

DAWN

Driver Advanced Warning Network

August 2017

The Problem

Yellow flag warning is insufficient

- Is the danger on the track or in the grass?
- Should driver lift off the throttle? Do they?
- Does the driver see the yellow flag?
- Is it deployed in time?



Problem is present in all road racing series

- Particularly serious at amateur level with less experienced flaggers



EMBRY-RIDDLE
Aeronautical University

The Solution

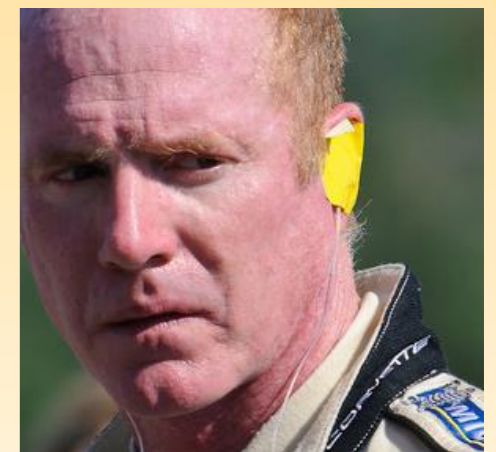
Vehicle to Vehicle Communication

- DSRC hardware developed for the street
- Cohda, Ublox, Delphi / 802.11p protocol
- Specialized software & packaging for racing



DAWN safety logic

- If any car stopped or going very slowly on track, deliver exceptional warning to approaching cars
- Warning can be lights, sounds, or both
- Logic in place to avoid false positives
- Additional driver information possible if requested



Simplicity for Racing



System Features

- 3 elements: low-profile antenna, ECU, and driver warning
- ZERO connection to race team CAN or data system
- Only connections are 12V power (with battery backup) and the driver warning (lights and/or sound)

No human interaction required

- Automatic on/off, battery backup, recharge – no interaction from mechanics or organizers required
- Warnings are only issued car-to-car on track, not in garage
- Detailed boundaries of all tracks loaded in memory

Initial Deployment Envisioned

25 – 30 systems, enough to cover an entire grid

- Safety benefits only present when all cars have the system
- One small hole in roof for antenna wires, then velcro & tie-wraps
- Embry-Riddle team to support vehicle installation as needed to ensure complete satisfaction

Use and Training

- Group and individual discussions with drivers, crew, and officials to answer questions, clarify expectations
- First race weekend – logging only with no driver warnings
- Continual at-track support from development team to address any concerns and refine system as necessary

Development Team



David Spitzer

- 18 yr career in racing (Le Mans, Indy, IMSA)
- Ex-VP of Competition for Grand-Am
- MBA, Professor in College of Business, Startup experience



Dr. Patrick Currier

- Asst Professor in ME
- PhD from Virginia Tech, robotics focus
- Advisor for EcoCAR, Robot X programs
- Success in DARPA Grand Challenge



Jayson Clifford

- Sr. Software Engineer
- Staff - NEAR lab



Jake Neighbors

- Software Engineer
- ERAU Student



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