Automotive Free Software 2013: "Right to Repair" and Privacy

Alison Chaiken
alison@she-devel.com
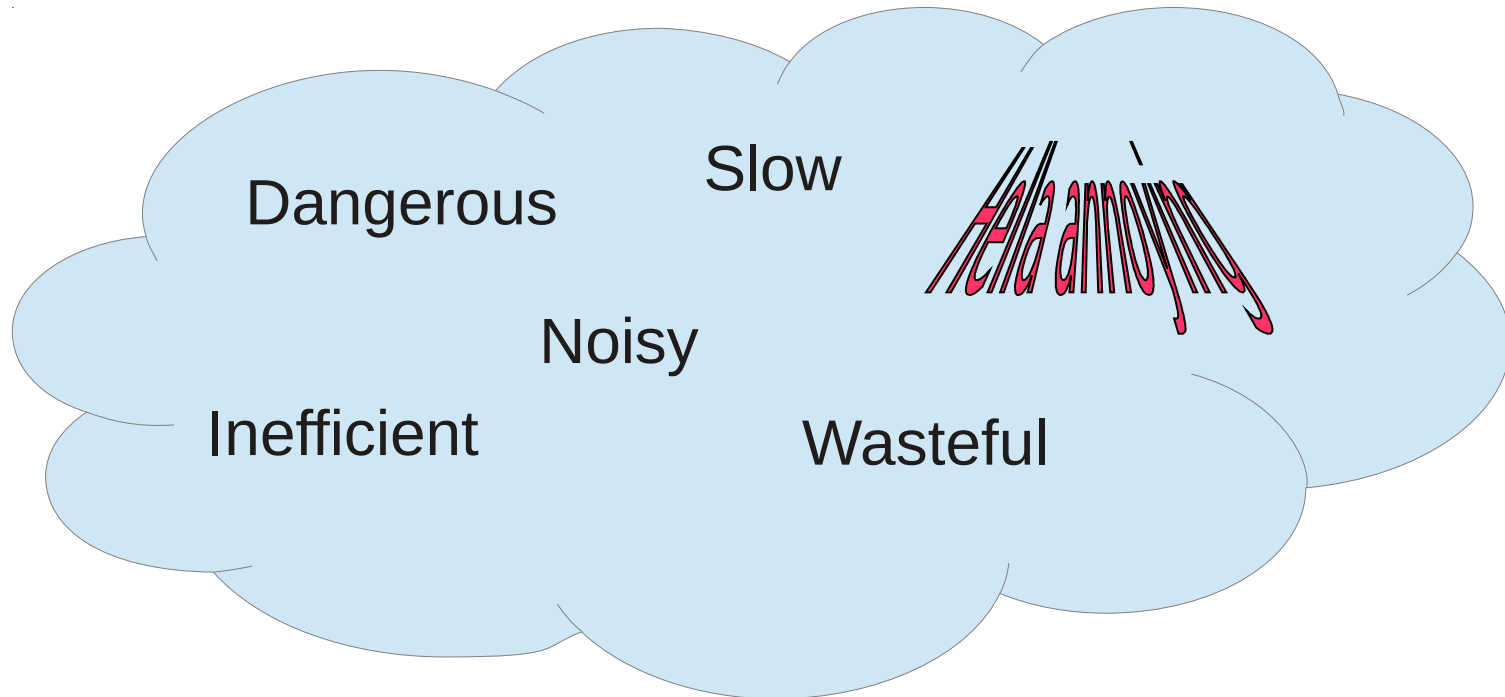
Brian Hickey
Brian Hickey Associates

March 23, 2013

Our transportation system is

Dangerous

Slow

Hella annoying

Noisy

Inefficient

Wasteful

because *until now* individuals had little power to change it.

Inevitable end-point: fully autonomous operation

Stanford's Stanley, winner of Second DARPA Grand Challenge

Agenda

- State of automotive free software 2013

- Event data recorders (EDRs) update

- 802.11p and privacy

- Right to Repair movement

- Our community is growing!

