Arm-based Automotive Partner Demonstrations Highlights for CES 2020
“The Automotive industry is going through an unparalleled period of disruption, and trends such as electrification, the digital cockpit, driver assistance and autonomy are providing a fantastic opportunity for industry collaboration and innovation. The Arm ecosystem is enabling the industry to reinvent the future of mobility, and along the way, play a key role in addressing global challenges such as road fatalities, sustainability and urbanisation. CES is one of the best places to see the technologies and solutions that can shape and enable the future of the automotive industry, so we have created this booklet to showcase the impact our Arm Automotive ecosystem partners are having and help you connect with them in person. We’re really excited to see the breadth and depth of Arm-based automotive innovation from our partners this year and hope you will be too. Enjoy the show!”

- Chet Babla, VP Automotive Business
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Arkamys

Innovative Software and Services in Audio Signal Processing

A leader in audio signal processing, ARKAMYS creates innovative software solutions for cars. ARKAMYS is an acknowledged expert in the 3D sound and audio rendering field. The company develops highly accurate solutions for optimizing audio quality and spatialization in the car cabin.

ARKAMYS’ audio software solutions are integrated into 60 million vehicles worldwide. ARKAMYS works with one of the world’s leading carmakers, Renault-Nissan, and the second in Europe, PSA. ARKAMYS’ solutions equip 1 in 2 vehicles of the volume carmakers in Europe and continues to expand in Asia by working with manufacturers such as Chery, Dongfeng, GAC, HKM, NIO and SAIC Motor.

At CES 2020, a global stage for innovation, ARKAMYS will present more than 7 demonstrations to meet the current and future challenges of automotive audio: media enhancement, new audio software, new usages, productivity tools, weight reduction, vehicle safety. In addition, ARKAMYS in-vehicle audio demonstration will be powered by an Arm-based processor from the NXP i.MX family.

The demonstrations offered by ARKAMYS at CES 2020 reveal its ability to adapt its responsiveness to the issues faced by carmakers and Tier1s using Arm-based processors powerful solutions.

Booth Location: Central Plaza #CP-36
Contact: marketing@arkamys.com
Altia

HMI Software and Services for Clusters, HUDs, IVI and Beyond

Altia offers end-to-end digital HMI software and services to rapidly get HMIs to hardware. At CES 2020, our team will showcase Altia user interfaces featuring integrated cockpit, 3D, functional safety and augmented reality on Arm-based platforms from Cypress Semiconductor, NXP, Renesas and more.

Visitors to Altia’s meeting suite will experience:

- A supersized, integrated cockpit featuring seven gorgeous displays on NXP i.MX 8 QuadMax technology – each board featuring two Arm® Cortex®-A72, four Arm Cortex-A53 and two Arm Cortex-M4F. Altia HMI software will be running in an instrument cluster, passenger display and multimedia and HVAC controls, plus a rear-view mirror, left and right side-view mirror views and interactive touchpad. These displays boast real-time 3D, ADAS simulations, and compelling interactive features.

- A sleek instrument cluster highlighting Altia’s functional safety features on the Cypress Traveo™, which includes dual Arm Cortex-M7 cores. The Altia Safety Monitor is employed in this demo to confirm that mission-critical information is accurately displayed during vehicle operation.

- The result of Altia’s research and development efforts on cognitive load-sensitive augmented reality applications for head-up displays. Get directions and then make a coffee run by following their HUD directions – all displayed on a Renesas R-Car H3 processor featuring four Arm Cortex-A57, four Arm Cortex-A53 and a single Arm Cortex-R7.

Automotive executives, engineering leaders, partners and customers interested in learning more about Altia’s HMI software and professional engineering services are invited to email info@altia.com to request a meeting with the Altia team during CES 2020.

Booth Location: Meeting Suite, Renaissance Las Vegas Hotel
Ambarella

From ADAS to Autonomy

Ambarella will be demonstrating advanced automotive ADAS and autonomous driving (AD) technologies during CES 2020. Key demonstrations include:

- AD and smart parking using Ambarella’s Embedded Vehicle Autonomy (EVA), a self-driving vehicle. EVA builds upon 20 years of autonomous vehicle research and utilizes CVflow embedded processors to run AI-based CV algorithms.

