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Concept Cars

Concept cars allow designers to exercise their creativity without risk in the marketplace.

Swincar, 2015

Fig. 1: Out-ATV any ATV with the Swincar.



Source: [Swincar](#).

This concept is about suspension and tilting. Each wheel has a separate 1 or 1.5 kW electric hub motor, and each tire is independently suspended on a crab-like leg. It can apparently go up/down a 70 degree incline, and across inclines of as much as 50 degrees. The batteries are under the driver's legs.

It also leans into turns to increase stability and control. It has hydraulic steering and brakes to make sure it can react quickly to driver commands with little human effort.

You can see a promotional video below.



Video

Tabby, 2014

Fig. 2: The Tabby DIY Open Source Vehicle
(<http://www.osvehicle.com/urban-tabby-info/>)



The *tabby* is an “open source vehicle.” Its design is completely open-sourced, which means anyone can take a copy of it, modify it, redistribute it, etc. Based on principles of [open source software](#), its design is intended to do away with the “middleman” of the automotive manufacturer and associated supply chain, thus making it cheaper. It can be apparently built from kit parts for just over \$6,000 in a day. The vehicle uses a 4 kW electric powertrain and has a top speed of about 80 kph, making it suitable for city driving.

Obviously, its “style” leaves something to be desired, but this is just the initial version - and like all open source projects, version 1.0 is usually rather bare-boned.

What's interesting here is that there's nothing stopping someone from setting up a shop that builds these cars for other people and charging them extra for the time needed to build and test it, as well as adding extras to it. Like a body.

Kenguru, 2013

Fig. 3: The kenguru (pronounced "kangaroo") automobile for wheelchair users. See <http://www.kenguru.com/> for more information.



The *kenguru* automobile is probably the first truly usable automobile for wheelchair users. There's nothing particularly special about it, in that all the technologies used in it have been available for some time. This is, however, a product that has found a very good [balance](#) between cost, sustainability, accessibility, and technology - and that has hit the market at a time when all these factors are at the forefront of social interests.

It's unfortunate, in a way. This sort of product could have been successful years ago. The only real hinderance to it in the past was social acceptance rather than technological limitations.

Piaggio PAM, 2013

Fig. 4: The Piaggio PAM urban scooter, by Simone Madella. Further information and full image gallery at <http://www.tuvie.com/sleek-piaggio-p-a-m-personal-advance-mobility-for-italian-cities-and-towns/>.



This new scooter was actually a student's thesis, carried out with the blessing of the Piaggio, the famous maker of Italian scooters. It features an lean-steering system; that is, all three wheels can pivot to let the whole scooter lean into a turn, which helps control and stability.

Go to the full article, look at the other images, and consider what potential problems there might be with this design. Don't just think about the technical aspects; think about user aspects too. Imagine some of its usage scenarios, using the images as a guide for your thinking; what problems can you find with it?

Odorico Trailer, 2012

Fig. 5: Odorico Trailer. See <http://www.gizmag.com/odorico-pordenone-caravan/21439/>.



This caravan trailer is intended to be useful, stylish, and effective. It expands via a hand-operated crank mechanism to provide more internal space when in use.

There is a concern, however, of rear impact.

ECCO Electric Vehicle Concept, 2011

Fig. 6: The ECCO concept electric vehicle.



This concept vehicle is designed to turn into a temporary shelter. So now, I guess, you can really live in your car - with *style!*

How many things wrong can you find with this vehicle?

A Complete album of pictures is available [here](#).

Jatech Disappearing Door, 2007



Video

Here's an interesting innovation. The design of the car door has not really changed in over 200 years, when it was established as a hinged surface with a handle, that swings out. Here's a novel idea that re-visions car doors given modern technology. It is not clear why this design has not caught on. There are many possibilities. What do you think is wrong with it?

Suzuki Pixy and SSC Personal Transport, 2007

Fig. 7: The Suzuki Pixy + SSC Personal Transport concept. 

Suzuki may be on to something with this combination of vehicles. Pixy is the tiny thing on the left. It obviously seats only one. But more than one Pixy can fit inside the SSC. The SSC gets you from the suburbs to the city and the Pixies let you get around downtown. There is no cockpit in the SSC; the lead Pixy drives the SSC, and since the SSC is symmetric front-to-back, either end of it can be used as the entrance.

There's a video of these two vehicles (CGI of course) at [Yahoo video](#). You can read more at [Engadget](#) and [AutoBlogGreen](#).

Terrafugia Transition Flying Car, 2007

Fig. 8: The Terrafugia Transition flying car. 

The [Terrafugia Transition](#) is a car with folding airfoils. It can fly. This idea keeps popping up every few years, ever since we figured out how to fly. No one's accounted for the fact that you need an airport to take-off from and land at.

There's even a (CGI) video of the thing at [YouTube](#). Notice the rather large blind-spot that develops when the wings fold?

Peugeot NJoy, 2006

Fig. 9: The Peugeot NJoy concept. 

The NJoy concept is intended to be a futuristic sports car. Of particular interest are the wheels; this vehicle is supposed to have [ball wheels](#) which have also been used in [the movies](#).

In principle, one could implement such a system as the converse of a [computer ball mouse](#). However, the ball mouse approach is not scalable to automobiles. One possible solution involves magnetic induction. Electromagnets in the wheel wells could force the spherical wheel/tire to rotate and also provide some suspension capabilities.

Peugeot HoneyB, 2006

Fig. 10: General views of the HoneyB. 

The HoneyB is supposed to be a new kind of SUV-like vehicle, with a high degree of safety and manoeuvrability (all four wheels steer). Most interestingly is the system used to extend the seats right out of the vehicle, which is intended to help disabled persons use the vehicle.

Again, while the vehicle itself might not ever be produced, the notion of developing seats that accommodate riders during entry and exit could be extremely valuable.

Stackable City Car, 2003

Fig. 11: The stackable City Car by GM and MIT.



[General Motors](#) and the [MIT Media Lab](#) designed a small city car that can *stack*, thus greatly increasing the effective parking space in congested metropolitan areas.

They also had the (then) revolutionary idea of putting the motor, steering, (regenerative) brakes, and suspension into the *wheel* itself. Today, this concept is called a [wheel motor](#), and they are eminently practical. (Can you tell why?)

For more information, see the [bit car](#) and a [Cnet article with more pictures](#).

See Also

[Case study, Michelin design challenge 2011](#)

[case](#)

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