CoherenSE

Complexity managed

A SOFTWARE PLATFORM FOR NEXT GENERATION INTELLIGENT VEHICLES AND MACHINES

A Solution for:

· *A vehicle architecture ready to cope with the demands of next generation vehicles*
· *Implementing new functions quickly and robustly*
· *Full command and control of your vehicle information and functionality*
· *The capability to update your system over-the-air*
· *Hardware cost of each individual vehicle model in your range to be optimized*

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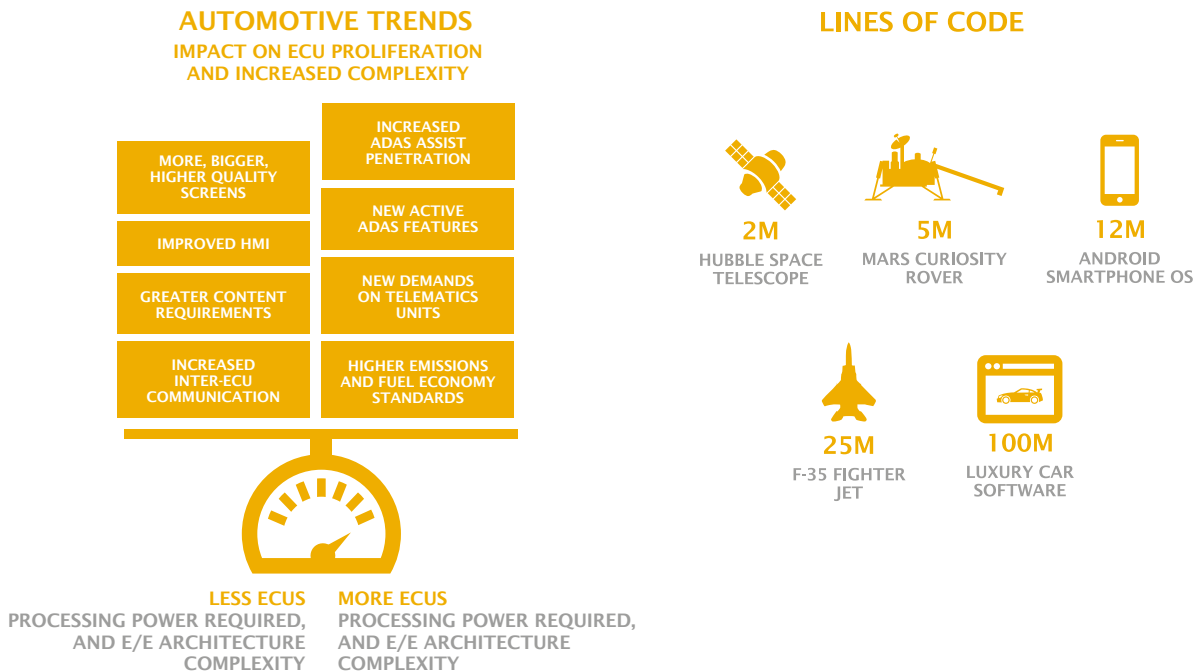
ALTRAN

ADDRESSING YOUR CHALLENGES

A major shift in vehicle Software and Electronics, with increased technological complexity

The automotive world is facing a **major shift** in **market, technology and consumer expectations**. Disruptive technologies have brought many exciting opportunities to the automotive industry.

The complexity of engineering automotive systems is skyrocketing.

This is driven by the proliferation of new electronic controls and sensors, as well as the sharp increase in software content to introduce more intelligence on-board.

However **this trend is challenging existing vehicle software and electronics architectures** and creating **more and more complex architectures**, increasing integration costs, weight and emissions.

AUTOMOTIVE TRENDS
IMPACT ON ECU PROLIFERATION AND INCREASED COMPLEXITY

MORE, BIGGER, HIGHER QUALITY SCREENS	INCREASED ADAS ASSIST PENETRATION
IMPROVED HMI	NEW ACTIVE ADAS FEATURES
GREATER CONTENT REQUIREMENTS	NEW DEMANDS ON TELEMATICS UNITS
INCREASED INTER-ECU COMMUNICATION	HIGHER EMISSIONS AND FUEL ECONOMY STANDARDS

LESS ECUS
PROCESSING POWER REQUIRED, AND E/E ARCHITECTURE COMPLEXITY

MORE ECUS
PROCESSING POWER REQUIRED, AND E/E ARCHITECTURE COMPLEXITY

Source : Roland Berger

LINES OF CODE

2M
HUBBLE SPACE TELESCOPE

5M
MARS CURIOSITY ROVER

12M
ANDROID SMARTPHONE OS

25M
F-35 FIGHTER JET

100M
LUXURY CAR SOFTWARE

This is only the beginning.

The industry is facing a tsunami of software and electronics content that will enable highly-integrated features such as **Advanced Driving Assistance Systems (ADAS), Autonomous Driving**.

The vehicle of the future will be required to offer the following:

- High level intelligence for ADAS, providing increasing support for all aspects of driving and vehicle behaviour, eventually moving into full autonomous driving
- High level of security against intrusion from connectivity or physical operations
- Increased levels of active and passive safety
- Ability to accept updates for both functional and safety related features
- Keep time to market and costs as low as possible
- Optimisation of emissions
- Platform for connected services and an ecosystem of content
- Personalisation options

Due to functional limitations, increasing integrations costs and associated complexity, **the current patchwork approach of adding ECUs for new features is no longer a sustainable option**.

A new solution has to be found.

