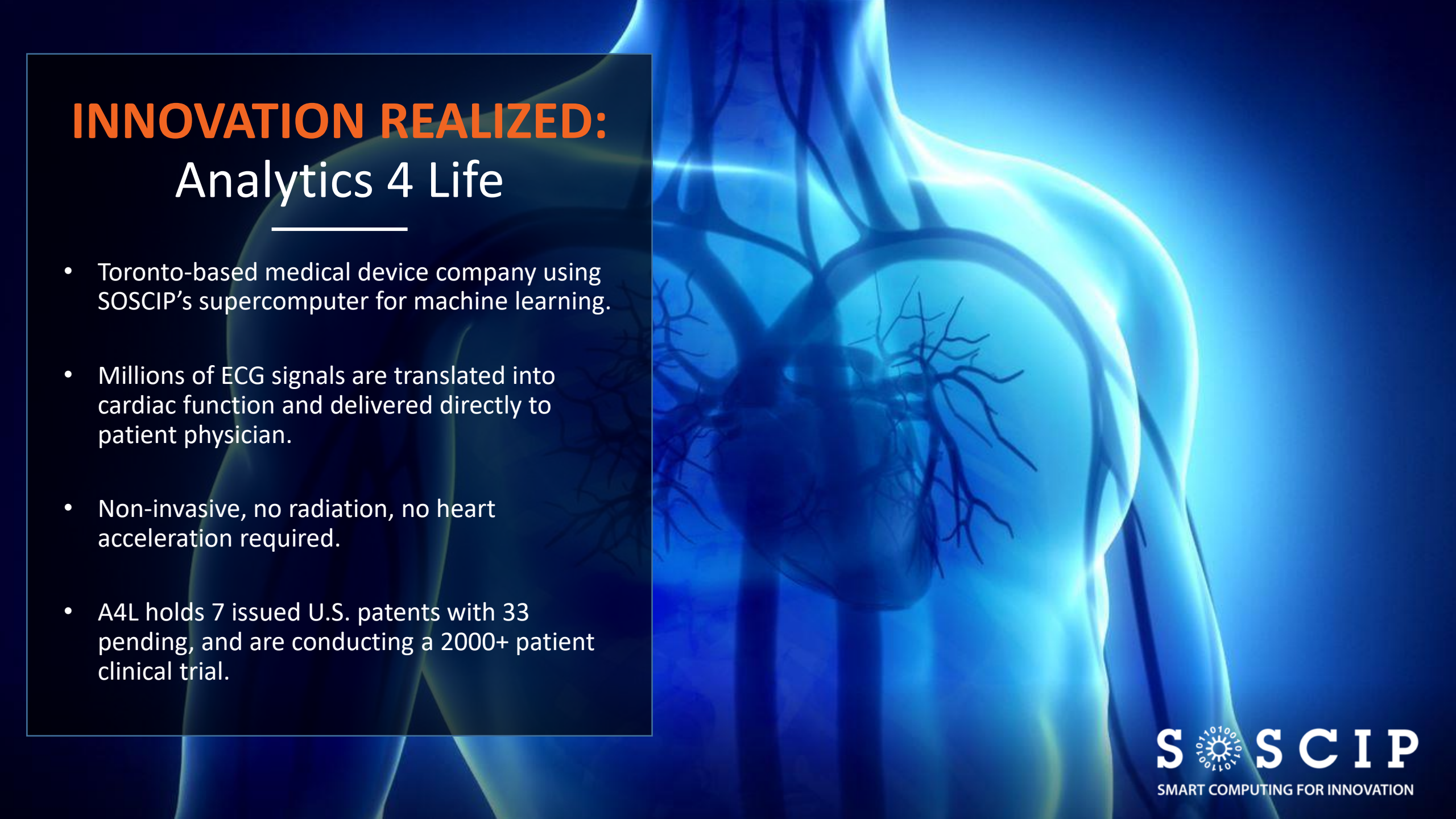
Half of rehabilitation patients from the Canadian Forces are suffering from traumatic brain injury, chronic pain and/or PTSD, and do not respond to traditional treatment options.

