

About CATLab

The Consolidated Advanced Technologies Laboratory (CATLab) project is a collaborative research and development effort between the University of New Hampshire and the New Hampshire Department of Safety and is supported by the U.S. Department of Justice through the efforts of U.S. Senator Judd Gregg. The lab is located at the Durham campus of the University of New Hampshire.

Faculty and students of CATLab work on introducing advanced technologies into the operations of the New Hampshire State Police and other law enforcement agencies. The CATLab team consists of approximately 35 faculty members, engineers, technicians, graduate and undergraduate students from the UNH Electrical & Computer Engineering Department as well as members of law enforcement.

For more information, email us, call us
or visit us on the Web.

DuraTech USA Inc.

12792 Valley View Street Suite 214

Garden Grove, CA 92845

Phone: (714) 898-2171

Fax: (714) 898-2502

Email: sales@DuraTechUSA.com

www.DuraTechUSA.com

Project54



Project54 is a fully integrated, voice operated, remote controlled police vehicle system developed by

CATLab

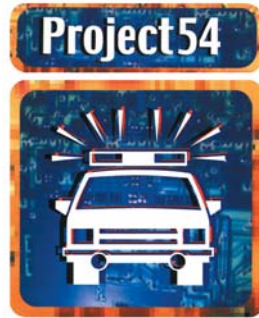
AT THE UNIVERSITY OF NEW HAMPSHIRE

About Project54 . . .

As technology advances, more and more electronic devices are installed in cruisers to aid police officers while they are on the road. Unfortunately most of these devices do not work together. This results in two problems. First of all, each device has to have its own user interface within arms reach of the officer. Consequently the officers operating the cruisers have to deal with the distraction of interacting with multiple user interfaces in the hands-busy and eyes-busy environment of a car. Secondly, it is difficult to take advantage of synergies between devices.

Project54 is an effort by the Consolidated Advanced Technologies Laboratory (CATLab) at the University of New Hampshire. Our goal is the creation and implementation of integration standards for in-car electronic devices. From the point of view of the officer operating a cruiser, the goal of the project is to create a system with a standard and safe user interface that will allow hands-free and eyes-free operation of in-car devices.

From the point of view of the department that installs and maintains in-car devices, the project aims to create a modular, scalable system that is easily installed, modified, expanded, inspected, and repaired.



Cars Currently on the Road

The New Hampshire State Police (NHSP) put the first Project54 equipped cruiser on the road for everyday use in 2001. Since then CATLab engineers have worked closely with state and local police officers in New Hampshire to fine-tune the system. By the end of 2004 over 350 Project54 equipped cruisers and SUVs will be on the road in the state of New Hampshire and in other states.

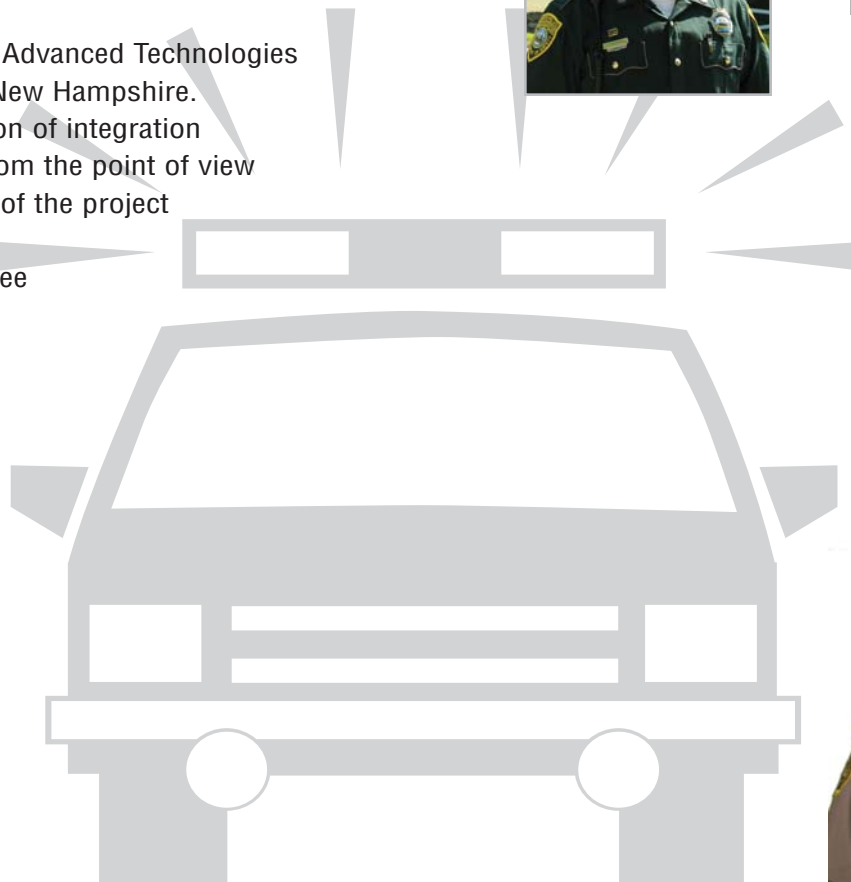
Here is what some current Project54 users have to say:



