Driver Profile and Smart Cars, A Step Ahead in Vehicle Registration and Security

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Abstract

As vehicle technology advances, so will vehicle security. Systems are being developed to make all elements in a traffic environment communicate with each other in order to provide a safer and secure landscape. While such an implementation seems complex and years away, technology available today can be used and leveraged to start providing levels of security by way of enabling communication among vehicles. Implementation of such technology today can help solve many issues with regards to vehicle security, which is one of the most important assets in any home and are in a constant risk if not secured correctly.

Introduction

This work seeks to combine newly developed technologies aimed at providing communication abilities between objects with vehicles. Systems are currently being developed to include communication with self driving cars and the environment in which they operate. The scope of communication will range from vehicle to vehicle and other environmental objects; for example, traffic lights and sensors to detect any nearby pedestrians. While this kind of future may still be years ahead, the purpose of this work seeks to begin incorporating such systems into current vehicles to be used to the general population's advantage.

Background

Currently, our vehicles are mostly aware of themselves. Sensors indicate if any fault is present, and if that were the case, a highlighted symbol would represent where troubleshooting would be needed. This has become the standard to help maintain the functionality of a vehicle by making its driver aware of what kind of maintenance is required. However, new technology is being implemented each year to ensure that a vehicle becomes aware of their drivers (or, the devices they carry with them).

For example, a driver may have a blue-tooth device that automatically connects to vehicle's radio, allowing music to stream or answering the phone hands free. The vehicle's configuration will also indicate which is the primary device to which it will connect, in the case that more than one person has a blue-tooth enabled device with them. This indicates a sign that a vehicle can be capable of being a smart object and even have the functionality to communicate with other devices.

Problem

News at the beginning of this year have stated that criminal activity against vehicles are on the rise. They have become quite common and current security systems have been put in place, but they can be 'tricked' by many ways. For example, Automated License Plate Readers cannot detect a cloned license plate. In the case of Insurance Seal, false copies of these can be added to a vehicle that has not updated its insurance. Stolen vehicles need to be personally confirmed with a database before any legal action can be made. This work proposes implementation of new technology and software to minimize problems presented here.

Methodology

The DSRC Driver Profile System will consist of an Insurance Seal; installed at the windshield of the driver. This will be the data transmitter. There will also be a receiver, which will be installed into police vehicles. The receiver will decrypt the information and will provide alert when a flagged vehicle is near. Software will help setup the information and store it in the database. The software will be used to store information in the database, render received data file into readable text and will provide information to the vehicle owner as well as provide the option to report a vehicle and flag the information sent by the Insurance Seal.
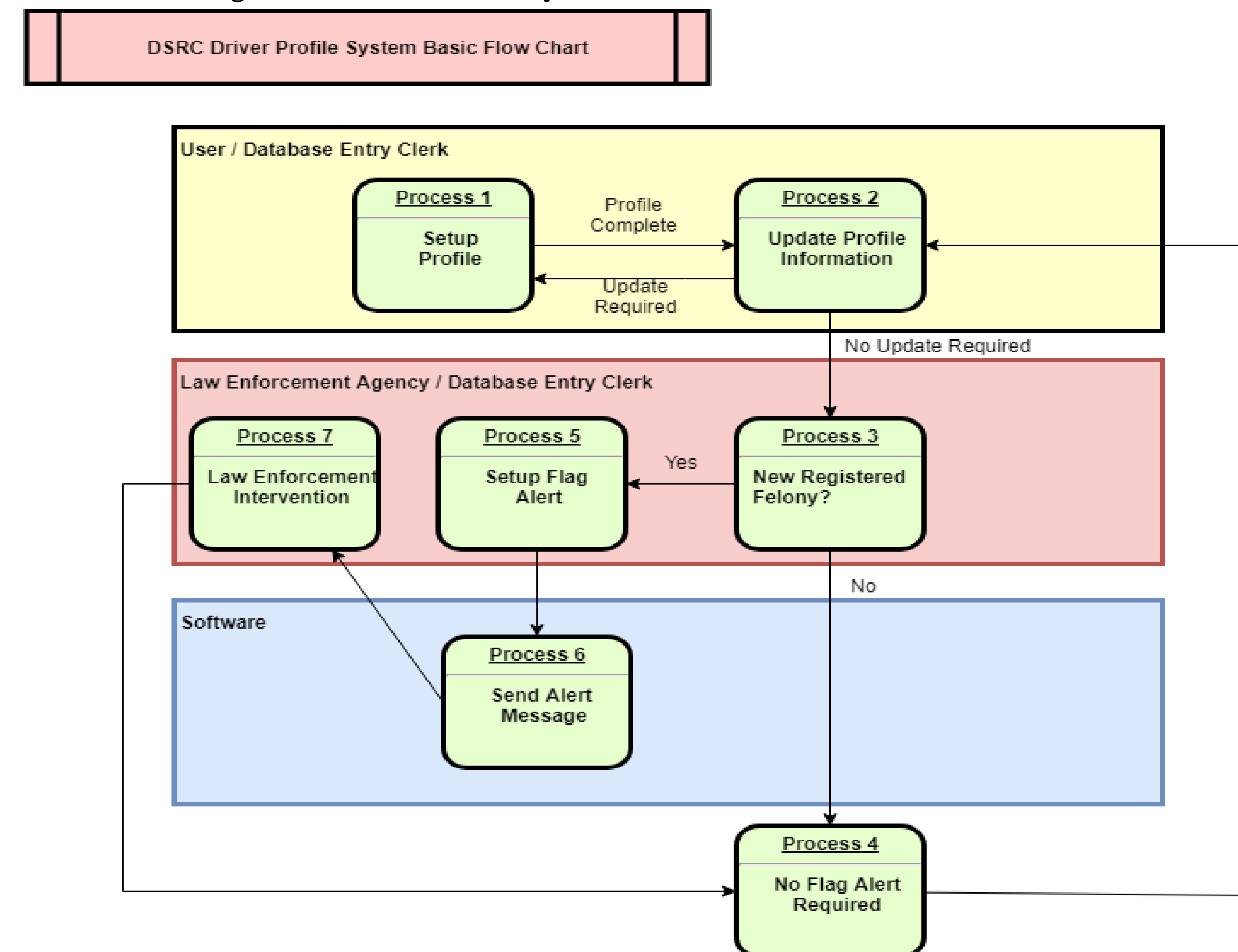
Results and Discussion

By using all elements together, we can create a system that can function by setting up and updating a user profile in a software application, which will communicate and synchronize with the main database. In the case any flags are required due to any reported felony, they are updated in the system and will alert any patrol vehicle with a receiving device; which will decode the message sent by the user vehicle.

Conclusions

The technology presented in this article is currently being developed or available. The goal is to work towards safety by means of vehicle communication with its environment, providing alerts of any risky conditions that can endanger a driver and other individuals. This would eliminate the human error factor that has currently lead to many life threatening situations. With the proposed DSRC Driver Profile system, vehicle information can be ready for law enforcement officials; easing the process of identification in many cases. For the individual who owns the vehicle, the DSRC Driver Profile system will provide better security and more flexibility when renewing insurance. While it is not the final state on the evolution of our vehicles, the DSRC Driver Profile system can be a big step forward towards the implementation of vehicle communication and security with the benefits it can provide.

Future Work

Insurance seal proposed needs to consider how to transmit the required data and duration before requiring maintenance or repair. Future work must research which components can fit in a compact seal as well as guarantee functionality as proposed in this work.

Acknowledgements

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