- Mercedes-Benz will demonstrate its Cargo Recognition and Organization System (CoROS): A camera assistant in the cargo space automatically recognizes registered parcels using barcodes and the symbols on the outside of the parcels.

- HELLA will feature its latest suite of deep learning ADAS algorithms including multi-class object detection, detection of driving area limitations, depth estimation, and classification of traffic lights and traffic signs.

- StradVision will demonstrate its suite of front ADAS and driver monitoring system (DMS) algorithms. Connected to an 8MP front-facing camera and an additional interior facing camera.

- EyeSight’s DMS will be shown on a system with 3 interior cameras. The system simultaneously processes a monochrome driver-facing camera, and two RGB-IR in-cabin cameras.

- Brodmann17’s ADAS solutions suite will showcase deep learning algorithms which include vehicle detection, distance estimation, and real-time forward collision warning running.

- Other live demonstrations will include camera-based electronic mirrors with blind spot detection (BSD) and intelligent around view monitoring (AVM).

- Ambarella’s low-power system-on-a-chips (SoCs) embedded Arm Processors offer high resolution video compression, advanced image processing, and powerful deep neural network processing (CVflow) to enable intelligent cameras to extract valuable data from high-resolution video streams.

Booth Location: Embassy Suites, 4315 University Center Drive
Contact: cday@ambarella.com or lgerhardy@ambarella.com
Or visit: www.ambarella.com
Automotive Grade Linux

Open Source Automotive Software

AGL is bringing together automakers, suppliers and technology companies to accelerate the development and adoption of a fully open software stack for all technology in the vehicle, from infotainment to autonomous driving.

AGL will be demonstrating the open source UCB software platform, running on different processors including Arm-based processors, for infotainment and instrument cluster applications. The booth will also feature a 2020 Toyota RAV4 with an AGL-based infotainment system, a 2020 Mazda CX-30 showcasing new AGL reference hardware, and 18+ AGL members demonstrating connected car, instrument cluster, and security solutions running on AGL technology.

Booth Location: Westgate Hotel Pavilion 1815
Brodmann17

The Next Generation of Perception Software for Automated Driving

Brodmann17 patented technology provides the most efficient perception solution possible for different types of ADAS product without compromising on quality and accuracy. Their Deep Neural Network (DNN) architecture requires only a fraction of the usual computing power and can run highly accurate computer vision on low-power Arm processors, ideal for mass production. This provides a more efficient and cost-effective deep learning perception solution with 20x efficiency.

Brodmann17 are demonstrating ADAS applications such as forward collision warning, lane departure warning and pedestrian detection. These applications are running on various setups, such as blind spot detection and front facing aftermarket products. All of these applications are running on Arm processors, while maintaining high performance and excellent accuracy.

Booth Location: North Hall, Booth 9503
Contact: keren@brodmann17.com
Original Innovation for Vital Progress

With decades of experience, Cambridge Consultants is an Arm Approved Design Partner for the ambitious.

Deep expertise across ASICs, IP and end-product development, enables Cambridge Consultants to provide a unique offer to its clients that crosses these boundaries.

They work with clients ranging from Tier1 semiconductor companies to world leading brands with no chip expertise.

Specialist skills include the creation of ASIC strategies, bespoke system architectures and design, defined by the business needs and ambitions of their clients.

The World’s Lowest Power Voice Activity Detection Brings Arm-Powered AI to the Edge

Cambridge Consultants will be showcasing a demo at CES 2020 that reduces the power consumption of Arm-based keyword detection by 99%. The demo uses Arm’s Neural Network framework and can run from a coin cell for five years. This opens the door to AI-enhanced, ultra-low power, ultra-low cost IoT.

They can help accelerate your path from discovery to world-changing applications.