Using a Computer Assisted Rehabilitation Environment to collect whole-body measurements. SOSCIP is providing Cloud Analytics and GPU platforms to deploy machine learning algorithms to develop real-time estimators of SAANS, which will allow individualized treatment plans maximizing rehabilitation benefit.

Academic Partners: Carleton University and Ottawa Hospital

INNOVATION REALIZED:
Analytics 4 Life

- Toronto-based medical device company using SOSCIP's supercomputer for machine learning.
- Millions of ECG signals are translated into cardiac function and delivered directly to patient physician.
- Non-invasive, no radiation, no heart acceleration required.
- A4L holds 7 issued U.S. patents with 33 pending, and are conducting a 2000+ patient clinical trial.



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INNOVATION REALIZED:

Miovision Inc.

- The University of Waterloo and Miovison Inc. partnered to build the first low powered, energy efficient real-time traffic event detection system.
- System will significantly improve traffic conditions, enhance commuter safety and be environmentally friendly.
- Harnessing SOSCIP's GPU system to accelerate the training of deep neural networks to achieve highly accurate and efficient models.

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INNOVATION REALIZED:
Advanced Property eXposure

- The University of Ottawa and APX are creating a smart emergency response using the Internet of Things
- Using machine learning to devise a scalable, robust and resilient beacon deployment strategy capable of providing responders with situational awareness
- SOSCIP's Cloud Platform processes large volumes of data using machine learning tools.

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INNOVATION REALIZED: Tracery

Cognitive ophthalmic imaging platform for personalized medicine in blinding eye disease

Age Related Macular Degeneration is a leading cause of irreversible blindness in Canada. Tracery has developed a functional imaging method to general unprecedented pictures of the retina for phenotype, genotype and epigenetic comparison.

Using SOSCIP's cloud platform, the team hopes to integrate image-based and structured data, genomics and data analytics to significantly alter drug development and personalized treatment.

Academic Partner: Western University and Robarts Research Institute

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INNOVATION REALIZED:

Aquanty Inc.

- Waterloo, Ontario company is developing real-time hydrologic tool for managing water resources.
- Aquanty's tool delivers enhanced real-time hydrologic modeling that incorporates high-resolution global weather forecasts with large datasets provided by The Weather Company.
- "R&D is costly and prohibitive for small companies; SOSCIP's support, through the Cloud Analytics Platform and access to skilled post-docs, makes it easier for companies like ours to make those investments," says Steve Berg, president and CEO of Aquanty.

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INNOVATION REALIZED: IBM Cognos

Simulating climate change impacts on permafrost

Nearly half of Canadian landmass underlain by permafrost. Increasing evidence of thawing can drastically impact ecosystems, communities and major infrastructure.

Accessing Cloud Analytics platform to develop tools and methods to understand and potentially predict the effect of climate change induced permafrost thawing.

Developing new open-source technologies that can be applied to understanding and predicting climate change impacts on snow, ecosystems, and water in remote areas.

Academic Partners: Carleton University

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INNOVATION REALIZED:

Pratt & Whitney Canada

- Research partnership between SOSCIP, UofT, IBM Canada and P&WC is developing next-generation combustor technologies.
- Research team is using computational fluid dynamics to design a more efficient fuel injector for gas turbines.
- The technology will optimize engine performance in all stages – from the runway, to take-off and in-air.
- Project will help P&WC meet international targets for reducing emissions.