2010: Changing Consumer Expectations

Library of Congress adds DMCA exception for jailbreaking or rooting your phone

By Paul Miller 🔊 posted July 26th 2010 11:33AM

BREAKING
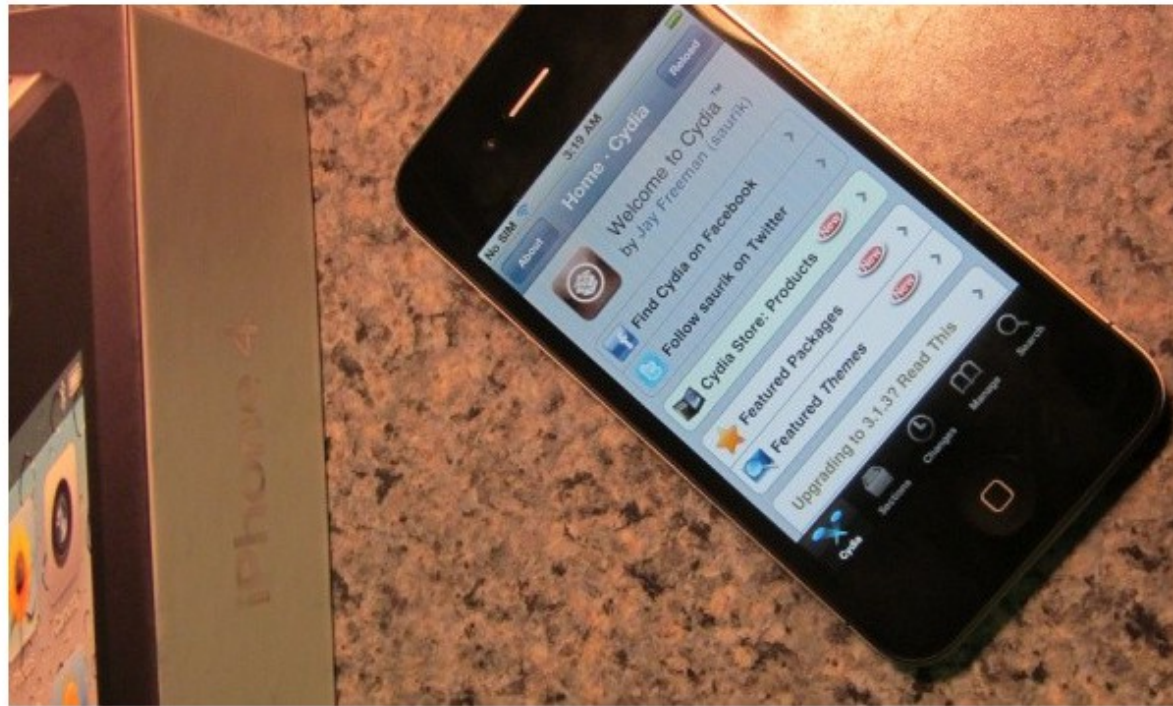
Mar 2013: White House sides with Consumers

OFFICIAL WHITE HOUSE RESPONSE TO
Make Unlocking Cell Phones Legal.

It's Time to Legalize Cell Phone Unlocking

By R. David Edelman

"The White House agrees with the 114,000+ of you who believe that consumers should be able to unlock their cell phones without risking criminal or other penalties."

Automakers and Free Software get Acquainted

Current Public Status of Automotive Linux

Carmaker	Confirmed Operating system
Fiat-Chrysler Blue&Me, Kia Uvo	Microsoft Windows Embedded Automotive
Ford (all?)	Microsoft MyTouch/Sync (+ OpenXC Android dongle and SmartPhoneLink)
General Motors "Cadillac User Experience"	Linux
Geely (China); Hawtai (China)	Linux: Moblin (MeeGo-Tizen precursor)
Renault R-Link	native Android
Jaguar Land-Rover, Tata, Toyota	Tizen (Linux)
Honda (Accord, Odyssey, Pilot), Audi (A8L, Q5, A6), BMW (7-series and M models), Chrysler, Daewoo, GM (OnStar), Hyundai, Land Rover, Porsche, Saab (9-3), Renault (SM7), Mercedes (S- and C-class)	QNX

Linux Foundation members: Toyota, Pelagicore, Symbio, Tieto

GENIVI Alliance: 160+ members including 11 "OEMs"

GENIVI Auto Industry Alliance

- *Goals*: reduce lock-in by SW suppliers; reduce cost and TTM.

- *Methods*:

  - Promote code reuse via standard interfaces.

  - Grow the size of contributor community.

  - Focus on middleware: not a distro.

- *10 Projects with released code;* more in pipeline.

- Open mailing lists and #genivi on FreeNode.

Features of GENIVI Alliance

- Modeled on Apache Software Foundation.
- Open development for *released* projects.
- No CLA, but no GPLv3.
- Familiar Linux (git, kernel, systemd, D-Bus, *etc*.).
- Mostly permissively licensed.
- Accepts outside patches.
- Non-member projects may join (2 have so far).