Booth Location: 44137
Contact: arm@cambridgeconsultants.com
Civil Maps

The Most Robust, Scalable Arm-Based Solution for safe, Low-Cost Autonomous Vehicle Localization and Navigation

Civil Maps offers the most scalable, safe, and low-cost Arm-based technology solution for autonomous vehicle mapping, localization and navigation in the industry today.

Civil Maps architecture enables automotive OEMs, mapping providers, and mobility companies to accelerate autonomous driving initiatives more cost-effectively than any other competing conventional solutions provider. With a data footprint that is up to 1,000 times smaller than traditional base maps, Fingerprint Base Maps® enables autonomous vehicle developers to radically reduce their cost footprint associated with data processing, computing power, data storage, bandwidth, and energy consumption, enabling autonomous vehicle deployment at scale.

Booth Location: LVCC North Hall, Booth 9023
Contact: info@civilmaps.com
Core Avionics & Industrial Inc.

The World’s Leading Supplier of Software and Hardware IP Platforms for Safety Critical Graphics and GPU Compute Applications

Core Avionics & Industrial Inc. ("CoreAVI") is a pioneer in the military and aerospace sector with a proven track record in providing entire software and hardware IP platform solutions that enable safety critical applications. A global leader in architecting and supplying real-time and safety critical graphics, compute, and video drivers, “program ready” embedded graphics processors, and DO-254/ED-80 certifiable COTS hardware IP, CoreAVI’s suite of products enables complete safety critical embedded solutions for aerospace, automotive, and industrial applications with long-term support. CoreAVI’s solutions are deployed in commercial and military avionics systems, and support rapidly emerging compute applications in the automotive, unmanned vehicle, and internet of things markets. CoreAVI’s products may be purchased with certification data kits for the highest levels of safety certification, including RTCA DO-254/DO-178C, EUROCAE ED-80/ED-12C, and ISO 26262.

CoreAVI is featuring a safety critical automotive cluster demo running on NXP i.MX8 featuring Arm’s Cortex-A53 processor. The demo showcases CoreAVI’s VkCore™ SC Vulkan®-based graphics and compute driver displaying DiSTI’s GL Studio® automotive HMI application. The demo is on display at DiSTI’s GL Studio UI Experience Suite at CES 2020.

Schedule a private meeting with them to learn how their safety critical software stack can speed your automotive applications into the next generation of safety and security.

Contact: Lee.Melatti@coreavi.com or Sales@coreavi.com
GL Studio

For over 20 years, GL Studio has been the number one choice for GUI software tools providing a user experience with high-quality UI, reducing production costs, while providing maximum runtime reliability and performance.

Whether designing instrument clusters, augmented reality HUDs or IVI, GL Studio is designed for the flexibility the automotive industry demands. GL Studio was the first ISO 26262 ASIL D pre-certified UI tool, lighting a clear path toward certifiable safety-critical development.

DiSTI’s philosophy for software and Arm’s philosophy for hardware closely align. In addition to the over 40 Arm based-platforms that GL Studio supports, DiSTI are proud to show their software on several hardware platforms running Arm technology at CES 2020:

- A supersized, integrated cockpit featuring NXP i.MX8
- Telechips Dolphin+
- Renesas R-Car M3

Arm’s high performance, low cost, and superior reliability in hardware are a good fit for GL Studio’s high performance, ease of development, and superior reliability in software. Arm architecture is the most frequently requested for GL Studio runtime ports to embedded platforms.

Contact: sales@disti.com or visit: www.disti.com
Elektrobit

Personalized and Connected In-Vehicle User Experiences with Arm CPU Cores

Elektrobit’s cockpit software platform demo brings together driving and infotainment information along with software updates over-the-air to continuously improve vehicle functions and react quickly to security issues. The user interface powered by EB GUIDE, supports any type of interaction (touch, graphic, haptic, voice) and any display type, including augmented reality.

Elektrobit’s demo includes two Renesas R-Car M3 boards with Arm CPU cores (Arm Cortex-A57) to run the cluster and infotainment functions, ensuring a seamless interactive user experience in the vehicle.

