

# Essam E. Bouni

Automotive Electronics & ECU Platform Leader

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## EXECUTIVE SUMMARY

Hands-on automotive electronics leader with deep experience across ECU hardware, embedded systems, and vehicle programs from concept through production launch. Known for building alignment across engineering, suppliers, and leadership teams to deliver complex platforms on time with best-in-class quality and automotive cost sensitive applications.

Core strengths include defining platform strategy and technology roadmap, establishing disciplined execution frameworks, driving mass production readiness, elevating supplier performance through structured accountability, and building high-performing teams through clear ownership models, coaching, and mentorship.

## LEADERSHIP HIGHLIGHTS

Results-driven Engineering Leader with 25+ years of experience delivering complex automotive electronics programs at **Bosch, TRW, General Motors and Scout Motors**—with a relentless focus on **driving results, reducing cost, and meeting tough deadlines**. Trusted to lead multimillion-dollar programs from acquisition through production, delivering **\$100M+ in cost savings**, first-in-market innovations, and on-time launches under aggressive timelines.

Combine deep technical expertise in **Scalable Zonal Architecture, Re-Configurable ADAS platforms, and safety-critical ECUs** with a **startup mindset within the enterprise**: question every step, eliminate waste, and empower teams to own outcomes. Proven ability to align cross-functional teams, harmonize multi-brand strategies, and build leaders who deliver results long after programs launch.

**Directly aligned with GM's transformation.** Delivered P-SAT Ultra Cruise camera for all platforms, Introduced MY21 Cadillac Escalade Adaptive Headlights System under GM's roof to be first Cadillac to provide ADB lighting. Architected greenfield SDV platforms at Scout Motors & VW AG. Led cross-brand harmonization with Audi, Porsche, Škoda, and VW. Ready to bring this experience back to GM.

**Strategic Differentiator:** Bridge the gap between executive vision and production reality—ensuring technology investments translate into programs delivered on time, on budget, and at quality.

## CORE LEADERSHIP COMPETENCIES

| Execution & Results                | Cost Optimization               | Strategic Vision                             |
|------------------------------------|---------------------------------|----------------------------------------------|
| Program Launch Leadership          | \$100M+ Cost Savings            | Zonal / SDV Architecture                     |
| Aggressive Timeline Execution      | Platform Reuse Strategies       | Scalable Centralized Computing Platforms     |
| Risk Mitigation & Burndown         | TCO Optimization                | Re-Configurable ADAS Compute & Sensor Fusion |
| Acquisition-to-Production Delivery | Supplier Negotiation            | Camera Systems                               |
| Multi-Discipline Team Leadership   | Waste Elimination               | AI-Driven Vehicle Intelligence               |
| Team Development                   | Cross-Functional Leadership     |                                              |
| Mentor & Develop Leaders           | Executive Stakeholder Alignment |                                              |
| Startup Culture Cultivation        | Cross-Brand Harmonization       |                                              |
| Ownership Model Implementation     | Global Team Development         |                                              |
| Talent Pipeline Development        | OEM Partnership Management      |                                              |

## QUANTIFIABLE LEADERSHIP IMPACT

| Achievement                        | Impact                                                                                                                                                                      |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>\$100M+ Cost Savings</b>        | Delivered over \$100M in development and tooling cost savings across multiple airbag ECU programs through platform reuse, smart architecture, and supplier accountability   |
| <b>First-in-Market Innovation</b>  | Architected first machine vision camera to meet AV mission; engineered first reconfigurable side airbag sensor for Honda—reducing development, tooling, and logistics costs |
| <b>35% Market Share Growth</b>     | Drove 35% increase in passive safety market share at Bosch through winning proposal architectures and strategic OEM partnerships                                            |
| <b>On-Time Production Launches</b> | Delivered MY21 Cadillac Escalade Adaptive Headlamp system for Canadian market—navigating complex regulatory requirements to achieve on-time, high-quality launch            |
| <b>TCO Optimization</b>            | Developed configurable Bosch MEMS sensors for airbag applications, significantly lowering Total Cost of Ownership across multiple vehicle programs                          |
| <b>Cross-Brand Harmonization</b>   | Led harmonization initiative with Audi, Porsche, Škoda, and VW leadership, driving consensus on scalable SDV framework across multiple vehicle programs                     |

