The gasoline-powered private automobile was one of the greatest inventions of all time. Over the last century, it has radically transformed our daily lives and the forms of our cities. However, it has become increasingly apparent that there are strict limits to scales at which automobile-based personal mobility systems can effectively and responsibly operate, and that we are fast approaching those limits.

MIT has designed several new battery-electric vehicles – the CityCar, the RoboScooter, and the GreenWheel electric bicycle – that are utilized within mobility-on-demand systems. All of these vehicles are extremely lightweight, have small footprints, have no tailpipe emissions, and are extremely frugal in energy use. This is accomplished without compromising safety, comfort, convenience, or fun.

Mobility-on-demand systems provide racks of these vehicles at closely spaced, convenient locations around an urban service area. Vehicles automatically recharge while they are in these racks. Users walk to the nearest rack, swipe a credit card, pick up a vehicle, drive it to a rack convenient to their destination, and drop it off. These are, in other words, ubiquitously distributed one-way rental systems. These systems are highly efficient in reducing urban congestion, energy use, and carbon emissions. They are synergistic with ubiquitous wireless networking and distributed intelligence, and with solar-friendly, wind-friendly, fuel-cell-friendly smart electrical grids. There are some attractive business models for their introduction, and the political and economic climate is increasingly propitious.