Contact: CES@elektrobit.com
Location: Renaissance – Continental Private Suite, By Appointment Only
emotion3D offers intelligent computer vision and machine learning software for camera-based in-cabin analysis of vehicles. The company’s technology enables a comprehensive analysis of all occupants inside the vehicle and is an essential building block for the implementation of intelligent safety (e.g. detection of driver distraction or fatigue) & user experience functions (e.g. gesture control or personalization of the vehicle).

emotion3D developed a number of AI-based analysis modules (e.g. head & body pose, eye openness & gaze, body metrics, object detection etc) that run with high accuracy and robustness on low-power embedded CPUs such as the Arm Cortex-A57. Since all processing is conducted on the edge, protection of the occupants’ privacy is ensured.

Contact: sales@emotion3d.ai
Eyesight Technologies

**Driver and Occupancy Monitoring Systems**

Eyesight Technologies develops computer vision and AI based in-cabin sensing solutions, offering driver monitoring, driver identification and occupancy monitoring systems.

**DriverSense**, driver monitoring system, tracks the driver’s eyes, eyelids, pupils, head, and gaze to determine alertness, wakefulness, and attentiveness. Driver recognition and action detection are also available.

**CabinSense**, occupancy monitoring system, monitors a car’s passengers, powering adaptive safety features, and enhanced in-cabin personalization features.

**FleetSense** is Eyesight Technologies’ after-market solution for fleets, providing a driver monitoring solution detecting fatigue, distraction and actions such as smoking and holding a phone.

The technology is optimized for lean edge processing on Arm Cortex processors. At CES you will be able to see these three solutions in action.

Booth Location: **LVCC, North Hall, Booth 9017**
Contact: **CES@eyesight-tech.com**
Green Hills Software

Leading Embedded Software Experts

Green Hills Software is demonstrating 8 solutions for safe and secure automotive electronics running on Arm platforms from leading automotive-grade SoC manufacturers NXP, Renesas and Qualcomm while supported by a comprehensive ecosystem of AI, graphics, simulation and networking partners.

The all-electric Mahindra Racing Formula E race car demands utmost efficiency, instant performance and guaranteed safety with security, as delivered by the ASIL-D INTEGRITY RTOS and MULTI® development tools on Renesas SoCs.

An AI-controlled simulated car calculates tens of thousands of paths per second on production-ready ASIL-certified Platform for Automated Driving. Its critical decision-making and drive-by-wire actuation are protected by INTEGRITY® on the NXP BlueBox Autonomous Driving Development Platform.

Camera-based Driver Monitoring detects drowsy drivers while the Secure Vehicle Network shows a cost-saving design for intrusion detection in automotive networks.

Scalable and high-performance Consolidated E-Cockpits and Domain Controllers safely and securely mix ASIL-critical functions with untrusted Linux and Android environments on the same Arm-based SoC while efficiently sharing resources such as Ethernet controllers or GPU. End-to-End Digital Security generates, distributes, authenticates and tracks secure digital assets for automotive and IoT applications such as secure OTA updates, secure boot, V2X communication, from the INTEGRITY Security Service experts.

Booth Location: LVCC, North Hall, Booths 9000 & 9300
GuardKnox

From Defense Aviation to Automotive

GuardKnox provides optimized & cybersecure high-performance computing platforms to not only ensure security and safety, but serve as the foundational layer for added services, personalization and revenue generating opportunities across the automotive ecosystem. GuardKnox’s solutions provide security in-depth with a Central Gateway, secured Domain Controllers and a local solution for externally connected ECUs. GuardKnox’s patented Lockdown™ Core & Service-Oriented Architecture (SOA) create the cybersecure environment to enable real-time vehicle customization for current and next generation of vehicles while defending against both known or unknown attacks.

