

Tricks of the Trade

Some sage once said it was impossible to stuff ten pounds of potatoes into a five-pound sack. Whoever that person was probably never knew Leonardo da Vinci, who, most folks don't realize, counted electronics among the areas of his seemingly endless discoveries and inventions.

If that sage had spoken to Lennie (yeah, we used to be on a first-name basis, but, puhlease, no cracks about my age), he would have told him that, thanks to the miracle of DSPs and accompanying software (yup, Lennie invented programming, too, another little known fact), you really can stuff it in.

Fast-forward a few centuries, read our cover story, and Tekgenix's Stan Hudson will show you how to pack more communications channels than are physically possible into your applications. Hudson may be no big L (as some of his pals used to call him), but then who is? Still, the inventiveness of his solution is impressive.

Hudson's trick: deploy virtual channels over a single physical channel. In effect, each application creates its own virtual communication channel (or channels), and the application becomes both the distributor and the handler of messages. As you add a new application to a processor, said application can add a channel through which it can communicate with other applications running on other processors. Thus this technique, known as multichannel communications, provides a scalable communications system among applications running on different processors.

It all boils down to a simple yet elegant concept, the Multi-Channel Host Port Interface model, the subject of our cover story. As Hudson explains, because with this model each application can create multiple channels at run time, you can provide for various types of data communications transfers. All HPI transmit and receive buffering is stored on the DSP, and each application owns its buffers.

Such an arrangement can be useful in systems that require one channel for streaming data and another for command and status information. You can get the details inside, and you don't have to be a Leonardo to get the concept.

Not to be outdone, Adaptive Digital's Scott Kurtz, the author of our second "tricks of the trade" article, tells

you how you can improve communications of a different kind—among us people. "Listen up," he says, portraying a sense of humor mostly unknown among the technical trade of Leonardo's age. You can achieve much better voice quality, he submits, by slashing unwanted echo and noise and adjusting the listening level of the signal so that the user is comfortable with it. Hear that, cell-phone shouters and cranky bosses? WE'RE TALKING ABOUT THE QUALITY OF LIFE HERE!

While I'm shouting, I might as well raise my voice in praise of some communications advances coming out of Lennie's old turf—the European technocommunity. Rutger van Dalen, of Windmill Innovations in the Netherlands, relates how Windmill designers succeeded in developing the first eXpressDSP-compliant TCP/IP stack. Not only is it compliant, but the stack includes in its repertory a number of plug-ins for the Code Composer Studio development environment, helping further in the integration of the algorithm.

The designers' achievement means that now you can integrate TCP/IP communications into your own TMS320 DSP-based application. But there's a lot more to this story. Reading about the Windmill engineers' experiences, details of the results, and how they let users modify and optimize the resulting product can shed light on your own efforts to develop compliant products.

As Lennie would have said, "*Orecchiare, cittadini extracomunitari!*"

—Stan Runyon
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