

PivotPoint Targets Auto Software Crisis with MBSE + Agile Architecture

PivotPoint's new Automotive DSM™ (Automotive Domain Specific Modeling) hands-on training workshops target the impending auto industry software crisis being caused by exponential increases in the software code deployed on modern automobiles. The Automotive DSM workshops emphasize pragmatic solutions to critical software and systems engineering problems that are disrupting the global auto industry as it is being transformed by simultaneous revolutions in propulsion, communication, and autonomous (self-driving) systems.

PivotPoint Technology Corp., the Custom Model-Based Solutions™ company, announced today it is launching [Automotive DSM™ \(Automotive Domain Specific Modeling\) editions of its popular Agile Architecture and Model-Based Systems Engineering \(MBSE\) hands-on training workshops](#). The new Automotive DSM hands-on training workshops emphasize pragmatic solutions to critical software and systems engineering problems that are disrupting the global auto industry as it is being transformed by simultaneous revolutions in propulsion, communication and autonomous (self-driving) systems. These critical problems include, but are not limited to, the following:

- burgeoning industry and government requirements for performance, safety, environment and cybersecurity (ISO 26262, EPA GHG Emissions, NHTSA CAFE, SAE J3061);
- prodigious feature creep as vehicle OEMs race to add more semi-autonomous (ADAS or Advanced Driver Assistance Systems) and fully autonomous driving features;
- information glut and network contention problems associated with rapidly expanding networks of sensors, processors (ECUs) and actuators;
- exponential increases in the size and complexity of software code bases causing testing, integration, maintenance and cybersecurity issues;
- antiquated software development practices that are error-prone and deviate from MISRA and ISO 26262 coding guidelines;
- over-reliance on automated code generators (MATLAB™/Simulink™, AUTOSAR-compliant code generators, etc.); and
- outdated User Interface (UI) / eXperience (UX) designs that are unintuitive, cluttered and distracting.

"As cars become greener and more autonomous the software code deployed in them is increasing exponentially in size and complexity," said Cris Kobryn, Founder and CEO of PivotPoint. Kobryn has been architecting and designing distributed computer systems for three decades, and is known for successfully leading the UML 1.x, UML 2.0, and SysML international standardization teams. "Consider that [a modern F-22 Raptor warfighter hosts approximately 2 MLOC \(Million Lines of Code\), and a modern high-end car hosts approximately 100 MLOC](#), where the latter is [projected to grow to 200-300 MLOC in the near future](#). Since software bugs and cyber attack vectors tend to increase with software size and complexity, one needn't be a computer scientist to predict that software bugs and cyber vulnerabilities in cars will subsequently surge. Furthermore, since research shows that most automobile warranty issues are related to electronics software, one needn't be a statistician to infer a correlation between exponential increases in automotive software code and recent massive recalls by Toyota, Ford, Volkswagen, GM, Fiat Chrysler and other automotive OEMs. Lastly, since the direct and indirect costs of massive recalls are wreaking economic havoc on automotive OEM market caps and their bottom lines, one needn't be an economist to predict that the financial losses associated with recalls of this magnitude are unsustainable."

PivotPoint is initially launching Automotive DSM editions of its popular "Essential Agile Architecture + UML 2 Applied" and "Essential MBSE + SysML Applied" training workshops. The "[Essential Agile Architecture + UML 2 Applied - Automotive DSM edition](#)" workshop, which uses UML 2 as its architecture modeling language and emphasizes Agile Architecture & Design best practices, is primarily aimed at Real-Time Embedded (RTE) software engineers. The "[Essential MBSE + SysML Applied - Automotive DSM edition](#)" workshop, which uses SysML as its architecture modeling language and emphasizes Model-Based Systems Engineering best practices, is primarily aimed at systems engineers. Optional learning modules include Requirements Engineering with ISO 26262, Model-Based Simulation with Parametrics, Model-Based Code Generation and Cybersecurity Architecture. Both Automotive DSM workshop editions are complementary, and are designed to be used by mixed engineering teams that include both software and systems engineers, as well as algorithm, electrical and mechanical engineers. The workshops can be customized to support popular visual modeling tools that support the UML 2 and SysML architecture modeling standards, including Enterprise Architect™ and MagicDraw™. Other modeling tools are available upon request.

"While there may be no 'silver bullet' quick-fix to resolve the impending automotive software crisis," continued Kobryn, "systems and software engineers can apply proven Model-Based Engineering techniques to mitigate it. In particular, they can apply Model-Based Engineering techniques to improve how they architect and design cars, automate requirement verification and validation, and reduce errors prior to production."

PivotPoint's [Automotive DSM training](#) is available immediately and can be delivered both onsite (North America, EU and Japan) and online. All Automotive DSM training can be followed up with comprehensive [Consulting](#) and [Technical Support](#) services, also delivered onsite and online, to address specific team and project needs.

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