GuardKnox Domain Controller and Reference Design

All GuardKnox products feature Arm technology, high-performance computing capabilities, security in depth design and a service-oriented architecture. Features of the demo at CES include:

- Real-time personalization.
- Mixed criticality on a single chip using Arm lockstep processing cores.
- Security by design with a SOA based off of the capabilities of the Armv8-A architecture.
- Arm TrustZone and an integrated MMU - certifiable up to ASIL D.
- Secure OTA updates (hardware & software).
- Multiple operating systems and applications with domain isolation and access control.
- Scalability and interoperability with flexible architecture based on Armv8-A and Armv7-R processing cores and FPGA logic.

Contact: events@guardknox.com
Get More Out of Getting There

HARMAN designs and engineers connected products and solutions for vehicle manufacturers, consumers, and enterprises worldwide.

At CES 2020, HARMAN invites you to see innovative solutions developed to meet the needs of consumers in this new era of mobility. Experiences Per Mile (EPM) are hyper-individualized experiences that solve for real consumer needs to help people and make time in the car, time well spent.

HARMAN will showcase several EPM demonstrations which blend multiple technologies and solutions together to further improve mobility safety, enable premium audio, allow for seamless transition of connected experiences and more. In the context of Experiences Per Mile (EPM), Device Virtualization is a critical building block as it enables the consolidation of multiple ECUs into a single hardware platform – reducing software complexities and integration costs, while improving the overall in-car experience.

The HARMAN Device Virtualization solution and its highly-portable Hypervisor is one of the only production-grade Type-1 and bare-metal real-time hypervisors for automotive platforms; optimized for Arm-based chipsets. It is ISO 26262-compliant and ASIL B-certified.

The Hypervisor features small footprint and highly efficient code designed for minimum overhead which makes it suitable to a broad range of use cases and applications in the automotive space, including Digital Cluster, Telematics, Communication gateway, ADAS, and Autonomous Driving.

Contact: Yohan.Albo@harman.com
Location: Hard Rock Hotel, 4455 Paradise Road, Las Vegas.
Please note: the HARMAN Automotive Showcase is solely intended for industry executives and media, by invitation only.
Lynx Software Technologies is Dedicated to Crafting Software Platforms Founded on Simple, Elegant Architectures

An innovator in modern platform software technologies, Lynx provides the richest set of options for efficiently realizing robust, comprehensible software systems on platforms based on the Cortex-A portfolio of Arm processors.

The Lynx MOSA.ic™ framework extends our continuing safety-certified RTOS history with a high performance, strictly-isolated and immutable platform abstraction model, offering a new simplified and comprehensible approach to the development, deployment and certification of software within safety-critical systems.

Our demonstration with our partner Real-Time Innovations, showcases an automotive platform built using Lynx MOSA.ic™ and hosting three guests:

- Open-source In-Vehicle Infotainment (IVI) running on Linux
- ETAS RTA-OS controlling a remote-control car via serial port
- Embedded Linux running RTI Connext DDS middleware

A separate laptop, running the CARLA driving simulator, acts as a 'stimulus' for the system, publishing virtual-world driving information as DDS topics. The RTI Connext DDS middleware subscribes to vehicle speed and steering angle topics and sends this information via internal 'passageways' in RAM to ETAS RTA-OS, which controls the RC car in response to the virtual world. A 'Big Red Button' can be pressed to trigger a kernel panic and software crash in the IVI guest, illustrating that key system functionality runs unimpeded even when the lower criticality subsystem fails.

Contact: inside@lynx.com
Mentor

We Enable Companies to Develop Better Electronic Products Faster and More Cost-Effectively

Mentor, A Siemens Business, presents their innovative Arm powered solutions addressing the needs of Digital Cockpit, Autonomous Driving and Automotive Audio.

