In the near future, smart cars will be able to talk to smart traffic lights and to one another to dramatically improve both safety and traffic flow. It's sort of like "The Jetsons," except for that whole flying thing.

The traffic signal ahead was warning the van's computer there was no way the driver could make the green light in time. It's sort of like "The Jetsons," except for that whole flying thing.

"This is about taking what you have and making it work better," said Michael Perovich, Caltrans district director for San Bernardino and Riverside counties.

"If it'll be awhile before you can read the morning paper or check your e-mail while blazing down the 10 Freeway without touching the steering wheel, but the how-to for that exists, too.

Until then, plenty of gee-whiz gizmos are already appearing under the hood and more are on the immediate horizon.

From the self-parking Lexus to cars that hit the brakes automatically if you're bearing down on a slower car, technology is erasing the line between science fiction and science fact.

"Most of our challenges are no longer technical," said Steve Kuciemba, vice president of the Intelligent Transportation Society of America, a trade group for an industry that barely existed two decades ago.

"We need to get a lot of this out there. It's going to take political will."

The organization held a major conference and trade show recently in Palm Springs, where roughly 2,000 people saw numerous high-tech traffic goodies on display.

"Everything in that hall is available today," Kuciemba said. That includes everything from red-light enforcement cameras to on-board information systems that would make a fighter pilot proud.

The whole Intelligent Transportation movement is a favorite of transportation planners, including Caltrans Director Will Kempton, who's pushing hard to get more of those systems out on the roads.

They provide a quick, low-cost way of smoothing traffic flow without spending decades and $4 million for a mile of one freeway lane.

Motorists are already familiar with ramp meters, speed sensors, remote cameras and the increasing use of changeable message signs on the freeway.

The $20 billion bond measure passed last year included $150 million for smart transportation systems, but the California Transportation Commission took that money off the table and steered it toward traditional construction projects, despite pleas from the Caltrans director that they provide huge bang for the buck.

The Inland Empire would have been eligible for a good chunk of that money because there are extensive areas, including the 15 Freeway, that aren't covered by the sensor network.

Traffic flow isn't the only benefit of intelligent transportation systems.

They will save lives as well as time.

Smart car technology can keep a driver from making simple mistakes, mistakes that all too often are fatal.

In 2005, 43,443 people died in vehicle crashes, with 4,394 of those in California.

Technology available now could reduce the four main types of crashes, including rear-end crashes, running off the road, drifting out of the lane, and crossing paths with another car.

"In the future, the car will know what's going on around it and keep the driver from making mistakes," said Christopher Nowakowski, a researcher with Partners for Advanced Transit and Highways at UC Berkeley.

With the advent of seat belts, air bags and crumple zones, drivers and passengers have a good chance of surviving when the vehicle smacks into something.

The trick now is to prevent those crashes from happening at all.

Vehicles, beginning in 2009, will be required to have electronic-stability control, in which a computer controls the braking on each wheel independently to help prevent spinouts and rollovers.

Cars that can talk to other cars, especially in poor visibility or other dangerous situations, could be lifesavers.

"If a car has a blow-out and gets sideways, it can tell vehicles 1,000 to 1,500 feet away," said Russ Davidson, with Econolite Control Products Inc. of Anaheim, a manufacturer of the systems.

Or if a car crashes into a ditch on a rural road, it could send out an SOS to passing vehicles and emergency officials.

Mercedes-Benz already offers "adaptive" cruise control that features forward-looking radar and will automatically change speeds or touch the brakes to maintain a safe distance.

Buildings, traffic signals or roads will be able to communicate with automobiles as well.

Aluminum transmitters about the size of a tissue box can send out a variety of information.

Aside from telling cars about how long a light will be green, they can easily be mounted near construction sites.

As a technician drove a van around the Palm Springs Convention Center parking lot, the computer voice spoke up: "Caution. Entering construction zone," as an icon shaped like a shovel flashed on the screen.

"The hope is the warning will provide protection for guys on the roadway," Davidson said.

The smart traffic lights have not been installed anywhere yet, though a few cities are ready to embark on pilot projects, including an ambitious plan in the San Francisco Bay area.

A tractor-trailer outfitted with the latest smart technology was also on display at the conference.

Using the global positioning system combined with a navigation system loaded with local road information, the speed limit is displayed right on the speedometer and sounds a warning if the truck is going too fast.

Radar keeps track of how close vehicles are, and tiny cameras outside allow the system to sound a warning if the truck is drifting out of the lane.

All of that information can be made available to the truck company to monitor a driver's performance, said Nowakowski.

"The real advantage to this is when you start to look at truck fleets and risk. The most risk is the 10 percent of drivers who cause 50 percent of the crashes," he said.

If such systems were installed when the truck was being built, it could add just a few hundred dollars to the cost.

The National Highway Transportation Safety Administration is looking at ways to encourage development and deployment of smart-car technology.

Phil Headly, chief engineer with Continental Automotive Systems, said thousands of lives per year could be saved.

There was resistance early on by the car companies to install seat belts and air bags, and there may be hesitation by motorists to surrender control to a computer.

"I think people will come to accept it as time goes on," he said. "What we need is for it to save your tail just one time."

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Telematics:
- Cars send out distress signals and warn other cars if one slows down, has a problem, crashes or goes over the side.
- When an airbag deploys, the car automatically calls 9-1-1.

Active/Pasive Integration Approach (APIA) automatically warns drivers of approaching emergency vehicles and traffic light changes and may apply brakes, if a danger threshold is exceeded.

Smart Traffic
Intelligent transportation systems are readily available — and at a relatively low cost — that allow traffic signals to talk to cars and each other, improving safety and traffic flow. Such systems include:
- Loops in the roadway that detect speed of traffic.
- Weather stations that transmit wind and precipitation information.
- Remote cameras that allow managers to view incidents.
- Changeable message signs to warn motorists of problems ahead.