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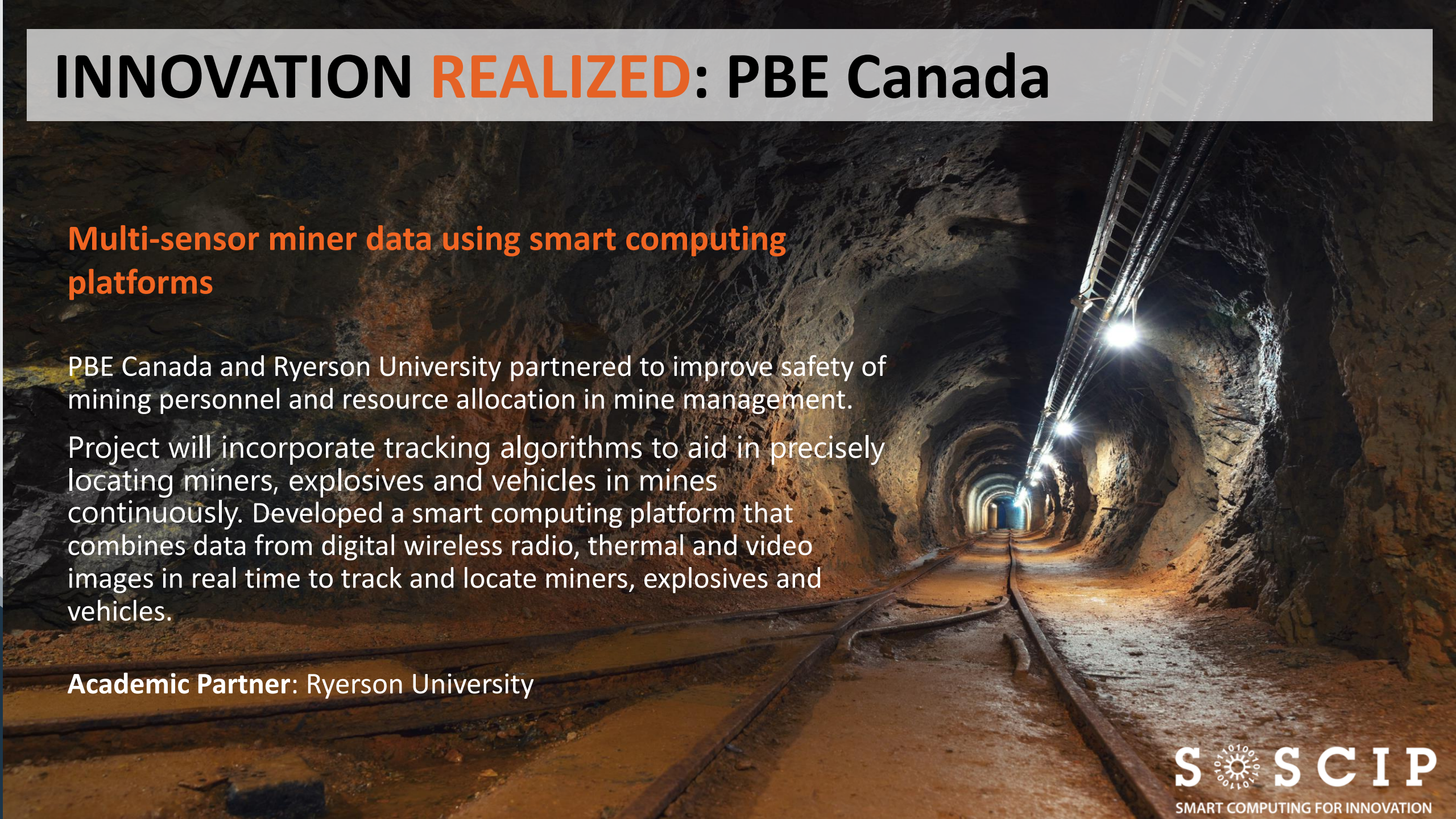
INNOVATION REALIZED: PBE Canada



Multi-sensor miner data using smart computing platforms

PBE Canada and Ryerson University partnered to improve safety of mining personnel and resource allocation in mine management.

Project will incorporate tracking algorithms to aid in precisely locating miners, explosives and vehicles in mines continuously. Developed a smart computing platform that combines data from digital wireless radio, thermal and video images in real time to track and locate miners, explosives and vehicles.

