

# AUTOMOTIVE

## CENTER OF EXCELLENCE

In the Automotive Center of Excellence at Security Innovation we analyze security features, identify weaknesses, and enable effective implementation to improve the security of connected vehicles.

By leveraging secure coding and embedded systems design skills, our experts can help secure automotive communication systems, in-vehicle infotainment (IVI), over-the-air (OTA) updates, advanced driver assistance systems (ADAS) and any other electronic control unit (ECU).

### Automotive Security Consulting

From security analysis of systems to highly optimized encryption and decryption implementations for secure communications, we deliver solutions that analyze security features, identify weaknesses, and enable effective implementation. We use specialized tools and methodologies to conduct detailed assessments, providing prescriptive and actionable guidance and collaborating to ensure that problems are corrected properly.

### Security Assessments



#### SECURE SDLC GAP ANALYSIS

Our security team will assess your existing SDLC (Software Development Lifecycle) and identify key points within the process to integrate new or refine existing security activities. This process yields a repeatable and efficient SDLC that incorporates security at each phase, streamlines activities, maps development activities to internal or compliance mandates, and improves tool usage for team members.



#### ARCHITECTURE & DESIGN REVIEW

This review identifies weaknesses in the design, requirements and goals of the software system and provides mitigation recommendations. This ensures that mistakes are identified early enough to prevent them becoming expensive code vulnerabilities. At the end of the review, our team of experts provide a detailed Threat Model, a summary of potential architectural issues, and a Risk Mitigation Plan.

### Our Principals

#### William Whyte Chief Scientist

William is our resident expert in automotive/ITS security. He is responsible for the strategy and research behind the company's activities in vehicular communications security and cryptographic research. He is chair of the IEEE 1363 Working Group for new standards in public key cryptography and has served as technical editor of two published IEEE standards, IEEE Std 1363.1-2008 and IEEE Std 1609.2-2006, as well as the ASC X9 standard X9.98.

#### Mark Etzel VP of Engineering

Mark is responsible for the development and testing of software products in the Security Innovation Embedded business unit, including the Aerolink™ and TCG Software Stack (TSS). Prior to joining Security Innovation in 2009, Mark served as Director of Engineering at NTRU Cryptosystems where he led the development of trusted computing. Before that, he was a Distinguished Member of Technical Staff at Bell Labs, and spent over twenty years developing secure telecommunications, designing and implementing security for Sirius satellite radio.

## Our Principals



### VEHICLE ATTACK SIMULATION

Our security engineers will conduct attacks on your vehicle or subsystem to determine how systems can be affected. This isn't just a network penetration test — we validate all identified vulnerabilities, follow chaining paths between vulnerable systems and disclose which hardware and software applications are putting you at risk. Attack surfaces include WiFi, Cellular, Bluetooth, RFID/NFC, 802.11p (V2X), OBD2, USB, CAN bus, CD/DVD, and more.



### PENETRATION TESTING

Using proven threat modeling techniques, our experts identify the highest risk areas of your application and test the avenues of attack that hackers are most likely to target. We provide a detailed report that describes the complete threat model, test methodology, and detailed vulnerability information that includes steps to reproduce, severity rating, and prescriptive remediation guidance. This "black box" testing is appropriate for acceptance testing and post deployment analysis, and can be applied to any type of software application.

## Security Training

Security Innovation offers a unique and innovative approach to secure software education, combining computer-based training with proven standards and best practices in our secure software knowledge base at the time of need. With over 100 classes available, TEAM Professor is the most comprehensive software security curriculum available. Specific courseware for embedded developers give a thorough grounding in application security concepts specific to the security challenges of System-on-Chip (SoC) software. For all stages of expertise, our 100 - 400 level courses are also available as TEAM Instructor classroom and virtual (vILT) sessions that can be tailored to an organization's specific requirements and environments.

## Aerolink™ Integration Services

Security Innovation is a leader in V2V security. Our Chief Scientist, William Whyte, was the editor of the IEEE 1609.2 security spec for V2V systems and Aerolink, our privacy and security software, is used on more V2V systems than any other solution. Our software engineers can integrate Aerolink with your specific crypto accelerators or port the software to any operating system to meet your engineering requirements for the US and European markets.

Ian Gallagher  
Principal Security Engineer

Ian is one of our most senior security engineers. His experience with black-box penetration testing makes him an invaluable asset to our customers, especially those who need multi-layer security assessment expertise for specific projects - from the silicon chips and hardware elements to middleware, user application layer, cryptographic implementation, and network connectivity.

Jonathan Petit  
Principal Scientist

Jonathan is in charge of leading projects in security and privacy of automated and connected vehicles. Previously, he was a Research Fellow in the Computer Security Group and The Mobile & Internet Systems Laboratory at University College Cork, Ireland. He received his PhD in 2011 from Paul Sabatier University, Toulouse, France. He received the M.Sc. degree in Computer and Communications Engineering in 2007 from the Paul Sabatier University, Toulouse, France.