“When you’re in a high-speed pursuit, you may be speeding into the next jurisdiction in a matter of seconds. It is crucial to let the police ahead of you know you are coming. Project54’s voice controlled radio software is the only practical and safe way to change to an upcoming jurisdictions radio frequency on my 2-way radio.”
-Trooper Todd Ferris
NH State Police

“Now that I can perform record queries without looking at a screen or bothering a dispatcher, I am able to run plate checks on hundreds of cars as I pass them on the highway”

-Officer Tom Moher
NH Highway Patrol



Off-the-Shelf Components

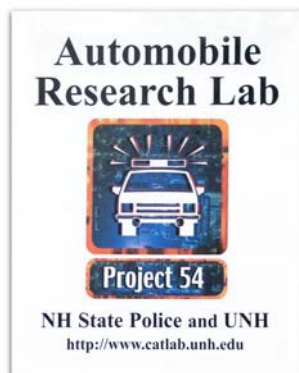
Installing the Project54 system requires only off-the-shelf hardware. In most cases, a department's existing equipment can be integrated into the Project54 system. The CATLab team is constantly working on supporting new equipment. This is a list of just some of the companies whose products are supported for integration into the Project54 system:

| | |
|---------------------|----------------|
| Whelen Engineering | Motorola |
| Decatur Electronics | Raymarine |
| Andrea Electronics | CODE3 |
| Stalker Radar | Federal Signal |
| Kustom Signals | Kenwood |

The software running on the embedded computer is either available from the equipment manufacturer or from CATLab.

Low Cost

Throughout the development of the Project54 system a constant effort has been made to keep the overall price low. The price of a complete system (embedded computer, LCD touch screen, and other electronics) is comparable to the price of a ruggedized police laptop computer. However, a department that is already using mobile data terminals, laptops or tablet PCs could incorporate the Project54 system for about \$1500 per car.



Fully Integrated System

Project54 is designed to integrate electronic devices (radar, radio, lights, siren, video, etc.) into one common control system. This allows all in-car equipment to be seamlessly controlled from a central Windows-based computer program. This reduces the distraction that officers face when trying to simultaneously operate multiple devices while driving. The Project54 system provides parallel control of every function through voice commands, an LCD touchscreen, a keyboard and the original manufacturer's control heads.

Organized Vehicle System

The Project54 system gives the cockpit of the cruiser back to the officers.

A small embedded computer is tucked away in the center console. This computer controls all devices in the cruiser. The original user interfaces are also placed in the center console or just in front of it, within arms reach of the officer.



The Project54 system cleans up the cockpit and takes up no trunk space.

Voice Operated

Every function in the vehicle can be performed with simple voice commands. This allows officers to do such things as control their lights, siren, radar, radio, GPS, video and perform record queries all while keeping their hands on the wheel and their eyes on the road.

Examples of Project54 Voice Commands:

“Front Strobes”

activates the front strobe lights on lightbar.

“Front Strobes Off”

deactivates the front strobe lights on lightbar.

“Pursuit”

activates 360° strobes, wigwags, and wail siren. It sends GPS location and reports pursuit status to dispatch, and starts High Quality Video Recording.

“Home”

switches the 2-way radio channel to a predetermined “home” channel.

“Front Antenna”

activates the front antenna of the radar unit.



