Modernizing the Electric Grid with Remote Intelligence Solutions

Audrey Woods, MIT CSAIL Alliances | September 22, 2025

Electric utility companies are struggling under the weight of managing an aging infrastructure with outdated methods and the exploding power demands of artificial intelligence, expanding data centers, electric vehicles, and more. Deteriorating and damaged equipment can lead to hazardous situations for workers and civilians, such as the catastrophic wildfires in California and Colorado. Utility companies are eager to improve their safety, reliability, and resilience, but they need better ways to inspect and maintain their current assets to meet the needs of today's economy.

To enable digital transformation in the utilities industry, MIT CSAIL Alliances Startup Connect Plus member Remote Intelligence Solutions (RIS) has created a comprehensive data management system for inspection, assessment, maintenance, and regulatory reporting, powered by AI and trained by industry experts. Their platform integrates easily with existing workflows, can process data exponentially faster, and, by keeping this critical infrastructure functional and robust, will save money, time, and lives.

STARTING THE COMPANY: DRONES AND INDUSTRY DEMAND

RIS co-founders Stuart Rudolph and Janet Ahlgren—a married couple—are seasoned entrepreneurs with years of experience creating technical solutions to meet real-world needs. They met while pursuing separate ventures in different parts of the country and had to work around their busy travel schedules to see each other. Rudolph jokes that they went into business together because they wanted their schedules to align.

Originally, Rudolph and Ahlgren worked with the government to modernize old systems for operations and management. They created software that meshed easily with existing architectures, captured institutional knowledge, and accelerated data processing. During this time, they also noted the rapid proliferation of drones. "All of a sudden, I could go on Amazon, buy a drone and poof! I'm a pilot and a photographer," Rudolph says. "We knew the problem would become: what are you going to do with all that visual data?" With their entrepreneurial instincts, Rudolph and Ahlgren deduced that drone technology would offer new ways for utilities to inspect assets like electric poles and transformers, and that would create an associated demand for technology to process and organize the images and data collected.

There are over 180 million electric poles in the United States alone—a number that is quickly growing—and each pole houses a complex variety of components which have to be inspected on a regular basis. This generates billions of images which need to be uploaded, sorted, evaluated, and annotated. Rudolph explains, "one person looking at 100,000 images, which is about 20,000 poles, could take close to two years." If an image reveals some time-sensitive damage that might lead to severe outages or injury—like a pole falling on a car—any delay can be catastrophic. The RIS platform, Rudoph says, "can do the same image evaluation that might take a human two to three minutes in three seconds," offering up to 40x more efficiency.

A benefit of their platform is how easily it integrates into current, familiar procedures, meaning utility workers—many of whom have been doing this work for decades—can rapidly adopt the RIS system as part of their normal operating procedures. Also, the RIS Applied AI is trained as it's used via supervised machine learning, so it is constantly improving and digitizing institutional knowledge. With looming shortages of skilled labor and an aging employee base, it has never been more urgent to capture hard-won experience before staff retire. By gathering both images and knowledge into one searchable, catalogued, trackable database, RIS offers a better way to organize and retrieve the information necessary to keep the electric grid healthy and reliable.

Ahlgren emphasizes the practical mindset of their company, saying, "We have a very experienced team. We're past the dreaming stage. We know that you need to have an anchor point and we are going to apply AI to a problem that exists now." RIS is currently working with the AWS B2B marketplace to deliver their platform globally and expand their AI services. They are also collaborating with the Electric Power Research Institute to standardize labeling, which remains a major problem across the industry. "Electricity is non-negotiable," Rudolph says. "The grid's getting old. We're here to help manage the unmanageable and add to the safety and resiliency of our key infrastructure."

CONNECTING WITH CSAIL: APPLYING RESEARCH TO INDUSTRY

For Rudolph, connecting with MIT was an easy choice. He grew up around the corner from MIT's campus and, when he and Ahlgren started the company, immediately looked for ways to get involved in MIT research because "who better to work with when it comes to computers, science, and artificial intelligence?" This led him to CSAIL Alliances, which he says has welcomed with "open arms his use of applied AI to solve practical problems."

"The beauty of this group is that you're bringing together both the large companies and the very small companies. Everyone wants to learn and share, and that makes this experience incredibly fruitful." Rudolph credits the success of their engagement with CSAIL in large part to the diligent efforts of Senior Client Relations Coordinator Christiana Kalfas. "Throughout my years of running companies, there have been very few occasions in my partnerships with other organizations when I have worked with someone of her caliber, possessing a strong work ethic, friendliness, and an intuitive understanding of what to do and what not to do to achieve success. She has been an exceptional asset in maximizing Remote Intelligence Solutions' alliance with CSAIL."

After attending the 2025 CSAIL Alliances Annual Meeting and discussing their goals with Kalfas, the RIS team has targeted three main research groups at CSAIL. They've spoken with MIT CSAIL Professor Fredo Durand about imaging, motion, 3D, and video. Professor Durand introduced them to MIT CSAIL Assistant Professor Sara Beery, whose work on processing images of vegetation is directly relevant to RIS's efforts to categorize and process images of foliage that could negatively impact an electric line or pole. Finally, RIS is speaking with MIT CSAIL Professor Manolis Kellis, whose Mantis software offers new opportunities for categorizing and visualizing similar images, which could help RIS autonomously predict, for example, types of transformers that have a history of anomalies and breakdowns.

Rudolph is keen to maximize their relationship with CSAIL and Alliances, saying, "We try to come up once a month. **Why would you not want to be here and walk around MIT and talk to the faculty and students and learn from them? You get nothing out of it if you're not there to participate."** This active engagement allows the RIS team to maintain open lines of communication with researchers and creates a solid foundation that they plan to build on going forward.

LOOKING AHEAD: MORE & BETTER

As they dive into fundraising, Ahlgren says RIS is motivated by the utility industry's current interest in applied AI. "The electric utility industry is ready to change. They are under surging pressure to grow and modernize, so it's an industry that is open to help." While there are challenges around educating customers, pinpointing open-minded early adopters, and raising awareness in a startup culture fixated on the "unicorn" tech companies, Ahlgren is excited to help an "inherently conservative utility industry move into their digital transformation." Rudolph's enjoyment comes from solving important problems. Citing recent wildfires that have been sparked by faulty electric grids, he says, "I sympathize with these poor people, whose lives were upended because of a lack of ability to find a needle in the haystack." By engaging with more electric utility companies—and potentially other utilities in the future—RIS aims to make sure that doesn't happen again.

When it comes to CSAIL, RIS is now looking to collaborate not only with MIT researchers but with other companies in the CSAIL Alliances ecosystem, both large and small. "What we need to do next is to start working with like-minded people to integrate different types of technology and bring a stronger problem-solving mindset to the utility market we're focused on."

Combining practical industry experience with cutting-edge MIT CSAIL research, RIS will continue to expand its capabilities to intelligently apply AI to address real-world problems.