Academic Partner: Ryerson University

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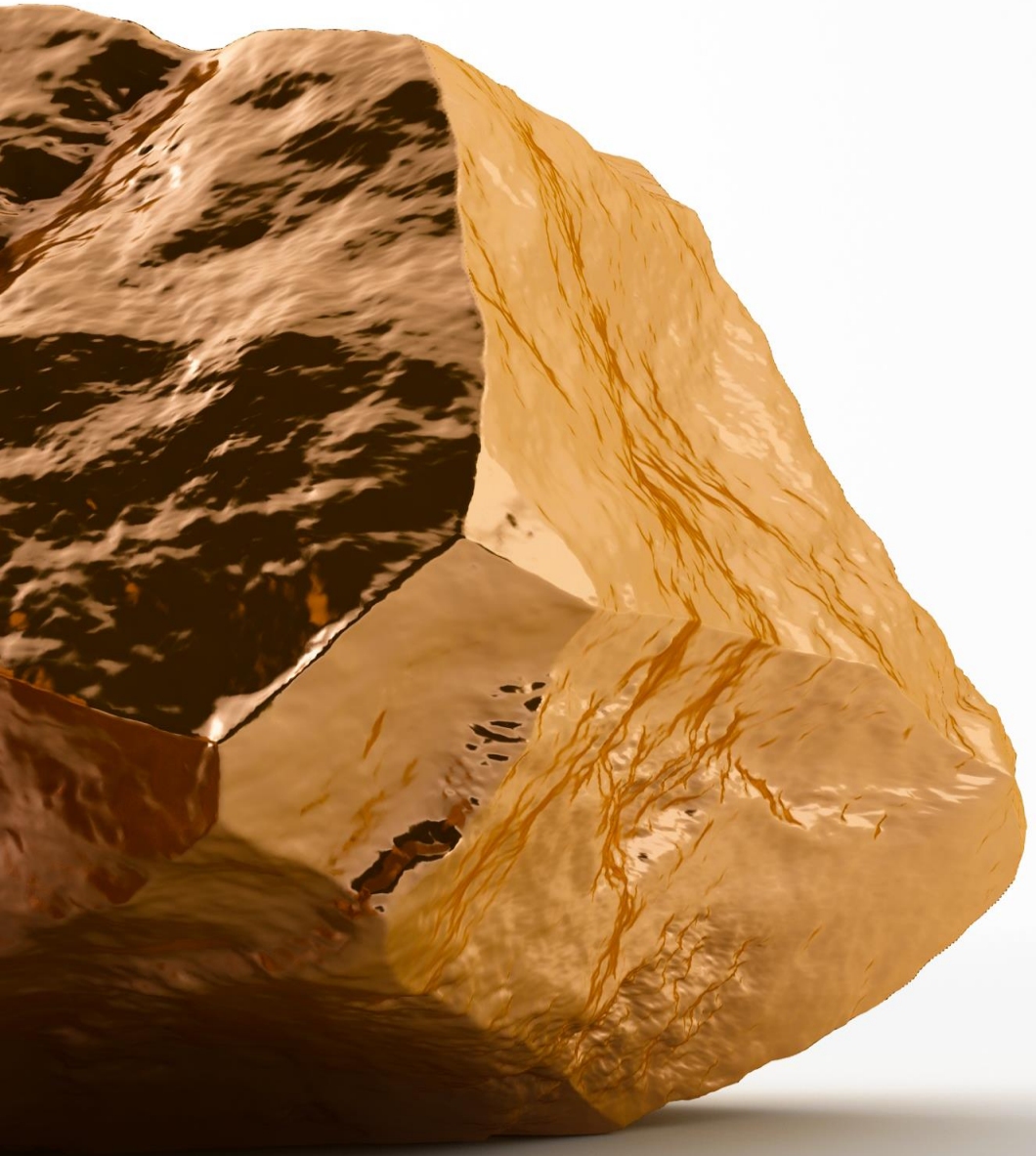

INNOVATION REALIZED:
Osisko Mining Corporation

- Collaboration between Osisko Mining and Western University.
- Analyzed geospatial patterns for mineral exploration and mining in Canada.
- Using cloud computing to automate, represent and analyze data sets to improve geologists work and reduce time/cost of compiling GIS maps.