Projects

GENIVI Open Source Projects

GENIVI was launched with a mission of driving the broad adoption of an In-Vehicle Infotainment (IVI) open-source development platform. (for more on the IVI platform, see What). The code behind this platform comes from three main sources:

- Upstream projects where the required functionality is already built (e.g., kernel.org)
- Upstream projects where a good starting point for required functionality exists upon which GENIVI can build additional automotive functionality (e.g., connman.net)
- GENIVI member projects where IVI code is developed because nothing is available in the open source community as a good starting point.
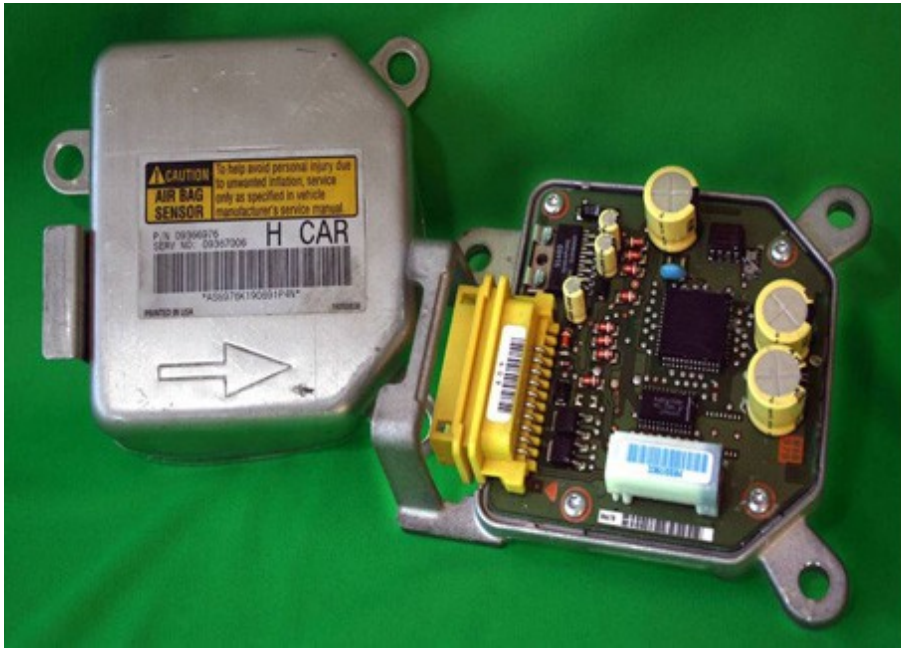
http://projects.genivi.org/

Agenda

- State of automotive free software 2013

Event data recorders (EDRs)

- 802.11p and privacy

- Right to Repair movement

- Our community is growing!

IEEE: EDRs already in 96% of cars

http://spectrum.ieee.org/computing/embedded-systems/the-automotive-black-box-data-dilemma/0#

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 571

[Docket No. NHTSA–2012–0177]

RIN 2127–AK86

Federal Motor Vehicle Safety Standards; Event Data Recorders

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation.

ACTION: Notice of proposed rulemaking (NPRM).

Public comment closed in February; takes force Sept. 2014.

ELECTRONIC FRONTIER FOUNDATION

Protecting Rights and Promoting Freedom on the Electronic Frontier

Re: Docket No. NHTSA–2012–0177
        Federal Motor Vehicle Safety Standards; Event Data Recorders

February 11, 2013

(1) mandate clear statements . . . that EDR data is property of the owner . . .

(2) explicitly prohibit the collection of audio, video, and location data . . .

(3) place a maximum duration on EDR data recording,

(4) require that data . . . be accessible via a published, free,

    and public standard . . .

(5) require the inclusion of a connector lockout apparatus . . .

Agenda

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- Event data recorders (EDRs)
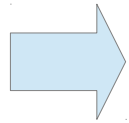
802.11p and privacy

- Right to Repair movement

- Our community is growing!

Vehicles are a "network of networks"