## PROFESSIONAL EXPERIENCE

### Melexis Semiconductor | North America

#### Senior Manager – OEM Technology Roadmap | 2026 – Present

- Serve as the strategic technical interface between Melexis and major North American OEMs,
- Directing the semiconductor enablement of next-generation SDV platforms for Detroit-based OEMs, securing preferred technology partner status for a ~\$50M pipeline. Drive early-stage influence on platform definition to position Melexis technologies in future vehicle architectures.
- Lead executive-level technical engagements with OEM architecture, platform, and procurement teams, shaping requirements and influencing early concept decisions for SDV and zonal compute programs. Translate system-level vehicle architecture trends into actionable semiconductor roadmap priorities across sensing, control, and power domains.
- Drive cross-functional alignment across engineering, product management, and commercial teams to prioritize development efforts based on OEM platform timelines, ensuring roadmap synchronization with high-value vehicle programs and reducing late-stage engineering rework and technical misalignment risk.
- Develop and present strategic technical positioning and value propositions for key OEM pursuits, directly supporting design-in readiness and reducing adoption risk through alignment with zonal compute architectures and centralized vehicle controllers.
- Enabled 4+ design wins across key OEM programs through early technical engagement and roadmap alignment.
- Influenced GM SDV platform strategy, contributing to the selection and adoption of Melexis embedded lighting code-free solution within the architecture roadmap.
- Supported ~\$50M pipeline value through strategic positioning, early engagement, and design-in acceleration activities.

## Scout Motors | Michigan, USA

### Staff Technical Leader - Vehicle Electronics | 2024 – 2026

Charged with defining the ADAS integration strategy for Scout Motors' greenfield SDV platform, establishing a scalable zonal foundation aligned with long-term brand and platform objectives under aggressive launch timelines.

- Defined the **ADAS integration** strategy for Scout Motors' greenfield software-defined vehicle (SDV) platform, establishing a scalable zonal architecture foundation aligned with long-term brand, platform, and launch constraints under aggressive program timelines.
- Architected the **ADAS and zonal electronics roadmap** for Scout's debut vehicle programs, delivering a cost-optimized and scalable system foundation that balances performance, functional safety, and future feature expansion within a centralized compute architecture.
- Led system-level integration of **infotainment and ADAS domains** into Scout's zonal E/E architecture, defining cross-domain interfaces between centralized compute, zonal controllers, and legacy ECUs to enable a unified SDV platform architecture.
- Directed infotainment system integration including Android Automotive, Apple CarPlay, Ethernet/A2B audio architecture, and HMI subsystems within a centralized compute environment, ensuring system stability, deterministic performance, and end-user experience consistency.
- Led ADAS integration into zonal architecture by coordinating sensor and perception data flows (camera, radar, and fusion pipelines) into centralized compute, ensuring real-time processing performance, functional safety compliance, and vehicle-level integration readiness.
- Owned integration of secondary ECUs and distributed subsystems into zonal architecture, defining electrical and software interfaces, network topology (CAN, LIN, Ethernet), and power distribution strategy while driving cross-functional alignment for production validation.
- Led hardware/software integration for centralized compute and zonal controllers, ensuring deterministic real-time performance, system robustness, and reliable inter-domain communication across vehicle subsystems.
- Directed software integration and calibration of high-performance perception stacks using Python, C++, and Qualcomm, NVIDIA Orin-based compute platforms, enabling advanced image processing and machine vision capabilities for ADAS applications.
- Oversaw embedded software development across AUTOSAR, embedded C/C++, Python, and Linux/QNX-based systems, enabling scalable and modular compute architectures aligned with SDV requirements.
- Defined and communicated compute system requirements to support OEM selection of optimal SoC platforms, enabling structured trade-off analysis across cost, performance, power, and scalability for architecture decisions.
- Led infotainment platform delivery supporting Android Auto, Apple CarPlay, and embedded HMI systems, ensuring seamless integration into centralized compute architecture.
- Led Ethernet and Automotive Audio Bus (A2B) audio architecture integration, including DSP stack selection, codec integration, and tuning framework optimization to improve latency, performance, and compute efficiency.
- Directed evaluation and integration of infotainment audio software stacks (DSP frameworks, codecs, tuning tools) into head unit platforms, optimizing system performance, resource utilization, and end-to-end audio quality.
- Led cross-brand SDV harmonization initiative with Audi, Porsche, Škoda, and Volkswagen leadership, driving alignment on a scalable low-cost software-defined vehicle architecture while preserving brand differentiation and platform reuse efficiency.

