

**THE BEST BAREBONE KITS!** TigerDirect.ca  
**THE HIGHEST QUALITY COMPONENTS AVAILABLE!**  
 The Best Computer Deals. Anytime. Anywhere.

[CLICK HERE!](#)

Sun. Dec. 5, 2004. | Updated at 03:37 AM

- Home
  - GTA
  - Business
  - Waymoresports
  - A&E
  - Life
- Careers
  - Classifieds
  - New In Homes
  - Photos
  - Shopping
  - Travel
  - Wheels

7-day site search  [GO](#) [More search options](#)

Stock Quote  [GO](#)

[Ticker](#) [Name](#)

**BIG NEWS**

Members [Previous Story](#) [Print Story](#) [E-mail Story](#) [Next Story](#) > ADVERTIS

Dec. 5, 2004. 01:00 AM

- [Membership Centre](#)
- [News](#)
  - [Ontario](#)
  - [Canada](#)
  - [World](#)
  - [Opinion/ Editorials](#)
  - [Editorial Board](#)
  - [Letters](#)
  - [National Report](#)
  - [World Report](#)
  - [Obituaries](#)
  - [Editorial Cartoon](#)
  - [Corrections](#)
  - [Today's Paper](#)
  - [Star Columnists](#)

>ADVERTISEMENT<

- Special Reports**
- > Minor Hockey
  - > Investing 1, 2 & 3
  - > MFP Inquiry
  - > Ad Scandal Probe
  - > Conflict in Iraq
  - > [More Specials]
- My Email Newsletters**
- My Scoreboard**
- My Stock List**
- My Print Subscription**
- Features**
- > Babies 2004
  - > Brand New Planet
  - > Contests/Events
  - > Crosswords
  - > Ellie
  - > Horoscopes
  - > Lottery Results
  - > Traffic Cams
  - > TV Listings
- Initiatives**
- > Classroom Connection
  - > Fresh Air Fund
  - > Santa Claus Fund
- The Star**
- > About Us
  - > Media Kit
  - > Affiliates
  - > Archives
  - > <http://www.thestar.com/careers>
  - > Contact Us

# Goodbye, gridlock: The ride's heavenly

**MITCH POTTER**  
MIDDLE EAST BUREAU

KFAR TRUMAN, Israel—Big dreams emanate from this tiny hangar nestled on the fringes of Israel's main airport link with the outside world.

Big, and maybe just a little bit preposterous too, because the obsession here sees deep into an elusive future of skies abuzz with flying cars, the likes of which George Jetson of Saturday-morning cartoon fame might approve.

Yet when you step through Raffi Yoeli's door, it is clear that unlike other entrepreneurial space cadets infatuated with the Buck Rogers ideal, this Israeli inventor on the outskirts of Tel Aviv isn't just thinking about the airborne auto. He's actually building it.

"Everybody I know thinks I'm crazy. But the people who understand the science, the aeronautics and the innovation behind the project are starting to believe me anyway," smiles Yoeli, 53, who quit his day job as an aviation engineer after the onset of the Palestinian *intifada* to dedicate himself full-time to the dream he calls the X-Hawk.

Imagine a jeep-sized vehicle that will take you, with the idiot-proof wiggle of a computer mouse, wherever you want to go, be it upward 3,000 metres or forward at speeds up to 200 km/h. And all with turn-on-a-dime, almost gyroscopic stability and control, capable of safely threading its way through urban canyons against wind gusts up to 50 km/h.

Imagine if a fleet of such vehicles kitted out for emergency rescue had been hovering mere millimetres from the upper floors of the burning twin towers the morning of Sept. 11, 2001, ready to collect those whose despair would otherwise prompt a plunge into oblivion.

**TigerDirect Computer Clearance Center**

**SAVE EVEN MORE!**  
DESKTOPS, LAPTOPS, PRINTERS, MONITORS, SERVERS, BAREBONES, NETWORKING, DIGITAL CAMERAS, AND MORE!..

**While Supplies Last!**



An Israeli inventor says this X-Hawk flying car is just years away.

**CADILLAC**  
BREAK TH

- > [FAQ](#)
- > [Internships](#)
- > [News Releases](#)
- > [Pages of the Past](#)
- > [Star Store](#)
- > [Subscribe](#)

Search the Web

GO by Google

You are now on Yoeli's wavelength, a school of thought that says the time for imagining is over. The technology is here. Having already lifted his first prototype, the twin-engine, turbine-powered CityHawk, off the ground 10 times in test trials, Yoeli is now shopping for manufacturers. Liftoff for the X-Hawk as a ready-to-purchase working vehicle, he says, could be as little as four years away.

Yoeli's company, Urban Aeronautics, won its first major industrial sponsor last week, signing a risk-sharing agreement with the U.S.-based Purdy Corp. to develop the X-Hawk's complex gearbox. But it will take the involvement of more industrial heavyweights — and the all-important certification of the U.S. Federal Aviation Administration — to get the vehicle officially airborne.

"The dream of the flying car has been with us for years," says Yoeli, who has amassed on his laptop a trove of rare, archival footage of prior attempts. Among his favourites are the early '60s "Flying Jeeps" developed for the U.S. army and navy. Yoeli also credits Canada's late, lamented Avro company for its development of the flying saucer-like Avrocar.