The Mentor engineering experts are looking forward to demonstrating and discussing solutions with you, focusing on these areas:

Cockpit Domain Consolidation
- Embedded solutions for multi-domain consolidation, including Infotainment (IVI), Digital Cluster and AUTOSAR on high compute Arm based ECU systems
- Introducing CDCBase, a platform available for customization to meet the project requirements, as an intermediate step to the Central Compute Platform

Autonomous Driving
- Solutions for Low Latency Middleware, Sensor Fusion and Perception Algorithms
- Hardware and Software systems engineering for ADAS and Autonomous Driving

Autonomous Audio
- Active Noise Cancellation: Improved in-cabin experience with mitigation of noise from the engine and the road
- Solutions for Development, Test and Analysis with the Automotive Audio Bus (A2B®) technology
- Sound Classification & Localization: Offering early alerts to the driver of oncoming emergency vehicles

Booth Location: Westgate Hotel Suite 2903
See Siemens page for PAVE360
Introducing a New Type of Automotive Processor: The S32G Vehicle Network Processor

A Vehicle Network Processor is a combination of safe and secure, real-time and application processing, with embedded hardware security, network acceleration and heterogeneous vehicle network interfaces. NXP’s new S32G Vehicle Network Processor based on Arm processor cores enables modern service-oriented gateways for rapid deployment of new vehicle capabilities and advanced edge-to-cloud analytics to unlock the value of vehicle data. They also enable the automotive industry shift to domain-based vehicle architectures and are being well-accepted as ADAS/Autonomous Drive domain controllers with support for enhanced security and functional safety.

The S32G offers full ASIL D capabilities including lock-step Cortex-M7 microcontroller cores, and an industry-first ability to lock-step Arm’s classic Cortex-A53 applications cores, allowing automotive safety to support new levels of performance with high-level operating systems and larger memory support.

Find out more about the S32G and the service-oriented gateway featured in the Automotive Concept Car, as well as use case demos for real-time edge-to-cloud vehicle data analytics, AI-based anomaly detection for vehicle health services, and Over-the-Air (OTA) updates to support upgradeable vehicles at the NXP booth.

Booth Location: Central Plaza, CP 18
Contact: pr@nxp.com
OpenSynergy Provides Embedded Software Products for the Next Generation of Vehicles

The virtualization platform COQOS Hypervisor SDK runs on System on Chips of different vendors based on the Armv8-A architecture. COQOS Hypervisor SDK supports the convergence of software-based vehicle functions with different requirements on safety and security. It is designed for multi-display cockpit controllers, smart antennae or powerful domain controllers using a mix of AUTOSAR technology and open solutions, such as Linux and Android. The hypervisor combined with a bundle of VIRTIO devices provides an automotive virtual platform creating a maximum of flexibility for OEMs and suppliers: Guest operating systems can be used and re-used on different SoCs, even SoCs produced by different vendors. Also, software systems can be moved among different hypervisors without further modification.

At CES 2020 OpenSynergy shows a hypervisor-based cockpit controller on the latest version of COQOS Hypervisor SDK. The hypervisor creates five virtual machines that provide separations between a virtualized Adaptive AUTOSAR, a Linux-based instrument cluster, a guard system verifying the safety-critical graphics on the instrument cluster, and two Android OSes for Infotainment, each in a separated virtual machine.

OpenSynergy’s communication stacks allow the wireless connection between the car and the cloud or between the car and mobile devices. OpenSynergy’s Blue SDK is the reference Bluetooth® implementation for many OEMs around the world.

Contact: josephin.Stadtkewitz@opensynergy.com
Or book a meeting via www.opensynergy.com/booking-ces/
Qualcomm® Snapdragon™ Automotive Cockpit Platforms

