

Proven designs in hardware; a design services perspective

Steve Lane reflects on the use of proven designs in the product development process



The range of possible sources of re-usable designs is expanding. For example, they may already exist within the OEM organisation, having been developed for a previous product. Tools and techniques for compiling, storing and tracking such designs for later re-use are currently the subject of discussion and development throughout industry and academia.

These sources of existing designs can offer product developers a short cut, although reference designs and application notes are usually conceived to showcase some aspect of the vendor's service or special competency rather than to offer a fully developed solution. An important point to bear in mind, therefore, is that designs found in these various sources may be able to help short-cut a subset of the overall product design effort, but that they are not necessarily proven.

However, finding a suitable pre-existing design is not the only responsibility on the product designer's shoulders. It must still be integrated with the overall circuit design; for example, paying attention to voltage levels, input and output signal properties, antenna performance and EMC specifications, among other aspects. Although design reuse can eliminate duplication of engineering effort, modular design does not obviate the need for design skills to be brought to bear upon a design challenge.

It is also important to bear in mind that a reference design is usually not created with any real product specification in mind. An IC vendor, for example, may offer a reference design to demonstrate the core attractions of a chipset or integrated solution. While the core components are usually well developed and robust, the selection and layout of the surrounding components often do not bear closer scrutiny.

This is not to negate the value of a reference design. They can and do provide quick and easy answers to many challenges. However, a reference design should be viewed as a solution in principle. Product developers expecting to bypass the detailed challenges involved in developing a truly market ready product, without adding further engineering effort, will be disappointed.

More should be expected of reusable designs offered by a design services partner. Triteq's telematics platform provides an example (Figure 1). The platform enables a quick and highly optimised solution for developing location and tracking products. It comprises all the applicable communication, location, system control, management and power supply technologies, as well as core code modules for location-based capabilities such as real-time location tracking and geo-fencing. Where this differs from the majority of reference designs or design plat-

forms is that the product specification comes first. Triteq develops the overall product specification, working with the customer, and then configures the appropriate system modules from the telematics platform, to meet that specification. Aspects such as manufacturability, cost engineering, testability and reliability are addressed in the actual implementation.

Triteq takes the same approach when designing other functions such as power control and battery management into customers' projects. These functions can be taken directly from the company's libraries and applied using the most suitable components and layout to meet the overall specifications for the product. While the technology functions are important to the design, it is also essential that any product development is carried out within a framework of a design procedure to ensure compliance with the customer, product and end user requirements. To this end Triteq has established an electronic documentation system that allows the management of the design process to ISO approved standards, providing a source of common documentation and a cost effective design route for each project.

All of these sources of existing designs can unlock valuable reductions in development costs and time to market, and can free engineer-

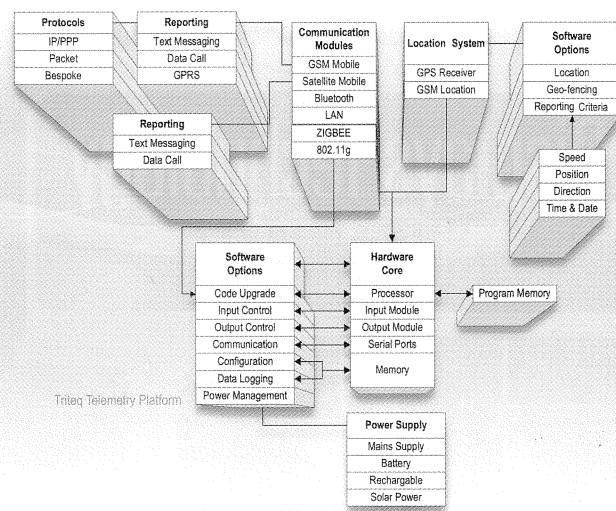


Figure 1: Triteq's telematics platform

ing resources to create the truly innovative features necessary for an ordinary gadget or accessory to become the latest 'must have' object of desire. Successful re-use of existing designs requires a considered approach. Designers need to be aware of the wider aspects of developing a production ready design, which are often not addressed. Another factor to bear in mind is that identifying suitable modules, from the many reference designs and IP offerings produced by third parties, is a skill in itself.

Choosing and using proven designs to gain competitive advantage is not a 'no brainer'. As design re-use permeates every aspect of product development, those that apply it in the most intelligent way will reap the greatest benefits.

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