V2V

V2I
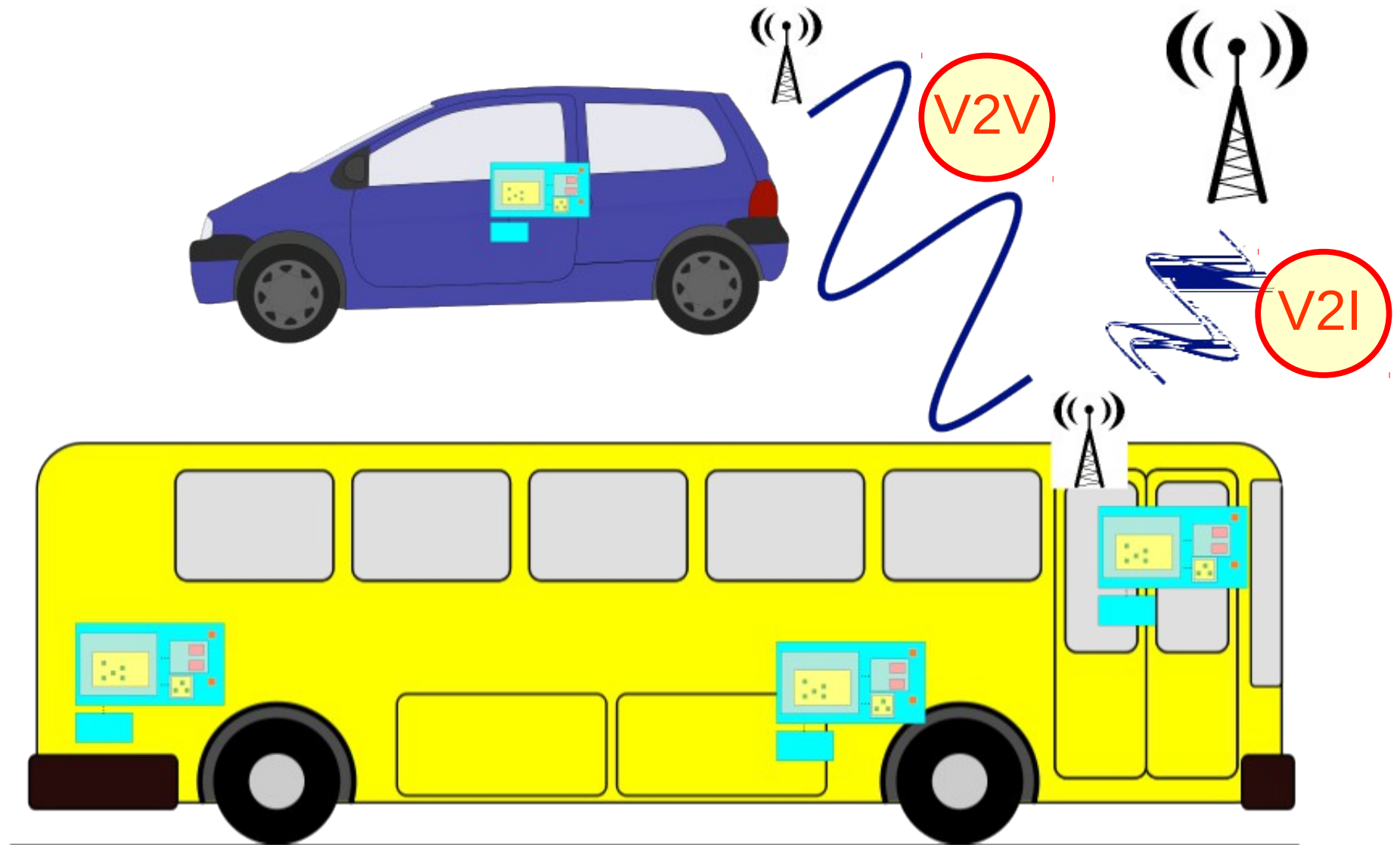
802.11p = Vehicular WiFi

- Safety messages via dedicated short-range communication (DSRC) protocol (IEEE 1609)

- Allocated spectrum at 5.9 GHz.

- New protocols, *e.g.* DNS Geocasting.

- New use cases, *e.g.* mobile routers

- VIN == MAC? or is VIN private?

- Field trials underway in Ann Arbor, MI and Germany (simTD)
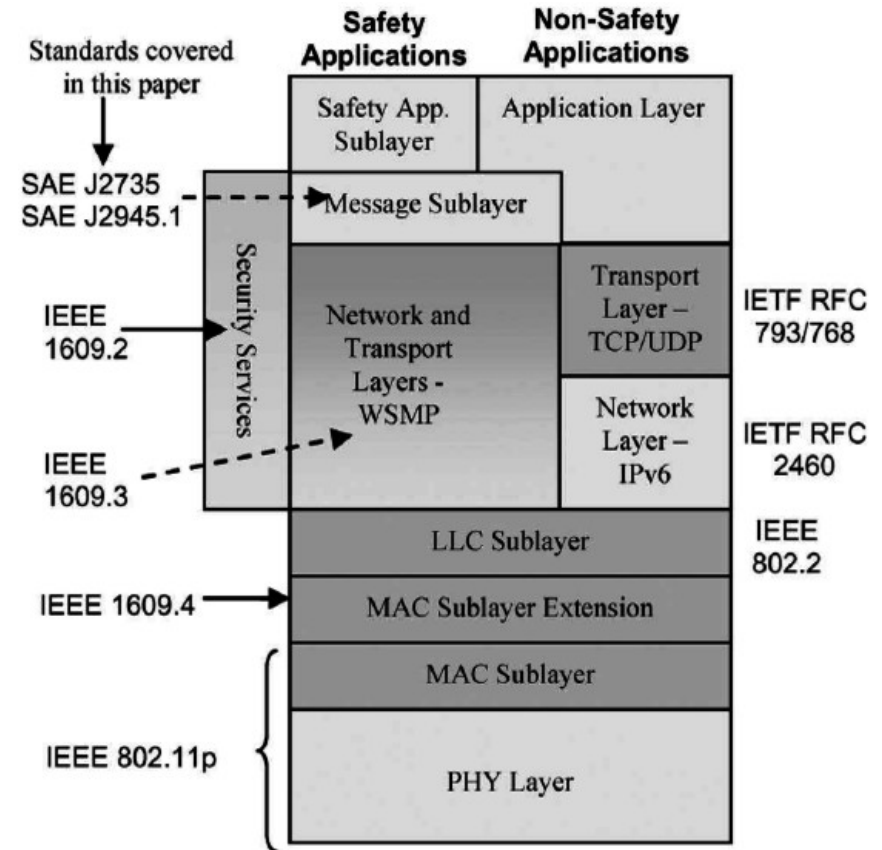
J.B. Kenney,
Toyota ITC,
Proc. IEEE 99,
2011.