At CES, Qualcomm will be showcasing the latest technologies from their automotive portfolio throughout the week, including their 3rd generation Qualcomm® Snapdragon™ Automotive Cockpit Platforms. The Snapdragon Automotive Cockpit Platforms are the automotive industry’s first-announced scalable artificial intelligence (AI)-based platforms designed to transform in-vehicle experiences, supporting higher levels of computing and intelligence needed for advanced capabilities featured in next generation vehicles, including highly intuitive AI experiences for in-car virtual assistance, natural interactions between the vehicle and driver, and contextual safety use cases. Utilizing precise positioning for enhanced navigation solutions, and cutting-edge technologies for immersive audio and rich visual experiences, the 3rd Generation Snapdragon Automotive Cockpit Platform is designed to unleash transformative experiences for the driver and passengers with high-resolution digital instrument clusters, industry-leading infotainment technologies supported through artificial intelligence capabilities, cutting-edge graphics for high-resolution multiple display configurations, vision-enhanced precise positioning for supporting safer and smarter navigation, and much more. The 3rd Generation Snapdragon Automotive Platforms are engineered with integrated heterogenous computing capabilities, leveraging the multi-core Qualcomm® AI Engine, Qualcomm® Spectra™ Image Signal Processor (ISP), fourth-generation Qualcomm® Kryo™ Central Processing Unit (CPU) based on Arm Cortex Technology, Qualcomm® Hexagon™ Processor and sixth-generation Qualcomm® Adreno™ Visual Subsystem.

Booth Location: LVCC, North Hall, Booth 5616
Please note these demos at CES are invite only
PAVE360

From Siemens & Arm

Siemens’ PAVE360 digital twin environment, featuring Arm IP, applies high-fidelity modeling techniques from sensors and ICs to vehicle dynamics and the environment within which a vehicle operates. Using Arm IP, including Arm Automotive Enhanced (AE) products with functional safety support, digital twin models run entire software stacks providing early metrics of power and performance while operating in the context of a high-fidelity model of the vehicle and its environment, helping deliver a new future of mobility.

Using PAVE360 with Arm automotive IP, automakers and suppliers can simulate sub-systems (SoCs) and better understand how they perform within a vehicle design from the silicon level up, long before the vehicle is built. Arm’s automotive IP is helping to democratize the ability to create safety-enabled silicon, bringing it within reach of the entire automotive supply chain. By rethinking IC design for the automotive industry, manufacturers can consolidate electronic control units (ECUs), leading to thousands of dollars in savings per vehicle by reducing the number of circuit boards and meters of wire within the vehicle design. This in turn reduces vehicle weight which can promote longer range electric vehicles.

The combination of Siemens’ and Arm’s innovative technologies can help automakers and suppliers deliver tomorrow’s electronic design and automotive solutions, today.
Swift Navigation

Nationwide Cloud-Based Corrections Brings Lane-Level Positioning for Autonomous Vehicles

Swift Navigation and Arm are working together to provide developers of autonomous and connected vehicles a cost-effective, scalable and high-integrity positioning solution. Starling® is designed to be compatible with industry leading silicon makers who build their solutions on Arm processors. Starling works with a variety of GNSS measurement engines and is a hardware proven, end-to-end solution, tunable for the specific requirements of a customer’s platform.

Starling pulls corrections from Swift’s Skylark™ Cloud Corrections service to deliver absolute positioning for safety-critical autonomous vehicle applications. A receiver-agnostic platform, Starling offers automotive companies a choice in selecting the best components for their autonomous sensor suite, Vehicle to Vehicle (V2V) applications and Automated Driving Systems. Leveraging STMicroelectronics’ TeseoAPP and TeseoV Automotive-Grade GNSS Chips, Starling is engineered from the ground up to comply with ISO 26262 for Automotive Safety Integrity Level (ASIL)-B Safety Standards. Available for purchase today for Arm-based processors, the Starling positioning engine provides a rapid deployment, low total cost of ownership solution to enable widespread adoption of ADAS, connected car, C-V2X and autonomous solutions.

Contact: sales@swiftnav.com
Teraki

Accurate and Efficient Edge Processing

Teraki based in Berlin, is a team of experienced Data scientists, Physics PhDs and Software developers working to deliver embedded software for sensor data pre-processing. The AI powered solution enables low-powered hardware to significantly reduce data in real-time of Telematic, Camera and LiDAR sensors while enabling their customers to detect events and objects with high accuracy. The efficient and accurate edge processing is deterministic and certifiable to conform to automotive safety standards.

At the Teraki booth they will demonstrate their sensor fusion software. Teraki demonstrate real-time fusion of point cloud data coming from a LiDAR with video data from camera, done by low powered processor.

