

Simplifying in-vehicle networking designs

Build car networking systems that are flexible, reconfigurable, and reliable.

The electronic systems of automobiles are increasingly complex. Microcontrollers or microprocessors control everything from anti-lock braking systems (ABS) and fuel injection units to rear-seat entertainment systems that support advanced audio, video, and wireless gaming capabilities.

But to deliver cost-effective networking solutions that can scale from low- to high-end systems requires design flexibility that is well beyond the capabilities of ASSPs or ASICs. Our Cyclone® FPGA series and suite of complementary products provide you with a scalable platform to develop reconfigurable networking systems at prices that are competitive with ASICs.

Efficient device architecture

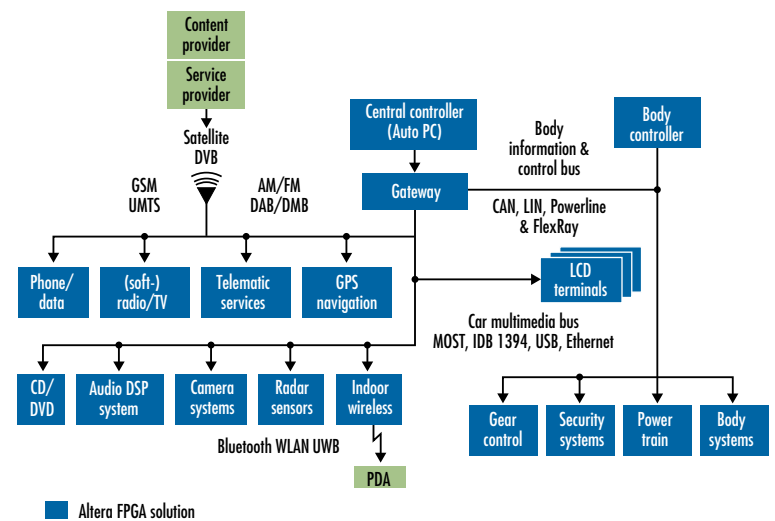
Car networks are typically divided into body- and power-train control networks, and telematics and multimedia sub-networks. A central controller, the core element of an automotive system, provides the processing hub that allows the driver to operate all these different electronic systems and control units.

To communicate with the electronic control units, the central controller must have access to all types of buses through a gateway controller, which acts as a router between the different electrical and optical buses in a car. Altera's FPGAs allow you to create programmable ways for components to talk to each other without having to build separate modules for each bus as required when using ASSP or ASICs.

Our programmable solutions:

- Meet performance and price-level requirements of the most cost-sensitive routing applications.
- Meet or exceed automotive quality standards TS16949 and AEC- Q100
- Provide automotive designers with unparalleled functionality at prices that are competitive with ASICs.
- Support our Nios® II embedded processor, which compliments Cyclone FPGAs by providing unmatched performance, utility, and cost-efficiency.
- Allow you to implement flexible and cost-effective networking systems across your entire manufacturing line.

Next-generation car network



Seamless integration

Increasingly, drivers demand up-to-date information such as current traffic conditions, driving maps and directions, and speed and fuel efficiency data. In addition, consumers today expect that during emergencies, vehicles can provide rescue services with their exact location.

On the entertainment side, basic audio and video capabilities are becoming standard on low-end cars, while consumers seeking fully loaded luxury vehicles expect advanced features such as dual-video output and digital video broadcasts. All of these features must be seamlessly integrated with the central gateway.

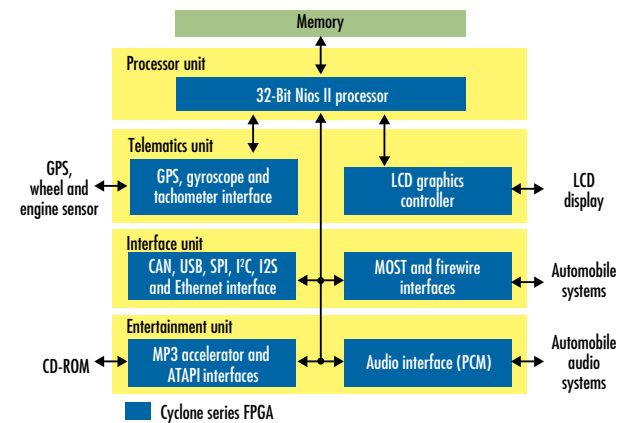
At the heart of this are telematics systems. Telematics systems are used to control automotive electronic components and to efficiently display information about them for drivers and passengers. These components can range from navigation and global positioning system (GPS) maps, to entertainment systems, mobile phones, and in some regions, road-tolling systems.

Altera's innovative FPGA solutions provide the capabilities you need to customize telematics interfaces to support these and other functions. Ultimately, we enable you to deliver flexible and cost-effective systems that work in conjunction with automotive-based ASSPs.

In addition to all this, Cyclone FPGAs:

- Allow you to easily implement telematics controller functionality.
- Significantly reduce your development costs and time-to-market by supporting ready-to-use Altera® intellectual property (IP) cores such as the 10/100 Ethernet media access controller (MAC) that can be used in combination with PCI and CAN controllers.
- Enable you to implement standard microcontroller functions in networking applications via Altera's 32-bit Nios II embedded processor.
- Provide you with an efficient device architecture that meets the performance and price-level requirements of your most cost-sensitive applications.

Telematics controller



Scalable and cost-effective

Whether designing low-end cars for cost-conscious consumers or luxury vehicles for individuals seeking the latest in driver's assistance, safety, and infotainment features, Altera delivers network solutions that meet your needs. Our Cyclone FPGAs and suite of complementary products allow you to easily design cost-effective and reconfigurable car networking systems that scale across your entire manufacturing line.

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