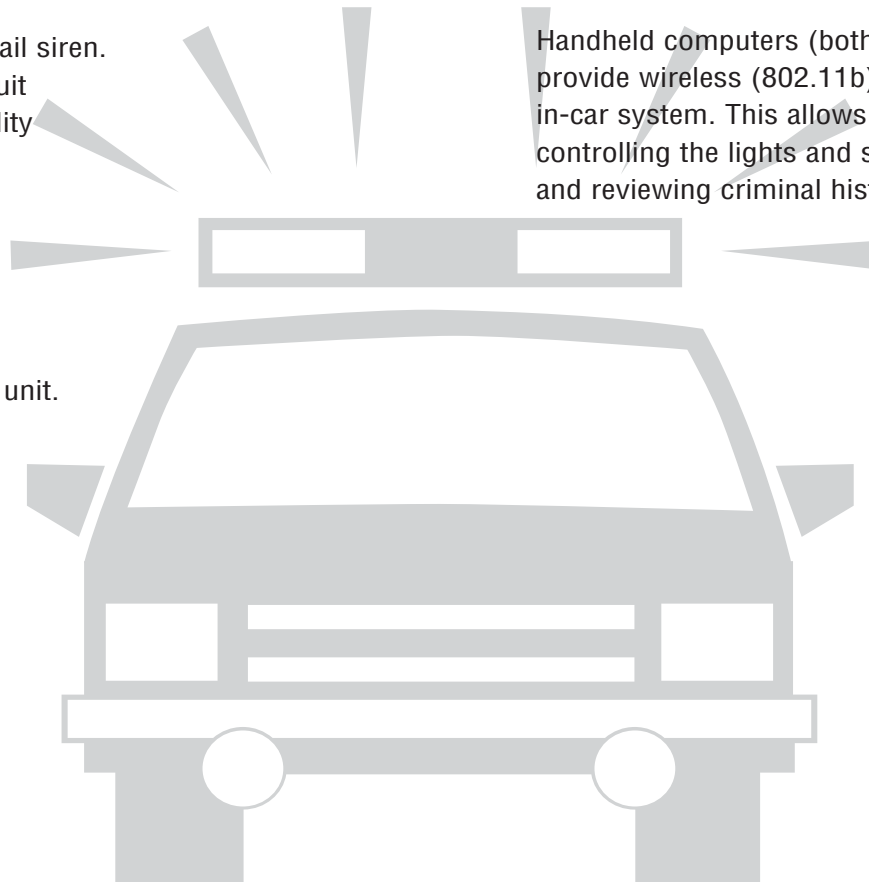
Remote Access and In-Vehicle Data

The Project54 system enables officers to perform a number of data queries (driver's history, NCIC, etc.). Data queries can be done over a data radio, a CDPD connection or by accessing a database that is stored locally in the vehicle.

All data queries can be executed without the help of a dispatcher. The officer can access databases using voice commands. Query results are read back audibly. This allows officers to simply read license plate numbers of cars they pass on the highway and hear the query results, all with their hands on the steering wheel and their eyes on the road.

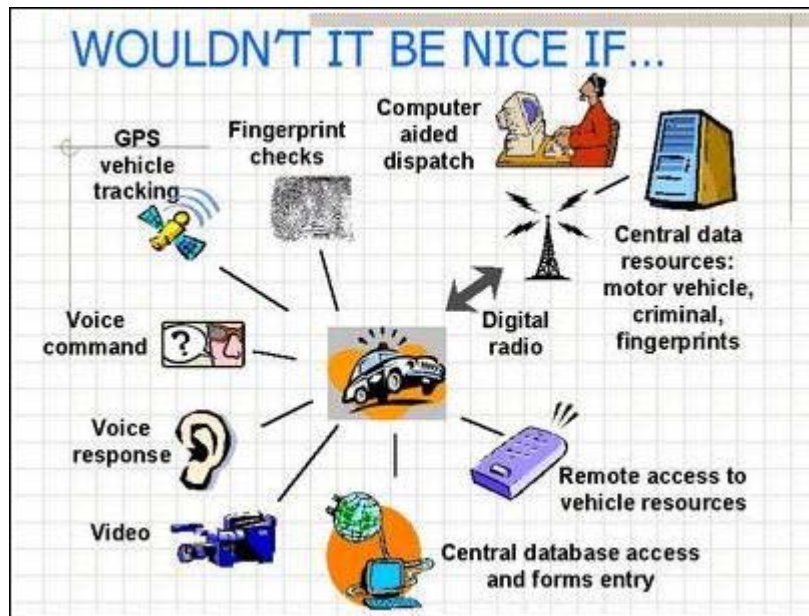
Remote Controlled

Handheld computers (both Palm and Pocket PC based devices) provide wireless (802.11b) remote control to the Project54 in-car system. This allows officers to perform such tasks as controlling the lights and siren as well as running records checks and reviewing criminal history data, all from outside the vehicle.





Project54 Introduction



Here is a figure that attempts to visualize these ideas. First of all, what do police officers do as they drive their cruisers? Many things. They communicate with a dispatcher using a radio, in order to get information on license plates, driver's licenses, driving directions. They talk to other police cruisers. They operate the light bar, the radar detector. All of this happens while they are possibly driving at high speeds and trying to keep their attention on the road, or while they are trying to observe the potentially hostile environment outside the cruiser. So wouldn't it be nice if...

Our patrol car responded to speech commands? This would reduce the need to type commands into a computer and/or press buttons that are not easily accessible. The car could also have speech feedback. This would mean the officer would not have to shift his or her focus from the outside environment to get feedback.

And what if the cruiser was equipped with a camera? The officer could use it to record a drunk driver, or when he or she is approaching a stopped vehicle, etc. The video recording could be used as evidence in court for example.

