

NAVY SBIR TRANSITION PROGRAM

SPOTLIGHT

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SRT Labs Designs Facility Health Monitoring, Energy Saving Software for Buildings and Infrastructure

Service Robotics & Technologies, Inc. (SRT Labs) is a software integration company that builds integrated facility health monitoring systems to track real-time health status of machines and buildings. These systems can identify and prioritize areas for repair, and predict where future failures might arise, as well as optimize equipment use.

SRT Labs brings necessary legacy infrastructure into shared data ecosystems with intelligence and security. SRT Labs' M1 Platform provides a place to consolidate data streams from across siloed systems, allowing users to monitor, analyze and automate operations. SRT Labs supports organizations by building on existing capital infrastructure and retrofitting when required to convert to "smart" systems. By layering in sensors and connected devices to fill data gaps, their systems can improve utility monitoring, evaluate environmental conditions, and optimize device, campus, military base, or city operations. By streamlining information to appropriate levels of leadership and sending alerts to end-users, this connected ecosystem saves

The M1 Platform



Map Based Dashboard
Map-based displays and flexible inputs provide the visualization of facilities to improve operations

Intelligent Analytics
A common data ecosystem gives user insights and proactive solutions across systems

Hardware Agnostic
Optimize operations with agnostic integration capabilities sensors, softwares, and robotics

Design for the Future
Future-proof facilities for growth and development and plan for adding in robotics and IoT devices

Image courtesy SRT LABS.

SRT Labs' M1 Platform provides a place to consolidate data streams from across siloed systems, allowing users to monitor, analyze and automate operations.

organizations resources, reduces capital expenditures, and improves services.

"Our M1 platform integrates disparate devices from different manufacturers—including robotics, legacy devices, and legacy software as well as new smart devices—to bring everything into one single pane of glass for data and asset management," explained Jens Fritzenwanker, Ph.D., a solutions architect at SRT Labs. "These days many organizations have access to a lot of data. Sifting through all the data and making it meaningful can be difficult or even impossible. Our software pulls data from deployed sensors across the facility into a common data management ecosystem and

performs cross-platform data analytics. We also cut down on noise, making alerts meaningful. You get a system where every alert has a meaning for the person who receives it and it's not overwhelming."

SRT Labs' software modernizes legacy and manual systems to provide predictive notifications for anticipated machinery downtime, reducing actual downtime of critical facility infrastructure, and profoundly improving facility efficiency, optimizing maintenance requirements, and improving reporting of machinery operations. This patented map-based data analytics platform creates a hardware agnostic device integration platform providing wide-ranging facility insights based on specific deployment needs.

"That single pane of glass can be used to monitor, analyze and automate across different platforms to see all that real time data of the building health status or to identify the health of the facility, and predict future failures or repairs that might need to be made. Our system scales from facility to whole buildings, campuses and smart cities," said Emily Wicks, marketing coordinator at SRT Labs.

SRT Labs recently participated in the DoN SBIR/STTR Transition Program. "The Navy STP supports small businesses in understanding the federal landscape, which—without guidance—can be a complex challenge! We are grateful for the support they provided as we start transitioning our R&D technology into DoD programs of record and other federal applications," Fritzenwanker

explained.

Marine Depot Maintenance Command

SRT's technology has been deployed at the Marine Depot Maintenance Command (MDMC) in Albany, Georgia. SRT Labs' software provides predictive notifications and reduces shop downtime by providing actionable information to adjust workflow. "We monitor their workstations, including paint and blast booths, using non-invasive sensors to retrofit equipment where needed, to monitor runtime, machine health, and air quality," Fritzenwanker said.

They are proposing to do more of those deployments. "The Marine Corps is envisioning their smart depot, and SRT Labs is proposing that the MI Platform be the software to provide real time insights into the facility, alerts, and reports on runtime hours, including accessibility and availability of shop booths. The long-term vision is to connect machine monitoring to the work order management system so that if a machine breaks down, a ticket gets issued immediately," he explained.

"Dashboards and user access are tailored to the site. The engineers will have an analytic dashboard for machine maintenance, showing raw or analyzed data for machine health. Shop managers will see workflow data, such as how often during a given workday a booth is in use so they can make decisions on capacity and allocation, and redirect workflow as needed."

