Press Release
Dec 12, 2013 | ID: 136653

New Scalable Product Architecture Enables Volvo Car Group To Move Faster Towards A Crash-Free Future

The elegant design possibilities are the most visually evident – but far from the only – advantages of Volvo Car Group’s (Volvo Cars) new Scalable Product Architecture (SPA). The ingenious new architecture also enables the company to reinforce its safety leadership and increase its momentum towards the aim that by 2020, no one should be killed or seriously injured in a new Volvo.

Recent independent data from the Swedish insurance company Folksam shows that modern Volvos have close to 60 per cent lower injury rates compared to the average modern vehicle in Sweden, which in turn has one of the lowest injury rates in the world.

Holistic focus
The new SPA architecture enables significant improvements both when it comes to offering protection in worst-case scenarios and when creating innovative features that support the driver in avoiding accidents.

“We retain our uncompromising attitude to offering superior crash protection,” says Jan Ivarsson, Senior Manager, Safety Strategy and Requirements at Volvo Cars. He adds: “The new architecture opens up for further improvements. Seven per cent of the safety cage in the original XC90 was made of hot-formed boron steel. The structure in the upcoming all-new XC90 features over 40 per
Unique electrical architecture
The new architecture includes a ground-breaking new electrical architecture that elevates the car’s intelligence level significantly. The architecture is designed to make it easy to add sophisticated functions and rapidly implement new technology in fast-moving areas such as microprocessor, sensor and camera technology.

In principle, the electrical architecture consists of a network with four domain masters – vehicle dynamics, safety, car body and infotainment.

“Each master can be connected to every single unit in the whole architecture. This means that we have one single nerve system with full control over all the connections in the vehicle. This is unique in the industry,” says Peter Mertens.

A holistic system built around people
The driver is literally the core of Volvo Cars’ holistic approach, which is based on real traffic situations. He or she is surrounded by 360° zones extending from technology cushioning the driver to putting him or her in contact with the world:

Embracing the driver
The driver and passengers are embraced by solutions that are designed for intelligent absorption of energy in various types of collisions. The safety technologies – such as safety belts, pre-tensioners, whiplash protection system, airbags and inflatable curtains – are continuously being enhanced.

In cars built on the new SPA architecture, the smart belt pre-tension systems increase the retention of the occupants before and during the event of a collision. For example, the rearward-facing radar is used to detect a rear impact. This allows the safety belts to be tightened in advance in order to keep the occupants in place.

Sophisticated strength
The new, patented SPA safety cage, with its mix of different steel grades, has been made stronger and smarter. The superior strength is achieved by more extensive use of boron steel.

Crash avoidance
Camera, radar and sensor technologies are extended to detect more objects around the car and to offer support at higher speeds and in more situations, such as at crossings.
“One of the most important focus areas within collision-avoidance is to help prevent unintentional road departures by autonomous steering intervention in critical situations. Unintentional road departure is the collision type that results in most deaths and serious injuries in modern traffic,” says Jan Ivarsson.

The new features also include detection and auto brake for large animals and pedestrians also when driving in the dark.

Enhancing the driving experience
The sensors used by the collision-avoiding solutions are also part of the extended range of features that makes the drive more enjoyable by simplifying complex traffic situations. This includes Adaptive Cruise Control with steer assist, introduced in the upcoming all-new XC90. The car automatically follows the vehicle ahead in queues. The Scalable Product Architecture is also designed to accommodate the implementation of autonomous technologies all the way to self-driving cars.

Seeing around the corner
To exchange communication with other vehicles, the infrastructure extends the driver’s theoretical field of vision beyond the capacity of the camera, radar and sensors. With this Car2Car and Car2Infrastructure technology in place, vital information can be shared and exchanged – creating a more comfortable and safer drive.

The technology opens up a multitude of safety and support possibilities, such as obtaining road friction information, advance warnings and detour options to avoid queues, creating a green light wave and finding free parking spots.

