# THE CITY CAR

## CITIES AND ENERGY

Urban networks will increasingly determine the pattern of future energy demand. Incremental efficiency gains in urban networks through new technologies and gadgets are useful, but will not suffice to achieve long-term sustainability.

Because land use, transportation, and energy distribution are tightly coupled, the big potential efficiency gains result from rethinking the whole system of urban networks. The strategy of the City Car project is to reinvent urban personal transportation.

## PRINCIPLES OF THE CITY CAR

City Cars are shared-use, two-passenger electric cars that fold and stack like shopping carts. Omnidirectional robot wheels and drive-by-wire controls replace the traditional engine, drive train, and steering mechanism.

You swipe your credit card, pick up a car from a stack, and deposit the car at another stack when you are finished – like having valet parking everywhere. Recharging occurs whenever the vehicle is stacked, so there is no need for very long range or heavy, bulky batteries. Inductive charging eliminates the need to plug in.

## CREATE SMALL, AGILE, CLEAN, SILENT VEHICLES

The City Car has the same footprint as a Smart when extended, is half the size when folded, and is more agile than a traditional car, so it makes much more efficient use of urban infrastructure. It is very lightweight, all electric, digitally controlled, almost silent, with no tailpipe emissions.

## SELL INNOVATIVE TRANSPORTATION SERVICES, NOT COMMODITY PRODUCTS

The shared use principle allows for a very high utilization rate and the transformation of the automobile industry from a low-margin, commodity product business to an innovative service business.

## RETHINK THE URBAN POWER GRID

With large-scale use, City Car stacks introduce enormous battery capacity into the electrical grid. These batteries effectively utilize inexpensive, off-peak power, and clean but intermittent power sources – solar, wind, wave power, etc. A smart, distributed power generation system composed of these sources enables the entire city as a virtual power plant and minimizes transmission losses.

If fuel cells make sense, locate them in buildings – where they are much more easily accommodated – rather than in vehicles.

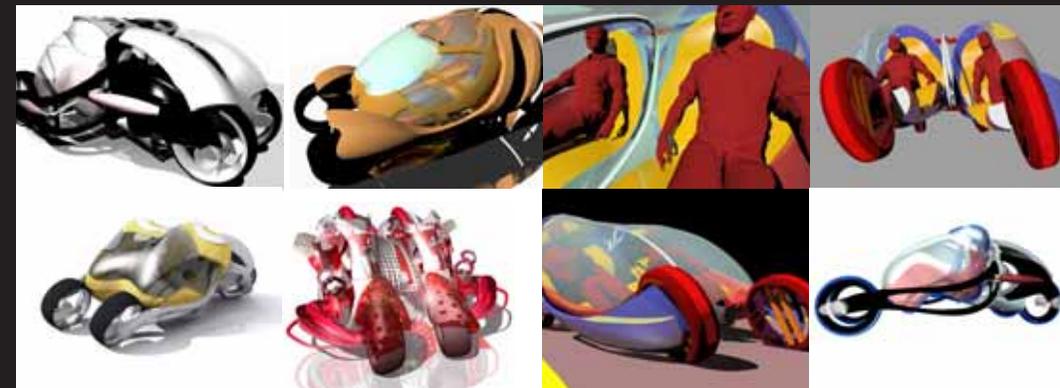## PROVIDE A SMART, MOBILE INTERFACE TO THE CITY

The whole point of urban personal transportation is to provide people with access to the resources of a city. People live in cities to gain this access, but the cost of access grows exponentially with the size of the city. It costs much more to search and to travel in large cities than in small towns.

Think of the car as a mobile computer, with larger screens and better power supplies than mobile phones and laptops. Add the capabilities of Google, MySpace, GPS navigation, etc. Replace traditional dashboards with sophisticated, wirelessly networked interface-to-the-city systems.
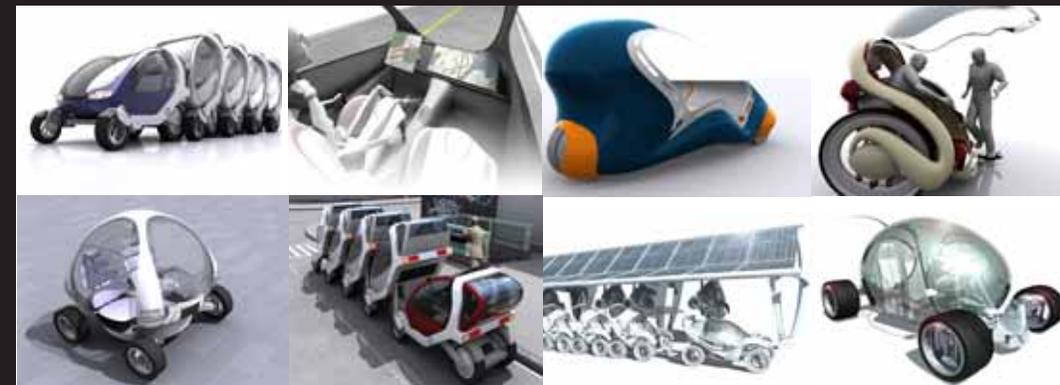
Clear space for this by eliminating the steering wheel (replace with virtual handlebars) and sending most mechanical information to the transportation system operator (who takes responsibility for providing reliable service) rather than the driver.

Efficiencies are realized through more intelligent driver behavior, shorter trips, and new land-use patterns enabled by better information.

## ATHLETE CAR



## CITY CAR



## ENERGY