

University Of Michigan Developed Software Recognized For Successfully Battling Lead Pipe Water Contamination

Georgia Tech University

University of Michigan



Lead pipes contaminate drinking water, endangering people across the United States, but it can be hard for water utilities to tell which homes are most at risk because they lack accurate service line inventories. This uncertainty delays replacements of these lead service lines, increases costs by creating inefficiencies in digging to find the lead, and extends the amount of time people live with the risk of lead exposure.

Data science expertise and the desire to create more equitable use of resources across communities led professors Jacob Abernethy of Georgia Tech and Eric Schwartz of the University of Michigan to create BlueConduit, a company whose software predicts which homes have lead pipes that need to be replaced using an algorithm. That algorithm predicts unknown service line materials from utility records and the age of a home, among dozens of other factors.

The company's proprietary software reduces the total time people are exposed to lead, maximizes available funding by helping remove lead service lines efficiently, and analyzes risk so cities know which homes need to be prioritized. The technology has been so successful that BlueConduit was named a Best Invention of 2021 by Time Magazine.

"BlueConduit's data-driven approach has empowered city officials to proactively address the issue of lead pipes, by simplifying a complex process and by giving water utilities clear ways to communicate risk to residents, including interactive maps. The technology also saves taxpayers and utilities money," said Schwartz. "BlueConduit was the first to develop this method, or any kind of method of predicting materials of service lines buried underground, and we have been inventorying and identifying lead service lines since 2016."

Today, the technology is being used in more than 200 cities, towns, and water systems, including Flint, Detroit, Trenton, and Toledo, saving hundreds of millions of dollars. BlueConduit has inventoried over 2 million service lines which serve more than 4 million people and has so far led to the removal of more than 15,000 lead service line pipes.

Working with University of Michigan's Innovation Partnerships, the office responsible for research commercialization, Schwartz and Abernathy were able to launch BlueConduit while keeping their careers focused on teaching and research.

"We really love our lives as academics. We appreciate this real privilege of being faculty at research institutions, and that includes benefits like being able to work with groups like Innovation Partnerships, who encourage real-world impact of our work. This allows us to build a business as a social enterprise that is genuinely mission-driven," said Schwartz. "We truly could ask the questions: What is the best vehicle through which this technology can have the biggest impact?? How can we improve the lives of as many people as possible nationwide? How can we take this beyond lead pipes and water?"

Accessibility and equity remain key priorities for the company, which has worked with various foundations to make its predictive modeling approach more accessible. Thanks to a \$1.5 million Google.org grant received in 2021 and \$1.2 million in grants from The Rockefeller Foundation since 2020, the BlueConduit has provided its services to underserved and disadvantaged communities, without charging those communities, and the company also is making available free open-source tools to help communities start identifying lead pipes, the first step in the removal process.

BlueConduit joined a White House partnership aimed at replacing all of the nation's lead service lines in a decade. The Get the Lead Out Partnership, a public-private initiative aimed to expedite the removal of lead in drinking water, was launched by the Biden-Harris administration in January of 2023, where BlueConduit was invited to the White House to attend.

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