



## A New Paradigm for Personal Urban Mobility

A statement from the Buckminster Fuller Institute about the winner of the 2009 Buckminster Fuller Challenge  
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The evolution of human settlement has reached the point where over half of the world's 6.77 billion people now live in cities. Where is this trend headed? The UN estimates that in a little over 40 years the projected global population will reach 9 billion, of which 70% will be urban dwellers. How we choose to manage this epochal transition will determine the quality of life on this planet in fundamental ways.

The use of personal transport vehicles is basic to urban environments. However, in many crowded metro regions around the world increasing traffic congestion and tailpipe emissions are having serious impacts on human health, safety, productivity, civic beauty and the climate. Compound the current state with the likelihood that over the next handful of decades more than 6 billion humans will reside in urban settings and it becomes painfully obvious that a new paradigm for urban personal mobility is absolutely critical.

Buckminster Fuller insisted that "you never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete." This is precisely what the [Smart Cities Group](#) at the MIT Media Lab has recognized and set out to accomplish through their winning strategy: [Sustainable Personal Mobility and Mobility-on-Demand Systems](#).

In setting out on this challenge, the Smart Cities Group at the MIT Media Lab examined how existing mobility, energy, and communication systems worked in cities and discovered the lack of integration between these systems and inefficiencies within each. In particular, the privately owned and fossil fueled automobile was in need of reinvention with respect to urban use. They have designed and tested a complimentary set of electric powered vehicles (bicycle, scooter, and car) with extraordinary innovation in efficiency, safety and convenience. In addition, they have addressed what is referred to by transportation planners as the "first and last mile" problem - the ubiquitous gap between final destination and the nearest public transit stop. The team has also developed a compelling economic model and business plan informed by in-depth case studies that will likely continue attracting public and private support.

Most of the media coverage about this initiative concentrates on the advanced design of the vehicles. This is understandable given our culture's fascination with futuristic technology. But if you probe deeper, the Media Lab's strategy seems to transcend the circumscription of sheer engineering prowess. From our perspective, we see certain design principles operating at the core of this initiative which we believe provides the basis of its underlying integrity.

Viewed as an integrated whole, one can see that the SPM/MoD strategy seeks to embody the key characteristics of stable, vibrant, complex systems found in nature. Headed by Professor William J. Mitchell and PHD candidate Ryan Chin, the team has employed an approach that contains *essential levels of variety* and relies on *mutual adaptation*. They envision a personal mobility model which is sufficiently *diverse and networked*, to be capable of producing an evolving process of *dynamic equilibrium*. Variety is expressed by combining multiple vehicle types at abundant access nodes with a flexible mix of capacity and price options tailored to fit local demographics and usage patterns. To ensure functioning as an adaptive, creative, learning system, SPM/MoD deftly incorporates another primary feature of resilient natural systems:

continuous *feedback loops*. This is achieved through location based tracking (GPS), real time information flows between users and mobility managers, as well as dynamic pricing incentives. SPM/Mod takes other important steps forward by including the use of renewable energy resources, designing for smart grid applications and optimizing components for future “[cradle to cradle](#)” material flows.

The timeliness of this new paradigm for personal urban mobility makes it easy to foresee, that in the not too distant future, it could be successfully implemented in both old and new cities and on all continents. It could also allow emerging urban areas to leap frog over the dysfunctional approach to personal mobility currently plaguing many developed economies. *Sustainable Personal Mobility and Mobility-on-Demand Systems* charts a clear path toward significantly improving the climatescapes, streetscapes, and soundscapes which impact millions of urban dwellers around the world.