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INNOVATION REALIZED: Pratt and Whitney

Predicting nvPM/Soot formation and emissions in aviation gas turbine engines

- Research team is using CFD to design a more efficient fuel injector for gas turbines for next generation combustor technologies.
- The technology will optimize engine performance in all stages – from the runway, to take-off and in-air.
- Project will help P&WC meet international targets for reducing emissions.

Academic Partner: University of Toronto

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INNOVATION REALIZED: MDS Aero Support

High fidelity simulations and low order aero-acoustic modelling of engine test cells

- Predictive modelling of flow generated noise is central for development of noise-mitigating designs.
- SOSCIP's high performance computer are being used for high fidelity, large-eddy simulations to ultimately develop a low order aero-acoustic model to predict resonant acoustic models.

Academic Partner: University of Waterloo

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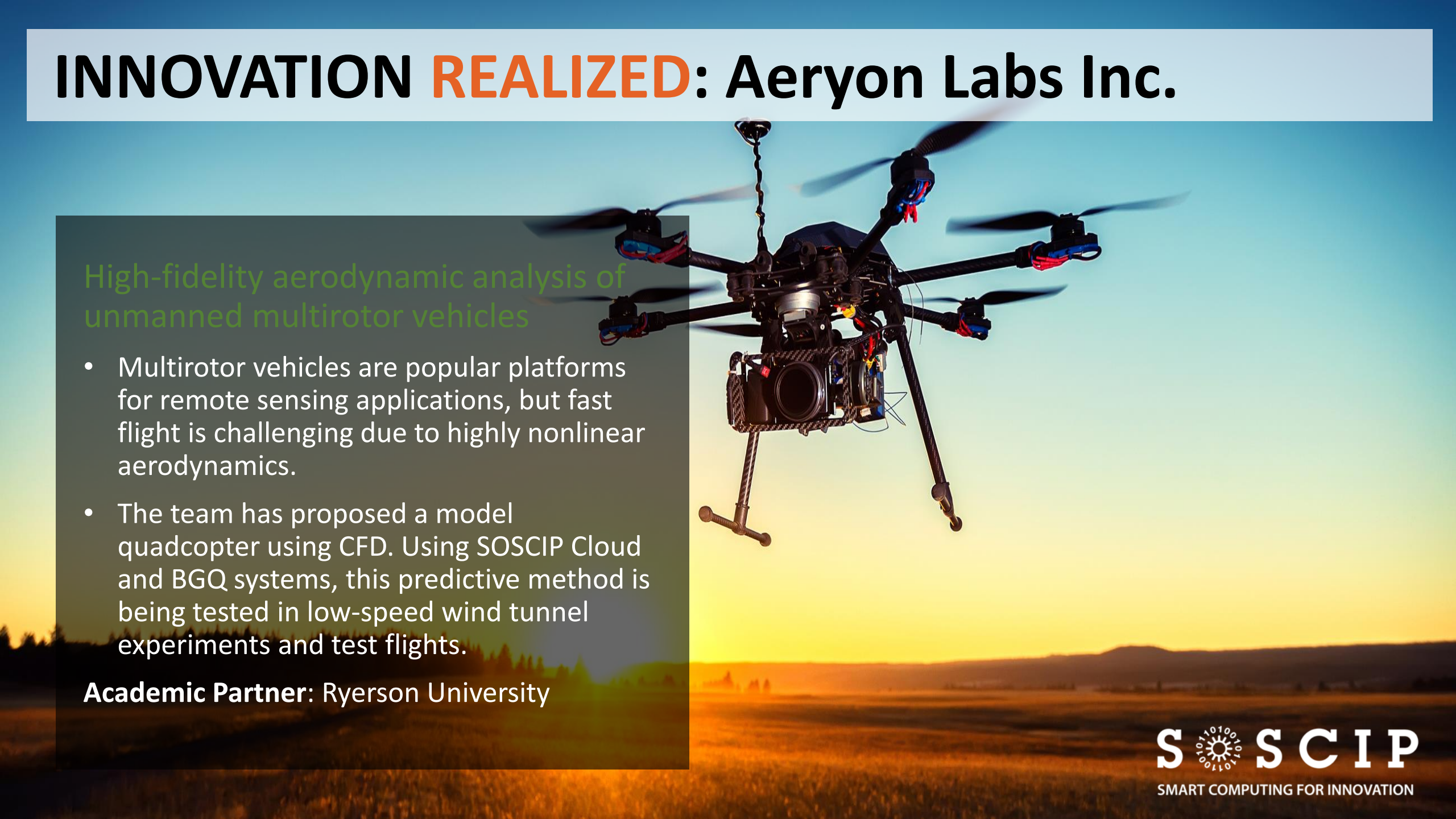
INNOVATION REALIZED: Aeryon Labs Inc.