IEEE: DSRC and Basic Safety Message
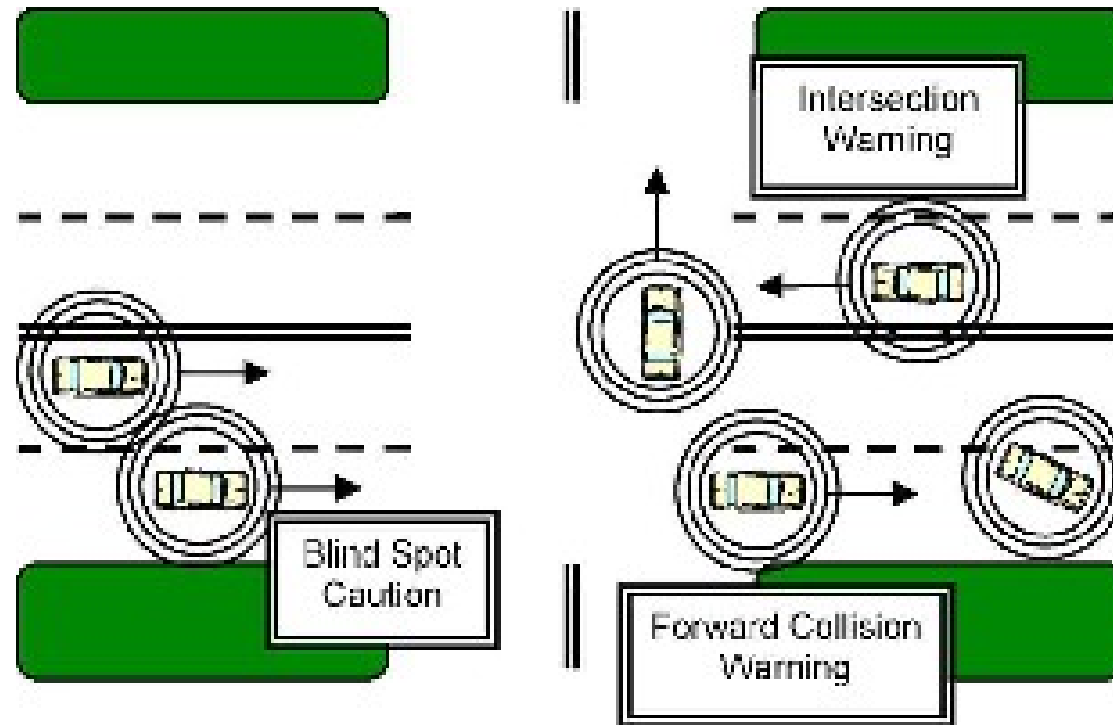
- Collision avoidance is primary motivation.

- USDoT had RFC on PKE for V2X in 2012.

- How to issue *revocable* keys w/o trackability?

Must watch: Chaos Computer Club 2012 video

Christie Dudley, Santa Clara University Law School


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TALK/ID-5095        PRIVACY AND THE CAR OF THE FUTURE
2.9-C/3             CONSIDERATIONS FOR THE CONNECTED VEHICLE

