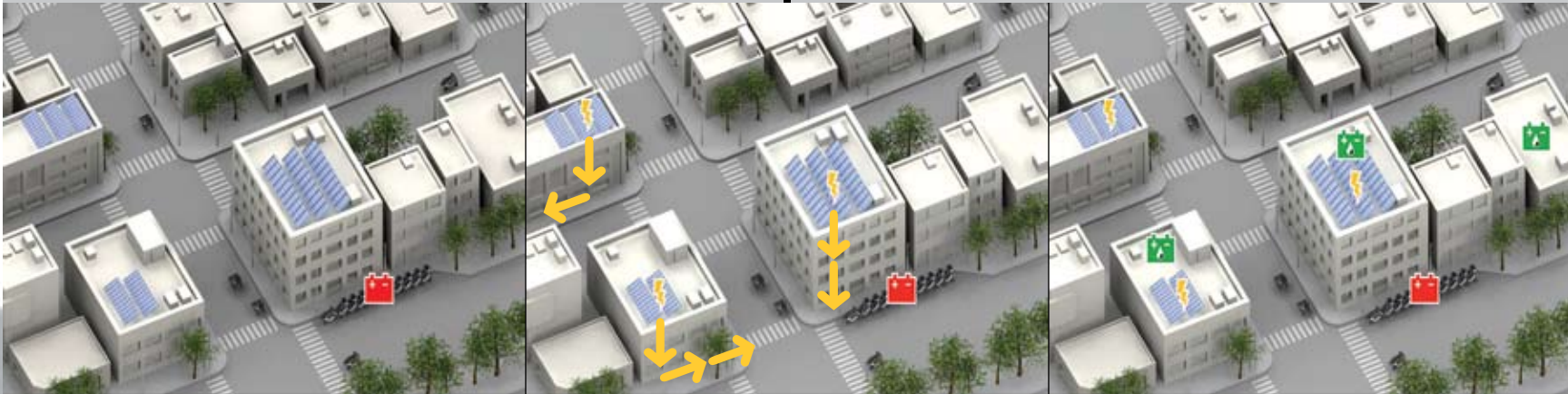




# CITY CAR

Reinventing Personal Urban Transportation

*If you combine the economy of car sharing with the environmental friendliness of an electric vehicle—and then add a really cool design that allows the car to fold and stack like supermarket shopping carts at convenient locations—you have the innovative City Car, now being developed at the MIT Media Lab.*



The City Car system inserts a large amount of battery capacity into the urban electrical grid. This allows utilization of inexpensive off-peak power to charge batteries, and effective utilization of clean but intermittent power sources such as solar power and wind power. Transmission losses can be reduced by integrating these sources with buildings, turning the entire city into a virtual power plant.

Pictured: Solar panels (center) and hydrogen fuel cells (represented in green, right) within buildings can provide energy for the City Cars stacked below (represented in red).

Images: Franco Vairani

To learn more about the work of the Smart Cities group, visit <http://cities.media.mit.edu>



A prototype for the self-contained, digitally controlled Wheel Robot that can turn a full 360 degrees.



The Wheel Robot with various design models.



Team members (left to right): Raul-David Poblano, William Lark, Jr., Polychronis Ypodimatopoulos, and Ryan Chin. Photos: Webb Chappell

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The idea is a revolutionary one. Not only will the City Car be a shared vehicle that can be picked up and dropped off at convenient urban locations—like bus stops or train stations—but it will also incorporate a totally new way of thinking about how to build a car: all the essential mechanical systems will be housed in the car's wheels.

“We are basically rethinking the car as we know it,” says NEXT Fellow Ryan Chin, a PhD candidate who is the project coordinator. “For starters, there is no engine, at least in the traditional sense. The power comes from devices called **Wheel Robots**, which are self-contained, digitally controlled robotic wheels, complete with their own suspension and very simple connections to the car body.”

This design eliminates the need for traditional drivetrain configurations like engine blocks, gearboxes, differentials, or even a steering wheel. Plus it allows for extraordinary maneuverability: the wheels can turn a

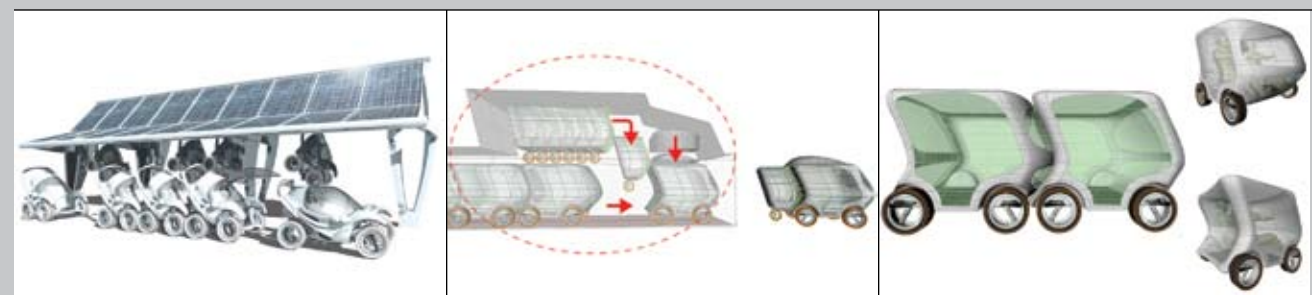
full 360 degrees, making it a lot easier to park in really tight urban spaces.

“The car’s tiny size and agility allow much more efficient use of scarce road, street, and parking space,” says Mitchell. “It is very lightweight, all electric, digitally controlled, almost silent, and pollution free. It will be equipped with computer screens that replace the traditional dashboard with sophisticated urban search and navigation capabilities, while mechanical information is mostly sent to the system operator.”

The proposed scenario is simple: you merely swipe your credit card, roll out the front car in

the stack, and drive off. It’s like having valet parking or a waiting taxi wherever you want it, with the added advantage that the vehicles recharge while parked in the stacks.

Mitchell and Chin emphasize that this project goes beyond thinking of City Cars as just small-footprint vehicles that can squeeze into tight spaces. “The idea,” says Chin, “is to have the vehicle work in unison with its urban surroundings, taking advantage of existing infrastructure, such as subway and bus lines. Ultimately we see this as an effective way to merge mass transit with individualized mobility, creating a new urban transportation ecosystem.”



Solar Collector Stack      Car ⤴ Dispenser      Car ⤴ Dispenser

*A chronological history (from right to left) leading up to the current City Car design.*



City Car components



City Car turning 360 degrees



Stackable City Car      K3 Car      Flex Car      Slider Car      Shoe Car      Omni-Pup Car      Omni Car      Turtle Car      "Axel" Car      Mr. Potatohead Car

Images: Mitchell Joachim, William Lark, Jr., Marcel Botha, Raul-David Poblano, Axel Kilian, Andres Sevtuk