# Can cycling be safer if bikes are smarter and 'talk' to cars?

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Jake Sigal wants to make biking safer. To do that, Sigal and his Detroit-area software company, Tome, plan to make bicycles, or their accessories, smarter and allow them to communicate with the cars and

trucks that occupy the same streets, sometimes leading to fatal interactions.

For the next year, Tome will be working at the Mcity autonomous vehicle test site at the University of Michigan to develop software that can go into bike and car accessories and apps. The software would, among other things, alert vehicle drivers when cyclists are in the area to potentially cut down on collisions. A car's navigation system could, for instance, warn a driver who might have trouble seeing because of glare from sunlight that a cyclist is nearby. How exactly the technology would function is not yet known because the project is in its earliest stages.

Sigal said the goal is not to tie the effort to one platform or product and he hopes to add partners as the project moves forward. The team will be working through the University of Michigan Center for Entrepreneurship's TechLab incubator at Mcity, which can provide student interns as well as researchers and other resources. Mcity is a 32-acre test site in Ann Arbor for autonomous vehicles and mobility technology. It opened in 2015 through a public-private partnership.

Sigal, who is a regular cyclist and lives in suburban Detroit, sees the project as a way to solve a problem that "everyone talks about," but no one has adequately addressed.

"This is something that will absolutely save lives if we do this," said Sigal, who knows firsthand about the close calls that come from riding a bike on Michigan's roads.

Sigal, 36, and his business partner, Massimo Baldini, are working with Trek Bicycle on the project and funding their portion themselves. Sigal estimates the total investment for all involved will be between $1 million and $1.5 million.

Although bicycle gear and clothing have been made more visible to drivers in recent years, and biking infrastructure, such as bike lanes, is being expanded, the need to boost cyclist safety is clear, Sigal said. Approximately 45,000 cyclists were hurt and 818 were killed in 2015, according to the latest available federal transportation statistics.

And as cycling has gained in popularity, the danger for cyclists has increased. A study by the Governors Highway Safety Association and State Farm noted that 55 additional cyclists have died each year since 2011 on U.S. roads.

Navigation systems in cars and trucks, cycling equipment and smartphone apps already provide the ability to send or receive alerts and messages, so allowing bikes and vehicles to communicate should be manageable. More challenging will be developing technology that determines when a driver might need an alert to watch for cyclists. Simply alerting a driver, for instance, that a cyclist is nearby could prove pointless or annoying in areas where there are regularly lots of cyclists, so those scenarios would need to be taken into account.

Sigal said the team wants to use artificial intelligence to help determine the most dangerous areas for cyclists and provide appropriate alerts. The technology to be developed would consider road and environmental conditions, such as road width and weather, as well as records of past accidents and what local experts have to say.

Making the technology affordable would be key to acceptance. A cyclist might not pay an extra $300 to buy an item for her bike that helps her avoid getting hit by a car, but she might be willing to pay extra when already buying a piece of equipment, such as a headlight, that could signal a driver when a cyclist is nearby, Sigal said.

Technology that lets cycles and cars communicate will also be critical as

autonomous vehicles begin traveling more frequently on public roads, Sigal said, noting that Trek approached Tome about working on the project.

Tome's founders have a track record of dealing with automotive companies and vehicle connectivity specifically. Ford purchased Livio, a software startup, from Sigal and Baldini in 2013. The pair formed Tome, which now has 20 workers, the following year.