LEADING EDGE SOLUTION

Complexity managed
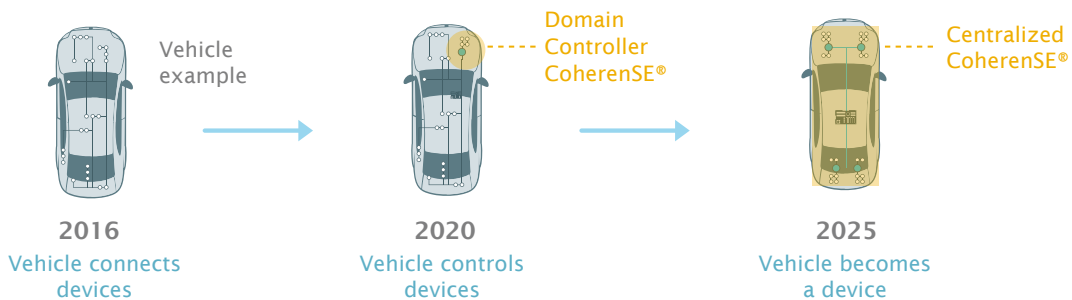
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CoherenSE®, A REVOLUTIONARY SOLUTION

CoherenSE® has been developed to provide coherence to the engineering of increasingly complex intelligent systems and empowers traditional Electrical and Electronic (E/E) automotive architectures.

Based on ideas and principles that have proven effective in industries such as aerospace or consumer electronics, CoherenSE® will enable automotive players to meet the challenges of major shifts in their markets, such as technology complexity and new usage expectations.
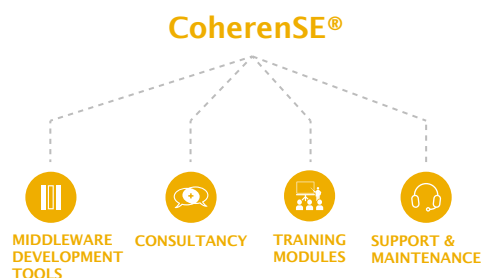
CoherenSE® is the solution that eliminates the need to constantly re-invent the electronic wheel by re-thinking the vehicle... as a network programmed as a vehicle.

Though ground-breaking, CoherenSE® can be deployed gradually on existing architectures.

Vehicle example

Domain Controller CoherenSE®

Centralized CoherenSE®

2016
Vehicle connects devices

2020
Vehicle controls devices

2025
Vehicle becomes a device

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WHAT IS CoherenSE®?

An enabler for Advanced ADAS, Autonomous Driving, V2X, Over the Air Updates, Remote Diagnostic... and an end-to-end solution comprising of:

CoherenSE®

MIDDLEWARE DEVELOPMENT TOOLS

CONSULTANCY

TRAINING MODULES

SUPPORT & MAINTENANCE

- A middleware with a run-time library available on a choice of Operating Systems and Hypervisors, providing the platform for compatible services to run and interact.
- A development kit to provide the complete package for testing and developing with CoherenSE®
- A set of tools for System design and integration (topology management, proxy/stub generators, R-XML AUTOSAR generator...) and development of CoherenSE® compatible services
- Training on methods and tools
- Consultancy and technical engineering services
- Maintenance and Support throughout

CoherenSE® VALUE PROPOSITION

CoherenSE® is a software solution developed by Altran that accelerates and makes possible advanced automotive features such as **autonomous driving.**

Through a modular approach, it gives a **full command and control of the vehicle** to manage the growing complexity of systems throughout the product lifetime.

It also contributes to **cost and weight reduction** by streamlining hardware content.

CoherenSE® **enables future vehicles to be updated and customized like smartphones** today, but with automotive grade **quality, safety and cyber security built in.**

CoherenSE

WHY CoherenSE®?

- ◉ Modular architecture, scalable
- ◉ Fewer computers, reduced wiring, weight, bill of materials, emissions...
- ◉ Reduced costs of system integration and variants
- ◉ Improved time-to-market
- ◉ Built-in safety and security
- ◉ Progressive deployment on existing architectures by dealing with legacy sub-systems
- ◉ Full compliance with automotive industry standards including **AUTOSAR, ISO26262**
- ◉ Open to enable an eco-system of content providers

MODULARITY

CLARITY

SCALABILITY

BENEFITS FROM CoherenSE® A ¨CENTRALIZED PER-DOMAIN¨ APPROACH

By 2025, according to industry benchmarking, the centralisation of ECUs, driven by a "centralized per-domain" approach, will provide:

- · Integration savings: from 15 % to 25 %
- · Cabling weight/length reduction up-to 35 %

- · Product derivatives: savings on reuse
- · Creation of new complex features

CoherenSE® is the solution to break free from the limitations of the traditional system architectures, providing a **future-proof platform** so automotive players can create better services for their customers for the years to come.

Altran's leading expertise across industry sectors in advanced software architectures will enable the introduction of this new technology to a host of different vehicles and machines.
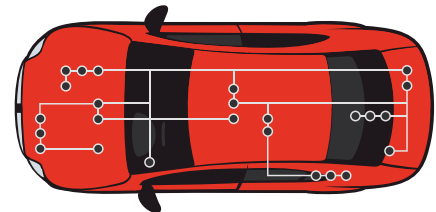
ABOUT ALTRAN

As a global leader in innovation and high-tech engineering consulting, Altran offers its clients a new way to innovate by developing the products and services of tomorrow. Altran works alongside its clients on every link in the value chain of their project, from conception to industrialization. For over thirty years, the Group has provided its expertise to key players in the Aerospace, Automotive, Defense, Energy, Finance, Life Sciences, Railway, and Telecoms sectors, among others. In 2015, the Altran group generated revenues of €1.945bn. With a headcount of nearly 26,000 employees, Altran has a presence in more than 20 countries.

CONTACT US

For further details you can find us at: coherense@altran.com

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