Puget Sound Naval Station

SRT Labs has two deployments at Puget Sound Naval Shipyard. “One deployment is for machine health and run time. We are retrofitting the older machines to monitor run time, and then combining all machine run time reports into a single management dashboard, connecting that to alerts and reports. The second deployment is for a pump well so it’s a little different; it provides a dashboard showing the current state of all the valves and gauges in that pump well. There will be a little bit of machine health monitoring too. The pump well set up is a new way of using sensors for our software because more real time data is needed. They need a live view of a system—to know what the state is right now—rather than in the morning. In the morning they want to know what the machine run time

was for yesterday,” Fritzenwanker said.

Commercialization of SBIR-Funded Work: Automating University HVAC Systems

SRT Labs’ work with the Navy has been expanded into an application of the MI Platform for university and business campuses, integrating room reservation software and occupancy sensors with the HVAC system to provide occupancy-based automation and automating micro-control of climate in a way that was not previously possible.

SRT Labs received a program grant from Virginia Innovation Partnership Corporation (VIPIC). “There are pilots in progress on two campuses right now on the East coast, each showing dramatic opportunities for cost savings,” Wicks said. The work is reducing thousands of room-hours of



Facility Health Monitoring

Monitor Environment

Visualize environmental conditions compared to occupancy and more with holistic data collection



Automate Actions

Software systems react preemptively and notify techs to anomalies before catastrophes form



Predict Failures

Maximize uptime by predicting failures based on health monitoring and react before breakdowns



Inform Decisions

Data insights and decision-ready analytics help inform decisions on resource allocation



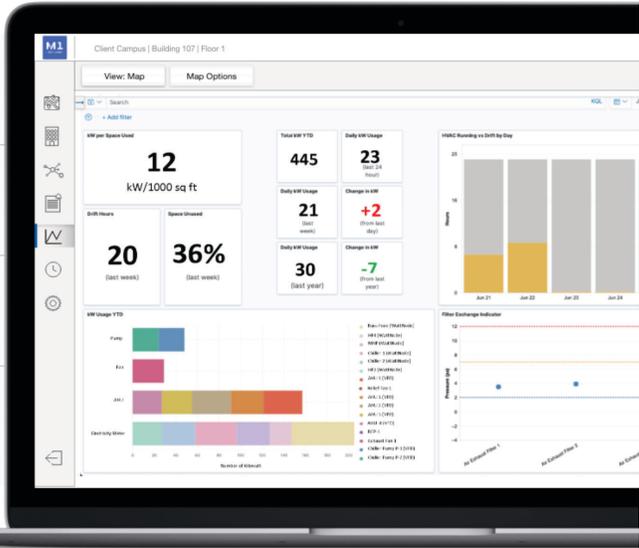


Image courtesy SRT LABS.

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climate control per campus each month, reducing energy consumption across the campuses.

“SRT Labs supports the mission of the 2008 American College and University Presidents’ Climate Commitment to address the threat of climate change, and works with universities committed to reducing energy usage. These deployments support that mission by reducing energy consumption of their heating and cooling systems. The MI serves as the technical base layer for system integration, and the breakthrough in this work has been integration of the building management system and the room reservation scheduling system. We layer in occupancy to create a dynamic system based on planned and actual occupancy, informing the building management system of which room needs to be cooled or heated exactly in which time interval. These micro-adjustments, as they are called, can save a good amount of energy. Some universities already add their reservation system information manually into the building automation systems, but if no one shows up the HVAC system doesn’t know that. The same applies if a room isn’t reserved and then all of a sudden there are 100 people in it. Our software creates a more organic automated system which responds to live events and scheduled events and that saves energy,” Fritzenwanker explained.

In addition to working with the universities in the pilot, SRT Labs is partnering with HVAC companies

including Siemens, the manufacturer of the building automation systems for both pilots. “SRT Labs has formalized this partnership and is working with Siemens on co-marketing strategies for the commercial version of our product,” said Fritzenwanker.

What’s Next

“We are fortunate that the SBIR grants have supported the development of this flexible smart campus base layer, which allows us to integrate everything from paint booths to HVAC! We are also applying it in hospital and warehouse settings. We help people envision how this software can connect legacy devices and new devices and bring all the data into one system, and how that can help them plan for their smart campuses,” Fritzenwanker said.

The software can be used for asset tracking, warehouse automation and inventory management, custodial services automation, automated robotic retrieval, and item location misalignment notification. All require similar monitoring components, sensor integration, data analytics, machine learning, and dashboarding for data visualization and insight notification.

SRT Labs specializes in the development of integrated hardware-agnostic software ecosystems for robots, smart sensors, and internet of things (IoT) devices. For more information, visit the company website at <https://srtlabs.com/>.

