



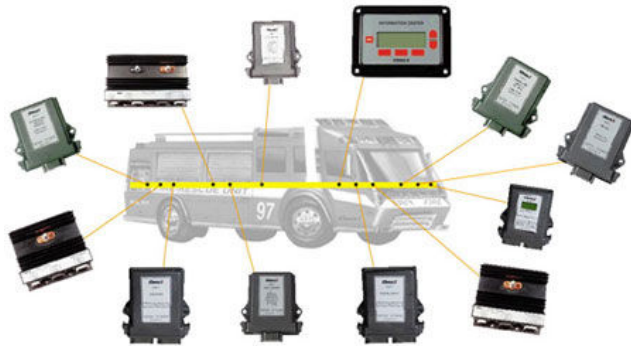
# SATURN SYSTEMS

"Solving Complex Business Issues through Software Engineering"

## Device Integration: Vehicle Multiplexing & Control

**The Project...** Class1, a developer of vehicle multiplexing systems specializing in solutions for the firefighting industry, required an application their customers could use to configure vehicles equipped with their ES-Key™ multiplexing system.

ES-Key™ is a CANBus based system of modules that provide support for inputs, power outputs, data logging, text display, engine and hydraulic integration. Virtually every switch, light, pump and hydraulic device can be configured and controlled using ES-Key™ equipment.



**The Solution...** The target vehicles have been designed and built around a CANBus network containing a variable number of nodes that, to simplify, control inputs (e.g. switches) and outputs (e.g. power). Each network also contains a master controller node that implements the configuration created using the Saturn developed application.

The power of the application and the master controller lies in the ability to control the state of any output by designing a logical equation based on other inputs and outputs in the system. For example, activating a fire engine pump may require the pump switch to be turned on, but may also

require the engine to be at high idle and the parking brake to be set. This is a simple example, however the logic equations are infinitely extensible and allow any number of sub-equations necessary to properly represent the desired logic. The end result of this is that using a network of simple devices eliminates a complex or even impossible wiring harness.

Saturn Systems developed the ES-Key™ Professional software using Borland/CodeGear C++ Builder and object-oriented principles, without which the logic management interface would have been unfeasible.

Technologies used:

- Borland/CodeGear C++ Builder
- Extensive Object-Oriented Design
- RS-232/USB
- CANBus network

**About Saturn Systems...** Saturn Systems is a national provider of software engineering solutions in the areas of device integration and enterprise technologies through our Rural Outsourcing business model.

Since 1990, Saturn Systems has created success through innovative application of technical expertise, a disciplined approach to project management, and a command of emerging technologies. Saturn Systems is a private company headquartered in Duluth MN, USA. For more information, visit our web site at [www.saturnsys.com](http://www.saturnsys.com). *Outsource To America!*