The booth will feature an Arm-based processor NXP Bluebox (A72, 2.0 Ghz) for processing, set up with a LiDAR and a Camera. Teraki’s library is installed on the Bluebox to process and reduce the size of 3D information from the point cloud, while also detecting objects from it to set the Region of Interest (RoI) for Camera processing. The library also efficiently compresses the 2D information based on RoI obtained from recognizing objects from point cloud.

Teraki delivers a very high accuracy between the original and reconstructed data for real-time operation, while the algorithms compress the data up to 10x for point cloud and 4x for video with minimal processing power required at the device. All of this is done within 25ms.

Booth Location: **LVCC, North Hall, Booth 9520**
Contact: info@teraki.com
Tuxera

Quality-Assured Software for World-Leading Companies to Help You Store and Do More With Your Data

IVI/Cluster Storage Health Widget: A widget that Tier-1s, OEMs, or even end users can use to check the “health” of the flash memory storage. The demo is running on an AGL infotainment system, built on top of an Arm-based Renesas R-Car H3, where the widget is displayed. The storage health widget is a community contribution, which shows fragmentation of the IVI/cluster storage device and latency on reading files. Fragmentation impacts performance and lifetime of the storage device, and is one of several diagnostics Tuxera uses in our flash memory testing service. This analyzes performance, level of fail-safety, durability, risk analysis, and lifetime cost of the entire automotive storage stack.

Booth Location: Smart Cities Exhibit Hall, Booth 1815, Stand B3
Contact: press@tuxera.com
Wind River Systems

The Software Foundation for Your Innovation

Wind River is a global leader in delivering software for the intelligent edge. The company's technology has been powering the safest, most secure devices in the world since 1981, and is found in more than 2 billion products.

Demonstrations at CES 2020 will include the following:

- Services Oriented Architecture (SoA) for Connected, Autonomous, Electrified Vehicles: Demonstration showcases virtualization with hypervisor enabling multiple HMI displays, each with their own OS instance, demonstrate GPU sharing. VxWorks real-time OS (RTOS) and Automotive Grade Linux will run on Renesas R-Car H3 hardware with Arm Cortex-A57 & Cortex-A53.

- Connectivity Control Unit with Hyundai Autron: Demonstration highlights a connectivity solution framework for integrating advanced compute features found in autonomous driving running on NXP iMX.6 hardware with Arm Cortex-A9. The platform runs Wind River Linux with an AUTOSAR Adaptive software platform that was jointly developed by Wind River and Hyundai Autron.

- Safety Certifiable Advanced Driver-Assistance Systems (ADAS) with Intron Technology: Demonstration highlights an ADAS Domain Controller developed jointly by Wind River and Intron featuring VxWorks, Wind River Helix Virtualization Platform, and SOME/IP based interoperability between AUTOSAR Classic Platform and the Performance Computation Unit, all running on Xilinx UltraScale MPSoC hardware with Arm Cortex-A53.

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Xilinx

Xilinx Automotive Zynq UltraScale+ MPSoC Product Line for ADAS/AD

Xilinx Automotive Zynq UltraScale+ MPSoC devices are well-suited for various functional aspects of ADAS/AD systems. Specifically, data aggregation, pre-processing, and distribution (DAPD) and compute acceleration. The Zynq UltraScale+ MPSoC devices are comprised of Xilinx industry-leading programmable logic as well as scalar processing system with quad-core Arm-A53 and dual-core Arm Cortex-R5 processors. Together, these elements enable implementation of various aspects of automated driving features, including perception, environmental characterization, decision, and control.

The Arm Cortex-A53 cores serve as primary application processors and orchestrate the programmable logic acceleration pipelines for sensor processing algorithms (which includes neural network and deep learning processing), overall characterization of the environment, and the path planning computational workloads. The Arm Cortex-R5 processors, which can be run in lockstep, handle safety-critical functions like issuing vehicle control commands over the vehicle bus.

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