- Established system integration governance frameworks across ADAS, centralized compute, and zonal ECUs, proactively managing architectural risks and ensuring program milestones aligned with vehicle launch schedules.
- Championed AI-driven vehicle intelligence strategy, defining roadmap direction for predictive diagnostics, context-aware systems, and next-generation user experience capabilities.
- Institutionalized an execution efficiency culture by challenging development assumptions, eliminating non-value-added complexity, and improving engineering velocity, cost efficiency, and delivery discipline across programs.

## General Motors | Michigan, USA

### Technical Leader – Autonomous Systems, Advanced Lighting & Passive | 2016 – 2023

Directed end-to-end execution of ADAS, camera, and advanced vehicle electronics across multiple GM vehicle programs, leading cross-functional teams from concept through production. Key contributor to GM's Ultra Cruise and next-generation camera platform evolution.

- **Owned** end-to-end development of production automotive camera systems, including **CMOS imager selection, ISP tuning, lens/optics design and integration, serializer/deserializer (SerDes) selection, thermal design, and ECU integration**
- **Owned** camera system architecture for ADAS (L2+/L3), enabling features such as object detection, lane keeping, and surround view, with focus on scalability and cross-platform reuse
- **Spearheaded** architecture and system design for Ultra Cruise camera platforms, aligning perception, compute, thermal management, and network integration to deliver high-performance, production-ready ADAS solutions
- **Drove** key hardware architecture decisions including **imager performance trade-offs (HDR, low-light), optical stack design (FOV, distortion), and high-speed data links (SerDes/Ethernet)** to optimize system performance and cost
- **Owned** DV/PV validation strategy and execution for camera systems, including:
  - Environmental validation (thermal cycling, vibration)
  - Optical validation (MTF, distortion, HDR performance)
  - EMC/ESD compliance
- **Partnered** with perception and embedded software teams to optimize **image quality, latency, and end-to-end data pipeline performance**, ensuring robust ADAS functionality
- **Owned** vehicle integration and calibration, including camera alignment, field-of-view validation, and ECU synchronization across vehicle networks
- **Delivered** multiple camera platforms to SOP with **zero major launch escalations**, meeting aggressive OEM timing and quality targets
- **Delivered** Adaptive Headlamp system on MY21 Cadillac Escalade (Canada), navigating regulatory complexity and technical tradeoffs to achieve on-time, high-quality launch without budget overrun
- **Drove** enterprise-level technical decision-making across engineering, program management, and executive leadership to resolve tradeoffs, mitigate risk, and deliver cost-optimized solutions
- **Established** system governance frameworks and interface ownership models, improving execution discipline and reducing late-stage integration risks across global teams
- **Built and mentored** high-performing engineering teams, creating strong ownership culture, improving execution throughput, and reducing single-point dependencies