Both projects got off the ground, barely, before funding was pulled. The challenges of building a rotorless vehicle that was aerodynamically stable proved too great. And the runaway success of the helicopter for military, rescue and civilian purposes put such notions on hold for decades to come.

People like Yoeli, however, never stopped dreaming. With a doctorate in artificial intelligence from Technion University in Haifa and a lifetime of work in advanced aircraft development, Yoeli admits he has always been intrigued with the idea that flight could be achieved with neither wings nor external rotors.

Yoeli's stepping stone along the way was his close involvement in the development of the Hummingbird, a circular flying platform that proved so successful in its testing stage that Israeli thrill-seekers began lobbying for the manufacture of an assemble-your-own kit for personal use.

"The Hummingbird was an important stage. It worked like a Segway (the gravity-defying gyroscopic scooter), because you stood on top and controlled it almost with body language, leaning one way or another," says Yoeli.

"But we sort of freaked out when we realized the (all-terrain vehicle) crowd was interested. We had visions of people flying 1,000 feet in the air and doing crazy things. We got scared."

The passage of time has solved many of the problems in the early '60s prototypes. New technologies, from lightweight composites to ultra-efficient turbine engines to fly-by-wire systems that allow for computerized piloting, all brought the flying car nearer to reality.

Yoeli's own contribution to the cause isn't merely to apply the improved capabilities to an old idea, but to conjure the missing ingredient — a control system capable of countering the adverse affects of wind against a compact airborne vehicle.

The answer came in a system of vanes, or louvres — 400 of them, to be precise — mounted inside ducts above and below the forward and rear turbine engines that give the X-Hawk its lift. Put another way, imagine a set of venetian blinds on the top of the vehicle's front and back. The blinds are automatically adjusted by a system of eight onboard computers to maintain balance.

"It was a eureka moment. When I started to experiment, I realized each of these vanes acts as a little wing, creating a perfect net force of control,"

says Yoeli.

"And because the application works on both sides of the fan blade inside the duct, the result is enormous stability, beyond anything I had hoped for.

"What it means is a very impressive manoeuvrability. It gives you the ability to move between buildings in an urban environment even in winter storms, much more so than a conventional helicopter."

The bad news, and this is going to be hard on the inner Jetson in all of us: Yoeli cautions that even though he expects to see X-Hawks in the air as emergency rescue vehicles in the near future, you can't have one. Not yet. And not for a long time, probably.

First, there is the matter of expense. Until such time as mass production brings down the price, X-Hawk is likely to retail in the \$2.5 million (U.S.) range, comparable to a rescue helicopter. Richard Branson and Bill Gates, most likely yes. You and me, most likely not.

Then there is the problem of just how global aviation authorities are going to contend with everyday people looking to take their road rage skyward. NASA is exploring a number of long-range scenarios for managing a potential explosion in private point-to-point air travel. But we should expect the stage of study to continue for decades.

"Look, it is going to happen eventually. But the process will be the reverse of what Henry Ford achieved," explains Yoeli.

"When Fords began rolling off the assembly line, there was no road system to speak of. The government was forced to respond to the massive expansion of personal cars after the fact.

"But in the case of personal flying vehicles, the government will have to act first. We can program computers and sensors to make sure people don't fly into each other, or crash into buildings. But you still need a system that establishes flight patterns to cope with so much air activity."

Omri Rand, an aviation professor at Technion University, describes the X-Hawk as a "brilliant concept in development." But he too warns that the problems of launching them in the hands of private citizens introduce a new threshold of worries.

"Suppose we have the ultimate aircraft that can be flown by anyone. I don't need training, it's fully reliable and stable, it can fly in any weather," says Rand.

"And suppose it costs no more than the average car. Great. Now suddenly I'm worried about my neighbour getting caught in the electrical wires over my roof. I am worried about where he is going to fly, at what altitude, in what air corridor," he says.

"Eventually, computers will do the flying for us. But the idea that we can all be up there together, flying off as easily as we drive off in our cars, that is a huge communication issue that will take decades to resolve."

But Ovadia Harari, chief operating officer of Israel Aircraft Industries, is persuaded that when that day comes, Yoeli's ideas are likely to be inside those vehicles.

"If you dream a little bit," Harari says, "you can envision a time when this technology enables us to fly to and from work."

[\*Additional articles by Mitch Potter\*](#)

> [Need Gift Ideas? Save 50%! Subscribe Now!](#)

 [Previous Story](#)

 [Print Story](#)

 [E-mail Story](#)

[Next Story](#) 

---

[FAQs](#) | [Site Map](#) | [Privacy Policy](#) | [Webmaster](#) | [Subscribe](#) | [My Subscription](#)

---

[Home](#) | [GTA](#) | [Business](#) | [Waymoresports](#) | [A&E](#) | [Life](#)

---

**Legal Notice:** Copyright Toronto Star Newspapers Limited. All rights reserved. Distribution, transmission or republication of any material from <http://www.thestar.com/> is strictly prohibited without the prior written permission of Toronto Star Newspapers Limited. For information please contact us using our [webmaster form](#). www.thestar.com online since 1996.