Always in touch with the world
The modern desire to be constantly connected is moving into the car. This connectivity can be used to make driving safer and more comfortable – but bringing it into the driver’s seat is also a challenge from a safety perspective.

The desire to stay online may divert the driver’s focus from the road. This is a field where Volvo Cars believes that autonomous drive will play an important role. Not having to supervise the drive continuously in certain situations allows the driver to focus safely on something else.

“Allowing the car to act automatically is crucial when moving towards the vision that future cars will not crash at all. The technologies enabled by our new Scalable Product Architecture will bring us significantly closer to this ultimate goal,” concludes Jan Ivarsson.

Keywords:
Safety, Technology, Press Releases

Descriptions and facts in this press material relate to Volvo Cars’ international car range. Described features might be optional. Vehicle specifications may vary from one country to another and may be altered without prior notification.

---

Media Contacts

Volvo Cars Media Relations
Phone: +46 31-596525
media@volvocars.com
The new Scalable Product Architecture (SPA) is essentially a blank sheet ready to accommodate a wide range of car models. The SPA is designed to enable faster development and exchange of information between vehicles, the infrastructure and the cloud. In principle, the electrical architecture consists of a network with four domain masters — vehicle, body, safety and infotainment — that can each be connected to a single module, enabling new functions that can be rapidly and incrementally introduced.

With four domain masters, the network can easily be divided into smaller and simpler sub-networks when needed. Each module's microprocessor, sensor and camera technology can be changed independently, which is particularly useful in the rapid development of the car, infotainment and safety systems.

Sophisticated strength

The new, patented SPA safety cage, with its mix of different steel grades, has been made stronger all around. Over 7% of the safety cage in the upcoming all-new XC90 features over 40% boron steel, which improves safety and reduces weight.

Seeing around the corner

One of the most important aspects of the new SPA architecture is a new radar-based system for obstacle detection. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

To exchange communication with other vehicles, the infrastructure extends the driver's theoretical field of vision beyond the capacity of the camera, radar and sensors. With this Car2Car and Car2Infrastructure technology in place, vital information can be shared and exchanged — creating a green light for driving.

Create a real-time traffic light

The technology opens up a multitude of safety and support possibilities, such as obtaining road friction information, advance warnings and detour options to avoid queues, creating a green light for driving. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

Future wants to avoid accidents

The desire to stay online may divert the driver’s focus from the road. This is a field where Volvo Cars believes that autonomous drive will play an important role. Not having to supervise the drive while navigating online is crucial.

The new features also include detection and auto-brake for large animals and pedestrians, as well as an early warning system for road departures by autonomous steering intervention in critical situations. Unintentional road departures are one of the most common reasons for road accidents, and represent the collision type that results in most deaths and serious injuries in modern traffic.

When autonomous technologies are fully implemented, the car automatically follows the vehicle ahead in queues. The Scalable Product Architecture is also designed to accommodate the implementation of autonomous technologies all the way to self-driving cars. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

To exchange communication with other vehicles, the infrastructure extends the driver’s theoretical field of vision beyond the capacity of the camera, radar and sensors. With this Car2Car and Car2Infrastructure technology in place, vital information can be shared and exchanged — creating a green light for driving.

When autonomous technologies are fully implemented, the car automatically follows the vehicle ahead in queues. The Scalable Product Architecture is also designed to accommodate the implementation of autonomous technologies all the way to self-driving cars. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

Future wants to avoid accidents

The desire to stay online may divert the driver’s focus from the road. This is a field where Volvo Cars believes that autonomous drive will play an important role. Not having to supervise the drive while navigating online is crucial.

The new features also include detection and auto-brake for large animals and pedestrians, as well as an early warning system for road departures by autonomous steering intervention in critical situations. Unintentional road departures are one of the most common reasons for road accidents, and represent the collision type that results in most deaths and serious injuries in modern traffic.

