

Design in a Connected World



We live in an information-based society, where app-driven cloud-based ubiquitous computing is in the palm of almost every hand and in many of the devices around us. The design engineering community needs to address that reality with products that serve the customer's expectations by not only delivering the desired functionality but also properly using the technologies and systems involved in the most cost-effective manner possible.

No EE today designs in a vacuum. Nearly every advanced electronic product today must not only provide its core functionality to a user, it must increasingly operate in a network (almost always wireless) and use its infrastructure to provide major portions of its functionality as well as deliver communications and networking capabilities to the user as well. That means that not only must the designer understand and accommodate the needs of the customer, but must factor in how to serve those needs using the available infrastructure and core technologies that best handle the task in the most cost-effective manner.

That means that hardware designers must understand and use software not only in the design and creation of the product, but in its operation as well. This means not only implementing software to set up and test the product but also to implement control and management of the product. Not only must the designer use software to simulate and test the hardware of the product in development, but the software functionality must also be set up and tested for both core functions as well as the user interface.

The issue gets more complex when one considers that advanced products often have more than one layer of network and communications: one for the user, and one for the device itself. Today many advanced consumer products must not only provide an interface for the user to operate them, but also for the manufacturer to go in and tweak things if needed after the product has shipped. In the "internet of things" paradigm, inter-device communications for housekeeping and other infrastructure tasks form another layer of networking that is invisible to the user, but a very real concern for the designer.

The bottom line is that when designing a product for the connected world of today

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one cannot forget not only the communications functionality for the user, but the ability of the device to operate on its own as an integrated member in the larger dataspace as well.

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