                    CHRISTIE DUDLEY
```

http://tinyurl.com/crbazg9

802.11p V2X routers in the wild

Linux-based

StreetWAVE™ Roadside Unit: Supports V2X Safety and Mobility applications using DSRC, 3G

BSD-based?

Commsignia

Agenda

- State of automotive free software 2013

- Event data recorders (EDRs),

- 802.11p and privacy

Right to Repair movement (Brian Hickey)

- Our community is growing!

MA "Right to Repair" is now Law

Key provisions of Massachusetts Right to Repair bill include:

•Immediately, car companies are required to make available to independents on "fair and reasonable terms," the same tools, software, and repair information that they make available to dealers.

•By model year 2018 (translates into 2017) manufacturers required to establish web sites or "clouds" that will contain the same information and software that dealers have access to as part of their proprietary tools.

Source: Aaron Lowe, Automotive Aftermarket Industry Association

2018 Model Year System

Workshop PC
+
OEM Application

SAE J2534
Device

Customer
Vehicle
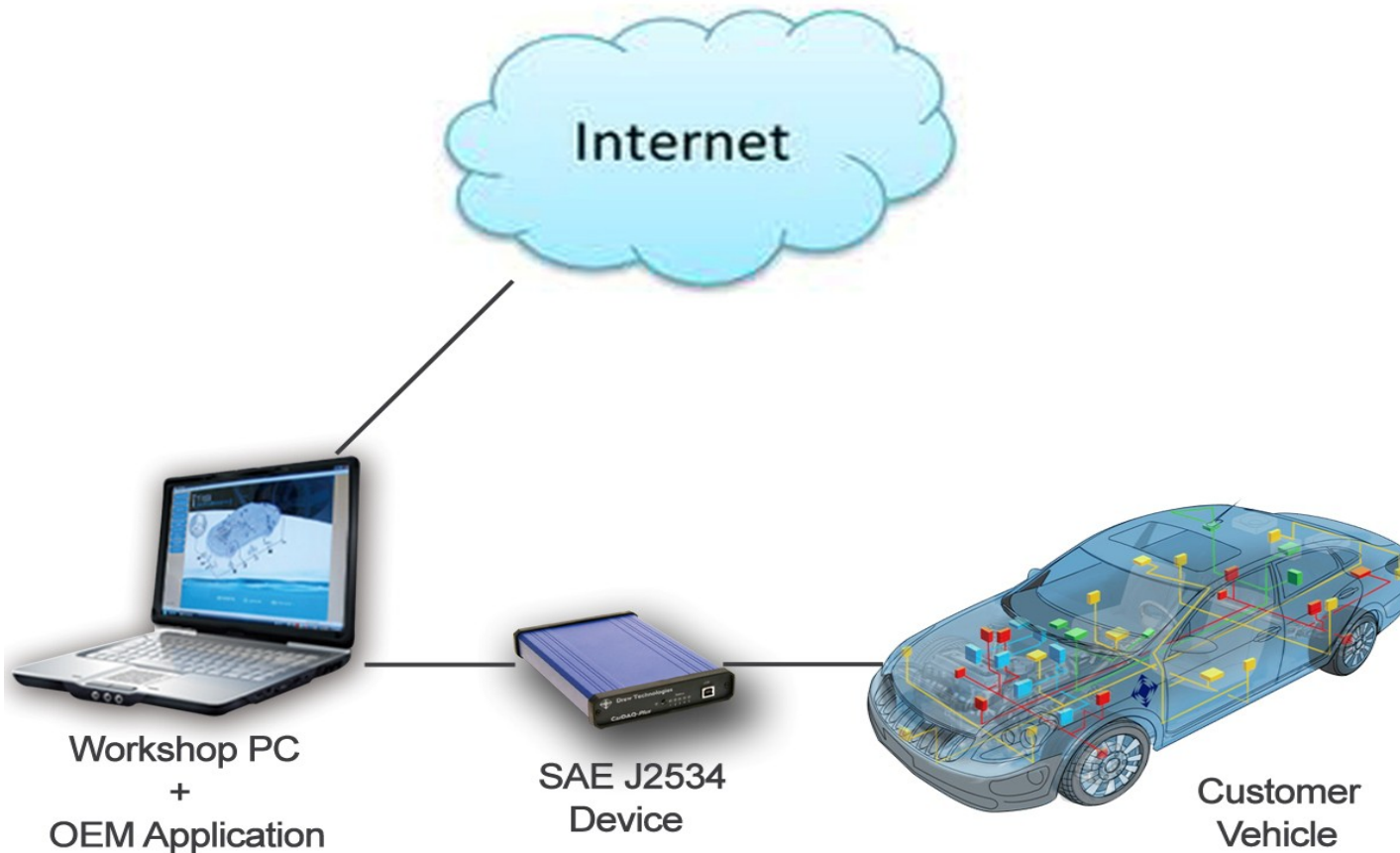
Source: Aaron Lowe, Automotive Aftermarket Industry Association

U.S. legislation still stuck in committee
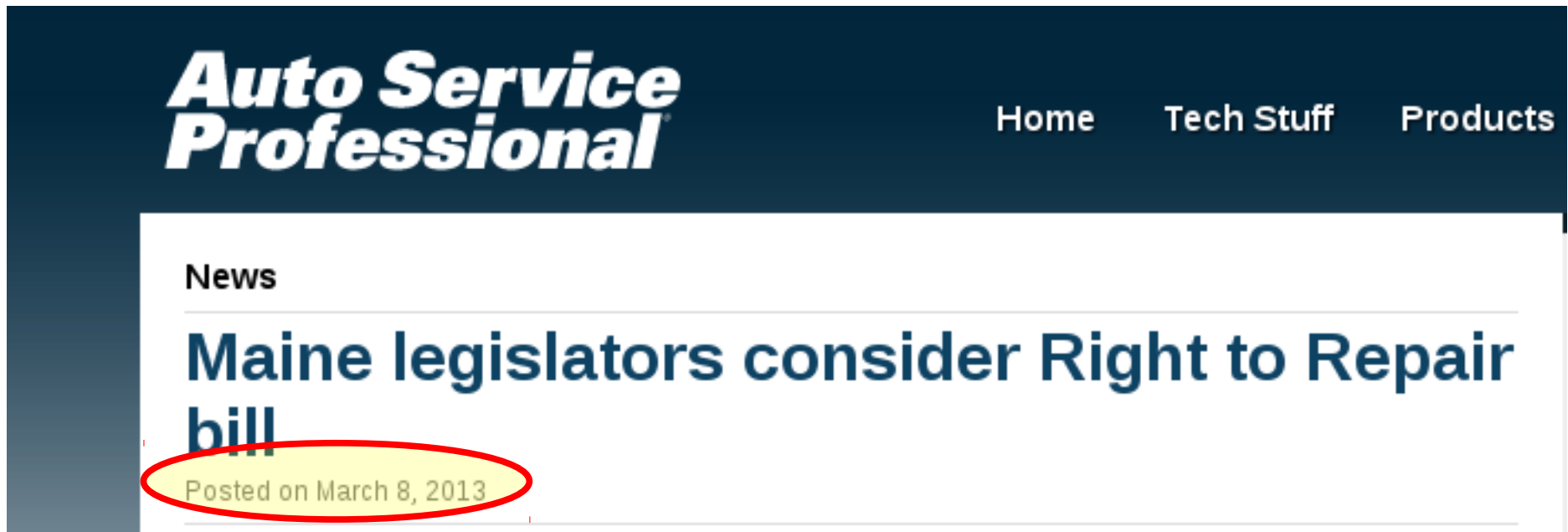
but states, Canada are providing leadership.

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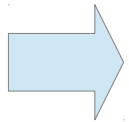
Our community is growing!

Car hackers _vastly_ outnumber geeks
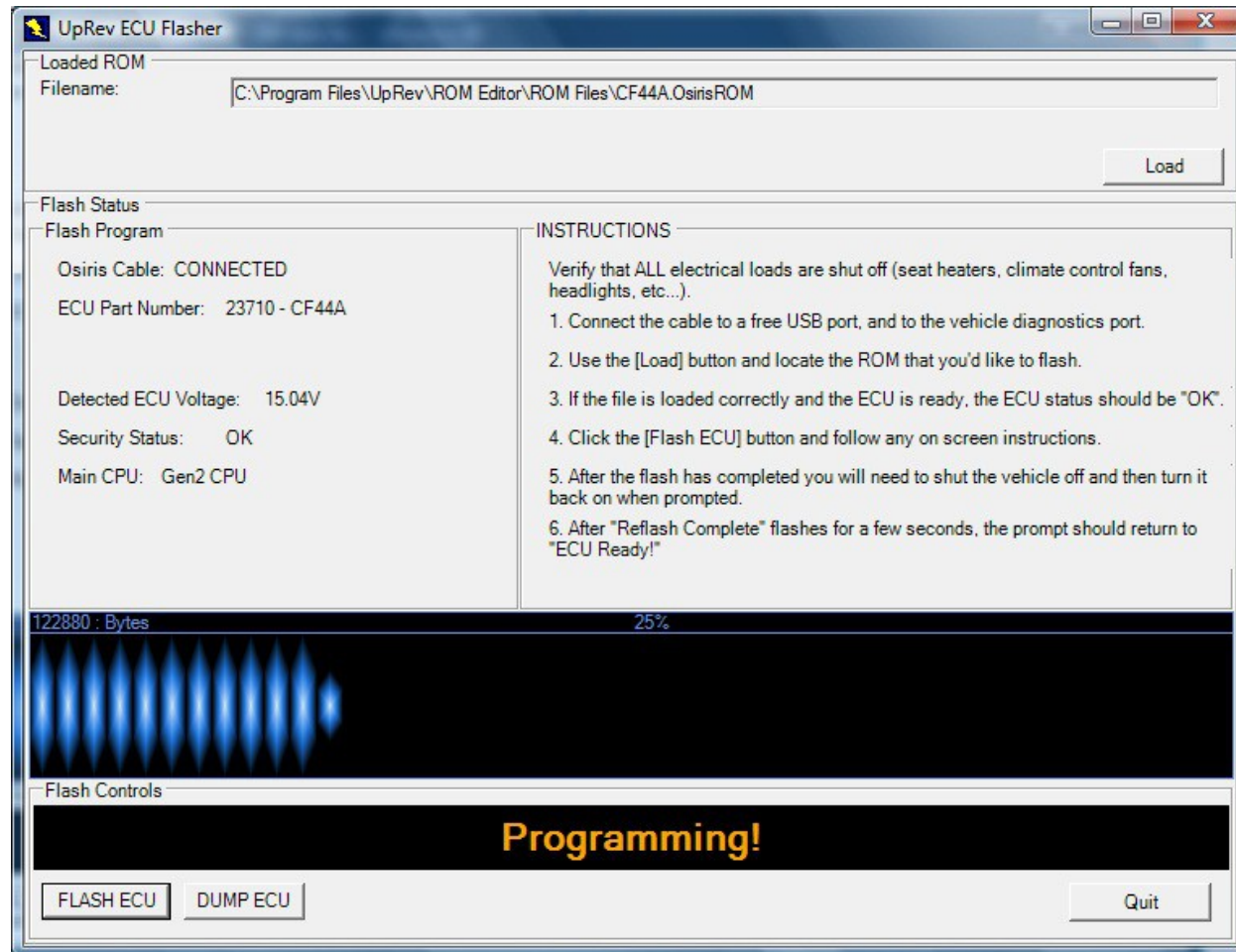
Many testers, bug reporters . . . _if_ Free Software reaches out!

Free software has new allies

Summary

- Increasing uptake of car SW with GPLv2 and permissive licenses.

    - Linux Collaboration Summit panel discussion on GPLv3 (?)

