

Dynamic Testing and Analysis Products – A Commodity Market??

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As hardware and software products for dynamic testing and analysis become more mature every year, it is clear that the concept of product differential is the key to the future of the industry that has grown up around us over the last 40 to 50 years. Are there sufficient differences in the basic modules of hardware and software used for fundamental data acquisition, analysis and processing among the vendors to justify a cost/benefit position, or are these products to be treated more like commodities? I raise this question because users are concerned about price with respect to substantive product differentials, while vendors have to be concerned about profit positions with respect to development costs. If we reach the point where all competing products provide the same basic capabilities and the product differentials are not substantive, the products start to become more like commodities. Alternately, if there is little product differential that is important to the user, regardless of cost differential, will the hardware and software situation eventually become an environment where a limited number of vendors will dominate the marketplace. This has happened in the PC software environment where there are only a limited number of operating systems available. While our technology situation is clearly not now a commodity market, are we headed there?

To look at this a little further, let's consider the definition of a commodity. Poking around on the web yields a number of relevant definitions. For example: "The word commodity is a term with distinct meanings in business and in a Marxist political economy. For the former, it is primarily a homogenous product, while for the latter, it is an item produced for exchange." Another example: . . . "Any good exchange in trade. Usually refers to raw materials and agricultural products traded principally on the basis of price." Finally . . . "A product or resource that is traded primarily on the basis of price, and not on differences in quality or features. Examples include precious metals, many agricultural products, fuels, and minerals. Manufactured goods are said to be commodity goods if purchasing decisions are made almost solely on the price of the product." It is clear that once the user believes that all competitive hardware or software products include the required components and purchase decisions are made on the basis of price alone, we are on our way to a commodity situation.

This brings us to what the user is looking for. Forty years ago, users were very concerned with how measured data were being manipulated from the analog sensor to digital signal processing. The number of bits in the ADC (analog/digital converter) were critical and choices between multiplexed and simultaneously sampled data acquisition were distinctly different with respect to both function and cost. With respect to analysis of measured data, there was a similar fixation on understanding what numerical methods, from theory to implementation, were being used to process the data into physical parameters of interest. Users frequently generated theoretical, test data cases and required vendors to process these specific cases prior to considering purchase of the software. This user climate has changed significantly as dynamic testing and analysis products have matured.

Starting nearly 20 years ago, proprietary methods were introduced where the exact details of the methodology were not available to the user. Two early examples of this are the development of proprietary flat-top windows and order-tracking algorithms. About this time, data acquisition windows began to be selected on the basis of signal characteristics rather than specific window nomenclature. This trend has continued to where today many data acquisition or analysis processes are selected on the basis of a software wizard. The wizard, through a series of interactions with the user, converts the user's data acquisition and/or analysis situation into specific, detailed requirements that define the processing of the data.

These trends and their acceptance frame what the user wants. Users want products that will do the job quickly and efficiently but also cost effectively. As part of the cost-effective focus, this means that software and hardware technology will often be used by technicians, while engineers and scientists manage the process. Therefore, dynamic testing and analysis products are focussed on a different user group than 40 years ago. To a certain extent, the user group is less knowledgeable about the details and more trusting of the vendor to provide an appropriate solution.

Which brings us to what vendors are looking for. Naturally, vendors have to be concerned about their profit position, or they won't be in business the next quarter. The ability to forecast and implement (financially) a 5- or 10-year business plan in high-technology areas is very difficult.

We currently have the luxury that most vendors have been in this business sector for a significant time and feel a responsibility to the technology and to the users. The trust that users have currently placed in vendors is well justified. Over the last 20 years, great changes have taken place in the hardware side of the technology, as the impact of consumer electronics has made better data acquisition and sensors available at lower cost.

Technology products on the software side improve daily, with increased computing power, data memory and data storage capabilities available at lower costs. But there are dynamics at play that, if the move toward a commodity position continues, will be troublesome. To finance these newer products, vendors have had to find a way to generate a continuous revenue stream from users. The move to lower up-front costs with continuing maintenance costs has been the answer.

This financing approach works as long as new software and hardware products are developed with substantive product differentials. The user is constantly put in a position of deciding whether a product differential justifies the continuing maintenance costs. The vendor must continue to provide new revisions of software or hardware to justify these costs. At this point, there has not been a separation of the fundamental hardware and software technology tools from more advanced technologies. This makes financial decisions by both users and vendors very troublesome.

By now you may be wondering what is the point? In reviewing some vendor sales literature, I recently came across the following statement: "However, don't worry about the underlying technology – its use is automatic and transparent." While I understand the statement from both a user and vendor viewpoint, it still concerns me. I want to understand *the underlying technology*, and I hope that vendors want users to understand *the underlying technology*. Our community of dynamic testing and analysis users and vendors needs to find a way to make sure that this statement never becomes more than a concern.

I hope this gives you something to think about, and I am always interested to hear your thoughts on where our technology is going. If you have any comments along this line, please contact me when you have the opportunity. **SV**

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