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Cure for common codes: Devil is in details for open-source auto technology

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The technology migrating to the modern car contains millions of lines of programming code, some of which is open-source and a free license to a software's blueprint.

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Dustin Walsh
Crain's Detroit Business

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Throughout its history, the automotive industry has propelled competition in horsepower, styling and even cup holders.

Yet the digital age has spawned a new type of vehicle owner -- an earbud generation less interested in steel and torque than in lifestyle management and fuel economy.

This bent on technology has led automakers and suppliers into spaces dominated by Apple Inc., Microsoft Corp. and Intel Corp. to develop or acquire the software that consumers want on wheels.

The answer to faster development timetables for many products? The use of open-source software. And that creates fine-print legal issues among the myriad of programs and coding that are all working to power the latest automotive gadgetry.

The technology creeping into the modern car contains millions of lines of programming code, some of which is open-source -- a free license to a software's blueprint. While these lines of code make possible the rapid development of in-car apps and infotainment systems, the devil is in the details.

"Open-source is free, publicly available and typically very useful, but the tricky part is in the terms and conditions," said John LeRoy, a partner and head of the open-source software practice at Southfield, Mich.-based Brooks Kushman PC. "There are tens of thousands of pieces of code out there that are open-sourced, and every one of them is subject to fine print.

"The problem is developers all the way through the chain aren't reading it."

The issue, LeRoy said, is that the terms and conditions are often very specific and carry weight.

In 2008, the U.S. District Court, Northern District of California set the precedent that using open-source code and not abiding by the terms and conditions qualifies as copyright infringement. Copyright infringement is a federal matter and qualifies the infringing party to pay damages with the potential of an injunction, LeRoy said.

An injunction for a minuscule piece of code in an infotainment system on a globally produced automobile could, potentially, shut down the line in several plants simultaneously, costing the liable party millions of dollars, he said.

"Failing to comply with the fine print -- that's not a trivial matter, this is a federal matter," LeRoy said.

Susan Kornfield, a partner at Bodman PLC in Ann Arbor, Mich., said the issue is that suppliers and automakers often don't even know they have open-source code in their products.

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"It's funny. When you talk to a CEO, they think their team wrote all the code," she said. "I don't think they are up to speed on the risks, but as more lawyers educate and operate with an audit team, it will get better."

After this year's Consumer Electronics Show in Las Vegas in January, Ford Motor Co. and General Motors announced they

would release the proprietary source codes for their respective in-dash systems to outside developers looking to create apps.

The move was considered forward-thinking for an industry that's traditionally protected its trade secrets with the rigor of the Queen's Guard.

"The main shift you're seeing in the marketplace is that, previously, automakers would write a RFQ (request for quotations) and select a supplier. That supplier would return a black box to them containing proprietary and some open-source code," said Steven Crumb, executive director of the Genivi Alliance, a San Ramon, Calif.-based nonprofit dedicated to the adoption of open-source development in the automotive industry.

"Now, things are changing," Crumb said. "The automakers are using the supplier model but want to know what they are getting in that black box -- and in order to do that, they have to have a level of transparency in that software."

Van Buren Township, Mich.-based Visteon Corp. uses open-source code for many of its product lines, said Upton Bowden, electronics marketing and portfolio planning manager for the supplier.

Bowden said traditionally suppliers used in-house development for a complete production program, but much of the system software blocks were similar from application to application and supplier to supplier. Visteon began using open-source code to cut down on costs and development time, he said.

"The use of open-source software development means that automotive suppliers can share commonly used software elements (like a Bluetooth stack, USB, media decoding, etc.) and focus engineering dollars and resources on application-unique features," Bowden wrote. "Essentially, Visteon no longer needs to re-create common software elements; the use of open-source software allows Visteon to use fewer resources to deliver a program and shortens software development timelines."

Visteon also is a member of the Genivi Alliance.

Crumb said Genivi members, which include automakers and suppliers, have developed internal procedures to ensure they are compliant with an open-source license.

Many use open-source compliance tools such as Black Duck Software's Protex, which can run lines of code to identify open-source areas and the terms and conditions of licensing that code.

"A good number of organizations are going into this with both eyes open because they know this is not their normal way of delivering software," Crumb said. "But this is not new stuff, and a lot of other industries have walked through this before, so this isn't reinventing the wheel in automotive. It's just applying best practices from other industries."

What makes managing the use of open-source codes more difficult than the typical terms and conditions issues is the scope, said Jennifer Dukarski, an associate attorney at Butzel Long PC in Ann Arbor, Mich.

A car can have up to 30,000 parts, but software code is far more expansive. For instance, the software managing the dozens of electronic modules in the Chevrolet Volt contains 10 million lines of code.


So automakers and suppliers must run the compliance software through millions of lines of code to ensure things work on multiple media, such as a new social media site, Dukarski said.

"It's easier to adapt," she said. "It's not much different than a traditional launch cycle where it's easier to launch off an existing platform than create an entire new infrastructure and architecture."

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