- New technologies can make us safer, *but* . . .

    - EFF and Electronic Privacy Information Center are speaking up on EDRs.

    - 802.11p (V2V and V2I) and automotive LTE on horizon.

    - Autonomous vehicles foreseeable.

- Era of R2R is upon us.

- Promise and peril continue for free car software.

Resources

- Christie Dudley's Chaos Computer Club 802.11p and DSRC talk

- Automotive Aftermarket Industry Association

- Massachusetts Right to Repair and national organization

- IEEE Spectrum on EDRs, EFF on EDRs, NHTSA EDR press release

- GENIVI Alliance

- IETF-ITS mailing list, *Thinking Highways*, *Telematics News*

- Automotive Linux Summit 2013 Japan (May) and U.K. (October)

- Silicon Valley Automotive Open Source group

Question: Proprietary Standards and Free Software

- Many automotive standards (ISO, SAE, etc.) are available only on a fee basis.

- May I freely distribute a library or device driver I write that implements a compatible interface to a standard I purchase?

- Does Google-Oracle API-copyright case apply?

- What does SMB-Samba precedent teach?

600+-member
Silicon Valley Automotive Open Source Group

- FAIF as well as FAIB

- April speaker: Christie Dudley on PKE and privacy in cars

- May speaker: Edward Durney on modularity and whole-system design methodologies for EVs

- June speaker: Nate Cardozo of EFF on Event Data Recorders (tentative)

Federal U.S.

RIGHT TO REPAIR COALITION 2012
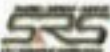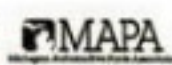
I'm once again a cosponsor of the *Motor Vehicle Owners Right to Repair Act* in the 112th Congress. . . . The Act has been referred to the House Committee on Energy and Commerce . . . Sincerely, *Anna G. Eshoo*