When autonomous technologies are fully implemented, the car automatically follows the vehicle ahead in queues. The Scalable Product Architecture is also designed to accommodate the implementation of autonomous technologies all the way to self-driving cars. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

To exchange communication with other vehicles, the infrastructure extends the driver’s theoretical field of vision beyond the capacity of the camera, radar and sensors. With this Car2Car and Car2Infrastructure technology in place, vital information can be shared and exchanged — creating a green light for driving.

When autonomous technologies are fully implemented, the car automatically follows the vehicle ahead in queues. The Scalable Product Architecture is also designed to accommodate the implementation of autonomous technologies all the way to self-driving cars. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

To exchange communication with other vehicles, the infrastructure extends the driver’s theoretical field of vision beyond the capacity of the camera, radar and sensors. With this Car2Car and Car2Infrastructure technology in place, vital information can be shared and exchanged — creating a green light for driving.

When autonomous technologies are fully implemented, the car automatically follows the vehicle ahead in queues. The Scalable Product Architecture is also designed to accommodate the implementation of autonomous technologies all the way to self-driving cars. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

To exchange communication with other vehicles, the infrastructure extends the driver’s theoretical field of vision beyond the capacity of the camera, radar and sensors. With this Car2Car and Car2Infrastructure technology in place, vital information can be shared and exchanged — creating a green light for driving.

When autonomous technologies are fully implemented, the car automatically follows the vehicle ahead in queues. The Scalable Product Architecture is also designed to accommodate the implementation of autonomous technologies all the way to self-driving cars. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

To exchange communication with other vehicles, the infrastructure extends the driver’s theoretical field of vision beyond the capacity of the camera, radar and sensors. With this Car2Car and Car2Infrastructure technology in place, vital information can be shared and exchanged — creating a green light for driving.

When autonomous technologies are fully implemented, the car automatically follows the vehicle ahead in queues. The Scalable Product Architecture is also designed to accommodate the implementation of autonomous technologies all the way to self-driving cars. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

To exchange communication with other vehicles, the infrastructure extends the driver’s theoretical field of vision beyond the capacity of the camera, radar and sensors. With this Car2Car and Car2Infrastructure technology in place, vital information can be shared and exchanged — creating a green light for driving.

When autonomous technologies are fully implemented, the car automatically follows the vehicle ahead in queues. The Scalable Product Architecture is also designed to accommodate the implementation of autonomous technologies all the way to self-driving cars. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

To exchange communication with other vehicles, the infrastructure extends the driver’s theoretical field of vision beyond the capacity of the camera, radar and sensors. With this Car2Car and Car2Infrastructure technology in place, vital information can be shared and exchanged — creating a green light for driving.

When autonomous technologies are fully implemented, the car automatically follows the vehicle ahead in queues. The Scalable Product Architecture is also designed to accommodate the implementation of autonomous technologies all the way to self-driving cars. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

To exchange communication with other vehicles, the infrastructure extends the driver’s theoretical field of vision beyond the capacity of the camera, radar and sensors. With this Car2Car and Car2Infrastructure technology in place, vital information can be shared and exchanged — creating a green light for driving.

When autonomous technologies are fully implemented, the car automatically follows the vehicle ahead in queues. The Scalable Product Architecture is also designed to accommodate the implementation of autonomous technologies all the way to self-driving cars. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

To exchange communication with other vehicles, the infrastructure extends the driver’s theoretical field of vision beyond the capacity of the camera, radar and sensors. With this Car2Car and Car2Infrastructure technology in place, vital information can be shared and exchanged — creating a green light for driving.

When autonomous technologies are fully implemented, the car automatically follows the vehicle ahead in queues. The Scalable Product Architecture is also designed to accommodate the implementation of autonomous technologies all the way to self-driving cars. The sensors used by the collision-avoiding solutions are also part of the extended range of sensor technologies.

To exchange communication with other vehicles, the infrastructure extends the driver’s theoretical field of vision beyond the capacity of the camera, radar and sensors. With this Car2Car and Car2Infrastructure technology in place, vital information can be shared and exchanged — creating a green light for driving.