High-fidelity aerodynamic analysis of unmanned multirotor vehicles

- Multirotor vehicles are popular platforms for remote sensing applications, but fast flight is challenging due to highly nonlinear aerodynamics.
- The team has proposed a model quadcopter using CFD. Using SOSCIP Cloud and BGQ systems, this predictive method is being tested in low-speed wind tunnel experiments and test flights.

Academic Partner: Ryerson University

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INNOVATION REALIZED: Unilever Canada

Automated modelling of trade promotion planning.

This project addresses challenges related to promotional planning in the consumer-packaged goods sector. Unilever sells over 400 brands each generating billions of dollars in sales. Forecasting models can help promotional spending and sales lift from specific promotions leading to improved profitability.

Using SOSCIPs Cloud Analytics and GPU platforms, this project focuses on using statistics and machine learning to examine financial data, consumer behaviour, competitor pricing, promotional activities, demand and retailer behaviour to develop a proof-of-concept framework for promotional planning.

Academic Partners: University of Ottawa

INNOVATION REALIZED: IBM Canada

#Here4U Military Edition: Can AI help reduce mental health stigma for the military?

Members of the Military are at greater risk of major depressive episodes, panic disorder, post-traumatic stress disorder (PTSD), generalized anxiety disorder, and alcohol or substance abuse.

IBM Watson will engage with the client to identify a presenting problem and when clinically serious, engage a counselor for guidance and referral; otherwise, Watson will carry on a conversation with the client, giving advice or referring to mental health resources.