FUJITSU TEN

Novi, MI

2015 – 2016

**Engineering Manager – Infotainment System**

- Led and scaled a cross-functional infotainment engineering organization delivering GM integrated cockpit and infotainment systems across multiple vehicle programs, including head unit, displays, connectivity modules, and vehicle interface integration (CAN/LIN/MOST).
- Owned end-to-end delivery from concept through production launch, aligning hardware design, system architecture, software integration, and validation to meet aggressive OEM timing and gateway milestones (DV/PV/PPAP).
- Directed hardware engineering, system validation, and electronic lab teams, ensuring readiness for vehicle integration, environmental validation (thermal, EMC), and manufacturing bring-up.
- Established and enforced validation strategies including bench, HIL, SIL, and in-vehicle testing to meet GM quality targets and reduce launch risk.
- Managed supplier relationships and Tier 1 coordination, driving design reviews, cost optimization, and issue resolution through APQP and 8D processes.
- Delivered programs on time and within budget while improving key KPIs such as defect leakage, test coverage, and first-pass yield at launch.
- Built and mentored high-performing engineering teams, improving execution discipline, technical depth, and accountability across hardware and system domains.
- Delivered infotainment systems supporting **Android Auto / CarPlay / embedded HMI platforms**
- Integrated audio architecture using MOST/Ethernet/A2B

**Robert Bosch**

USA / Germany

**Engineering Manager – Passive Safety, and Engine Controls | 2005 – 2015**

*Built and led multi-disciplinary engineering teams delivering safety-critical ECU and sensor platforms for global OEMs, driving technical execution, business growth, and cost leadership across North America.*

- **Owned** end-to-end development of North American OEM restraint system ECUs and sensors, leading cross-functional teams from acquisition through production launch across multiple vehicle programs
- **Owned** next-generation airbag ECU architecture for North America, driving platform scalability, performance, and cost optimization across vehicle lines
- **Owned** technical business development with major OEMs (Chrysler, Honda, Toyota, Ford), securing program wins and driving **35% market share growth** through competitive system architectures and strong customer alignment
- **Owned** technical proposals, translating OEM requirements into scalable, cost-effective designs aligned with safety, performance, and timing targets
- **Delivered** over **\$100M in development and tooling cost savings** through platform reuse, architecture optimization, and strategic supplier negotiations—without compromising safety or quality
- **Architected** first-in-market reconfigurable side airbag sensor for Honda, enabling a single design across multiple vehicle platforms and significantly reducing development, tooling, and logistics costs
- **Developed** configurable MEMS sensor solutions, lowering total cost of ownership (TCO) and establishing a competitive advantage across multiple programs
- **Owned** execution and delivery of key OEM programs (including Chrysler), ensuring production readiness and on-time SOP under aggressive timelines
- **Owned** engineering cost reduction (ECE) initiatives, driving redesign, validation, and implementation to sustain long-term cost competitiveness

**Program Execution & Technical Leadership:**

- **Owned** system-level design and analysis including worst-case analysis, DFMEA, and FTA to ensure robust, safety-compliant ECU designs
- **Owned** DV/PV validation strategy and execution, including EMC/ESD, environmental, and pre-launch readiness to ensure high-quality production launches
- **Owned** ECU component selection, change management, and validation, maintaining design integrity and minimizing production disruption

- **Owned** execution of production and model year changes, aligning engineering deliverables with OEM timing and manufacturing requirements
- **Contributed** to advanced MEMS sensor roadmap, influencing next-generation occupant safety technologies

**Team & Organizational Leadership:**

- **Built and led** high-performing engineering teams, mentoring and developing leaders who advanced into key roles across the organization
- **Drove** a high-accountability execution culture focused on ownership, speed, and cost efficiency, improving program delivery and engineering productivity
- **Implemented** continuous improvement initiatives and new technologies to reduce development cost, enhance quality, and strengthen execution discipline