ORGANIZATIONS IN SUPPORT OF THE BILL

The GENIVI Alliance Membership (www.genivi.org)

OEMs

BMW Group · BMW · MINI · HONDA The Power of Dreams · HYUNDAI · JAGUAR · LAND ROVER · NISSAN · PSA PEUGEOT CITROËN · GM · RENAULT · SAIC MOTOR 上汽汽车

First Tiers

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OSV, Middleware, Hardware, and Services Suppliers

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ATX ALTEN · AutoNavi · bertrandt · b square · blackduck · Bouygues telecom · CANONICAL · CENTRAFUSE A WHOLE NEW WAY · cinemo · CHLEON

Collabora · COMARCH · CQT CloudQuest Technologies · csr · CTAG · CYBERCOM GROUP · dts · e-GITS · ERICPOL · ESG · ETRI

Fraunhofer ESK · GARMIN. · HCL · htc quietly brilliant · HI CORP. · IBM · iGATE patni · infobank · Infosys · intecs · INTRINSYC · itemis

Green Hills SOFTWARE, INC. · jambit · K2L CONNECTING NETWORKS · K3 · KPIT Cummins · LARSEN & TOUBRO · LUXOFT · HUMAX · Mahindra Satyam · mapscape

McAfee An Intel Company · Mentor Graphics · MiTAC · 神通電腦 · MFORMATION · montavista · MTA · MPHASIS an HP company · NAVIGON · NavNGo · NAVTEQ

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peiker · PELAGICORE · PLDS · QUALCOMM · RTI · RECARGO · RIGHTWARE · SPANSION · secunet · SEGULA TECHNOLOGIES

SIERRA WIRELESS · SIRIUS SATELLITE RADIO · Suresoft · SW · SYBASE · symbio · TATA ELXSI · TATA · TechniSat DAS ORIGINAL · TELECA · Telemotive AG

telenav · neto · TomTom · T-Systems · TUXERA · UNWIRED · Valeo · vTuner internet radio · wcities · WIND RIVER · WIPRO · YesVal XSe

Silicon

NXP · ARM · ROHM · freescale · SAMSUNG · intel · Renesas · ISSI · ST · MARVELL · MICREL · TEXAS INSTRUMENTS · NETLOGIC · VTEC · NVIDIA · XILINX