Academic Partners: Queen's University

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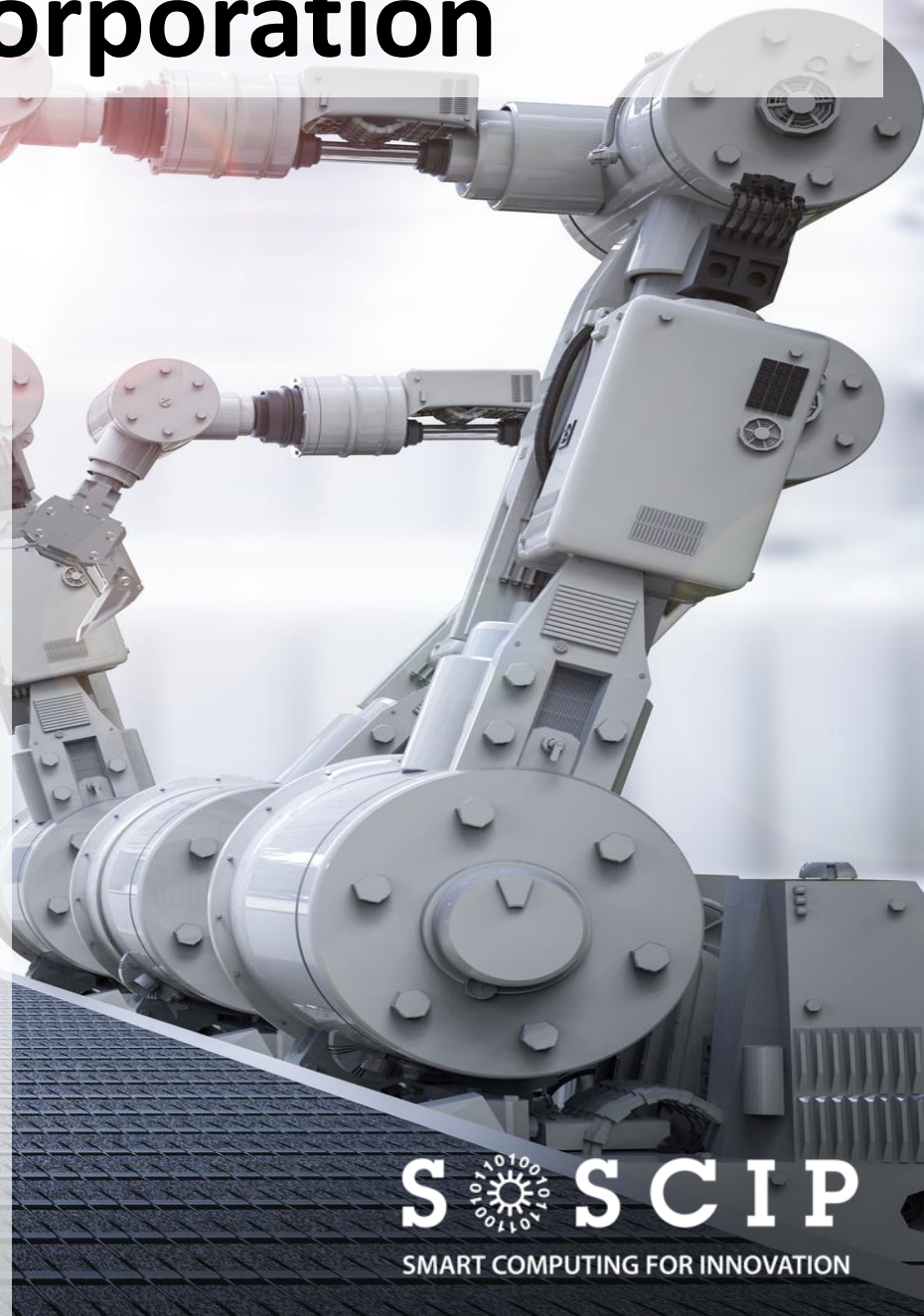
INNOVATION REALIZED: MDA Corporation

Safe learning-based control for high precision assembly robots in advanced aerospace manufacturing

MDA are designing versatile, high-precision assembly robots for aerospace applications in order to lower assembly costs, increase productivity and reduce human error.

In collaboration with UofT, the team is using SOSCIP's platforms to combine advanced methods from control theory, machine learning and optimization to develop computationally efficient, learning based algorithms that improve the assembly robot's performance in uncertain scenarios.

Academic Partner: University of Toronto



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INNOVATION REALIZED: Vubble

AI-Enhanced Curation to Automate Video Categorization and Filter Fake News

In the age of misinformation and fake news, Vubble provides customized and curated video content from reputable sources.

SOSCIP is providing computing power to design, implement and train a system that can automatically categorize and label video content. This will reduce valuable editorial time, broaden the types of videos for review and suggest important and authentic content at a faster pace.

Academic Partner: Seneca College

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INNOVATION REALIZED:
Tillsonburg Hydro Inc.

- Western University and Tillsonburg Hydro Inc. are building a smarter resilient power grid.
- Developing a novel, smarter and predictive self-healing transmission grid to improve efficiency of the electrical grid and quickly return power to customers.
- Using the SOSCIP Cloud platform to develop and evaluate fault management and rerouting algorithms.

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INNOVATION REALIZED: Inovex Inc.

Using advanced computing to predict border delays

- The border between Canada and the U.S. serves as a critical juncture for many sectors delivering essential and time-sensitive goods and services.
- Borders are subject to unpredictable delays during customs and security inspections.
- Using SOSCIP's Cloud Platform to accurately predict border delays within a range of ten minutes to two hours and provide notifications of port-of-entry delays to shippers, dispatchers, drivers, receivers and supply chain managers

Academic Partner: University of Windsor

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