**TRW Automotive      Farmington Hills, MI      7/1998 to 7/2005**

**Staff Engineer – Passive Safety / Restraint Systems**

- **Owned** end-to-end ECU hardware development for restraint systems, including schematic design, component selection, PCB design reviews, and worst-case circuit analysis, delivering robust, cost-optimized solutions for high-volume production
- **Owned** ECU design and development lifecycle from concept through production, enabling sustained business growth and platform scalability across multiple OEM programs
- **Owned** technical business development for North American and Japanese OEMs, securing new program wins and contributing to significant market share growth
- **Owned** cost optimization strategy across restraint ECU programs, achieving best-in-class BOM and manufacturing cost through design efficiency, supplier alignment, and architecture decisions
- **Owned** design and production launch of Honda airbag ECU sensor systems, leading sourcing, supplier integration, validation, and production readiness
- **Owned** system-level safety and risk analysis including DFMEA, FTA, and worst-case analysis, ensuring compliance with functional safety requirements and robust design performance
- **Owned** DV/PV validation strategy and execution, including EMC/ESD, environmental, and vehicle-level testing to meet stringent OEM safety and quality standards
- **Owned** component selection and qualification, including review of DFMEA test plans and validation reports to ensure alignment with safety goals and system requirements
- **Owned** cross-functional execution across hardware, validation, manufacturing, and suppliers, ensuring on-time delivery and high-quality production launches

**General Dynamics Land Systems | USA**

**Electronics Engineer – Defense Vehicle Systems | Early Career**

- Contributed to vehicle electronics development and integration for defense platforms, building foundational systems and hardware engineering discipline.

## LEADERSHIP HIGHLIGHTS: DRIVING RESULTS, REDUCING COST, MEETING DEADLINES

| Challenge                                                                                                        | Action                                                                                                                                                    | Result                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Rising development costs across airbag ECU programs                                                              | Architected platform reuse strategy; negotiated with suppliers; eliminated redundant validation                                                           | <b>\$100M+ saved</b> across multiple programs                                                                               |
| Honda needed flexible airbag sensor across multiple vehicle lines                                                | Engineered first reconfigurable side airbag sensor with single design adaptable to multiple platforms                                                     | <b>Substantial reduction</b> in development, tooling, and logistics costs                                                   |
| Bosch MEMS sensor costs impacting program profitability                                                          | Developed configurable sensor architecture optimized for airbag applications                                                                              | <b>Lowered TCO</b> across vehicle programs; created cost advantage                                                          |
| Aggressive timeline for MY21 Cadillac Escalade launch                                                            | Drove cross-functional alignment; navigated regulatory complexity; maintained execution discipline                                                        | <b>On-time delivery</b> without budget overrun                                                                              |
| Greenfield SDV architecture needed from scratch with aggressive launch                                           | Architected ADAS and zonal roadmap while leading cross-brand harmonization with Audi, Porsche, VW                                                         | <b>Scalable foundation</b> delivered on schedule                                                                            |
| Team operating with silos and unclear ownership<br>Need to scale engineering capability without adding headcount | Implemented startup-like culture: question everything, own outcomes, move fast<br>Mentored and developed new leaders; created clear accountability models | <b>Increased throughput;</b> reduced single-point dependencies<br><b>Built talent pipeline;</b> improved execution velocity |

## TEAM DEVELOPMENT PHILOSOPHY

*"I don't just build products, I build leaders."*

Throughout my career, I have been responsible for developing and nurturing talent within my teams. By identifying individual strengths and providing tailored opportunities for growth, I have empowered team members to advance their skills and contribute significantly to project success. My coaching and mentoring approach has cultivated a strong sense of ownership and dedication among team members, leading to increased productivity and project efficiency.

I promote and implement new norms and technologies to reduce development costs, continuously challenging my teams to question every step of the development cycle and drive change that optimizes execution cost and timing. This startup mindset within enterprise organizations has enabled me to deliver exceptional results while building the next generation of engineering leaders.

Proven outcomes: Mentored engineers who now lead programs at TRW, Bosch, GM, and across the automotive industry. Created ownership models that reduced single-point dependencies and increased organizational throughput. Built talent pipelines that continue delivering results long after programs launched.

## PATENTS (SELECTED)

DE102008040043A1 / DE102008040043B4 - Seat-back / occupant sensing technology.

Additional U.S. patent publications related to occupant sensing and safety electronics.

## EDUCATION

Master, Electrical Engineering – Wayne State University, 1999