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FROM: John Minck, Stanford Park Division DATE: January 7, 1974

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I wonder if any one person at HP is concerned with the overall potential threat we face from the Tektronix modular instrument program? Several things have come to my attention recently which lead me to think that the modular system's time has come.

1. A number of specific comments from NCSL Cal-Lab managers who I talk with regularly indicate they like the plug-in approach. Starting with the TEK 545 and HP 5245, plug-in concepts have generally been accepted and successful because of flexibility and redundancy.
2. A specific Army Electronics Command program is being launched to design a miniature-modular-maintenance system of instruments ala Tektronix and will be made compatible with Auto-Test maintenance equipment like CATE.

The plug-in compatibility concept is a powerful sales tool. It has locked in more 5245's than most people will admit. It is especially useful to Tektronix who gets a lot of scope orders automatically.

1. For a customer, it is a simple sole-source procedure to buy an additional counter or oscillator from TEK by merely requiring compatibility with their mainframes.
2. For the military, plug-in compatibility is an easy lock-out even on big procurements.
3. TEK is especially well-liked and many customers have encouraged TEK to get into other test equipment.
4. The bench equipment market is important to us, and I think we might lose a good segment of it. Standardizing on one brand name is inherent with the modular sales pitch, and people like TEK as well as HP.

About 10-12 years ago, USAF Logistics Command started an effort to get industry to design a modular instrument system with common supplies. It failed because the technology wasn't quite right. Too many items still needed tubes and the master power supplies needed about a dozen voltages from 300V down. Miniature circuits and controls weren't ready.

Tektronix hasn't executed this TM series very well. The overhead is high. Customers feel that they've packed too many controls on each front panel. Some the boxes are fairly grut and there are some cross talks and interactions, but it's an acceptable level.

I keep thinking that the time for a whole new modular concept has come. I don't mean using the HP modular cabinets and wiring everything together ala 3550. I do mean a dramatic jump ahead in a plug-in program.

1. We have the interconnection technology that will allow some real contributions on passing power and signals between boxes.
2. We have the control technology such as the ASCII bus techniques. You could also envision common crystal time bases, power supplies, voltage references, D-A and A-D converters.
3. We have the memory technology that could be the unifying strategy to the whole program. It could support control, display storage, switching, test routines and self-test.
4. We have the display technology. No longer would each box need accurate knobs and calibrated dials. A single display might show oscillator frequency, input/output voltages, rep rates, logic levels, etc.

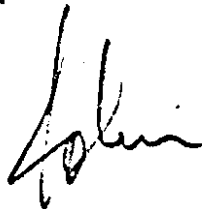
Aircraft display systems are going this way because unified displays are the only way a pilot can view everything. The bench engineer could use the same kind of thinking.

5. We have the markets. The bench market is our bread and butter. But you can also envision this concept giving us some real contributions in specialized markets. Again the 3550 is a simple example. More typical would be small test sets to do specific jobs, e.g. scope calibrator, diode characterizer, radar test set, a medical set, each able to run pre-programmed sequences from a P-ROM.

Jerry Hayes of Pomona runs Navy-wide metrology and calibration. He wants small, dedicated groups of instruments for specific jobs, i.e. a pressure transducer calibrator set. The instruments would be connected by ASCII bus and run from a P-ROM to do a simple-minded test sequence. The above HP concept would do his job perfectly - and the Army Ecom job too.

We have a serious liability on this compared to TEK. They are monolithic, centralized, and ahead. Clearly, they have made a unified effort to standardize and charge into HP's market. I feel they will not only be successful on this TM program but that success will bring them into even more direct confrontations, in our business. With their strengths, they'd be stupid not to. Worse yet, this type of multi-divisional design strategy is tough for us to carry out. In effect, nobody has the ball.

I hope someone at HP will try to pull this thing together. Such a program, if well-executed could be the biggest lock-out of all time.



JM/cb