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Interface-off…

by Mark Fihn

For the past two years, in this newsletter as well as other forums, I've been writing extensively about the advent of the DisplayPort specification and its obvious collision course with the existing HDMI standard. For most of this time, I was convinced that the handful of companies supporting the DisplayPort initiative would eventually recognize that their efforts were costing way more than any possible payback and they would ultimately get distracted and move on to greener pastures. I must now admit, with some surprise, that the DisplayPort promoters have been able to sustain any amazing ferocity of purpose, and that indeed, it looks like there will be yet another format battle.

Several people have advised me that as a journalist my job is to simply report – and not to interpret the news. The problem with this view of journalism is that informing people about anything involves much more than just a recounting of press releases. In fact, press releases are designed by clever advertising professionals to shape a specific perception; press releases frequently fail to really educate the reader about anything of real value. Veritas et Visus was established both to report the news and to provide insights about what is being reported (and what is not being reported). "Truth and Vision" is not just a title – it's what we strive to accomplish in our publications.

In the debate about high definition digital interfaces, I would be doing a disservice to our subscribers if I only recounted press releases based on the promotional pieces from each side. That said, I acknowledge that our coverage has not put DisplayPort in a flattering light. Contrary to what some have suggested, I have no "hidden agenda" or financial interest related to DisplayPort, HDMI, or any of the companies involved. I am just a reasonably educated observer reporting about what I see. (Please note that virtually all of those who have criticized my editorial bias, which favors the rapidly growing HDMI standard, do have a financial or professional incentive to seeing DisplayPort succeed).

Please also understand that in the interest of full coverage, on numerous occasions we have invited various promoters of the DisplayPort specification to contribute an article or interview to this newsletter. Despite our assurances of unedited access to readers of this newsletter, the DisplayPort promoters have refused our requests, claiming that my editorials on the topic are "not objective" and are "filled with inaccurate information". (By the way, just as a matter of policy, whenever we publish something that is inaccurate, please tell us; we very much want to help assure that we correct any errors we make). Let me offer a review of the reasons why I believe that the position of the HDMI promoters makes more sense than the position of the DisplayPort promoters in this "interface-off":

Performance: If DisplayPort offered some substantial advantage over HDMI, then there could be a meaningful discussion about the relative merits and shortcomings of each, but despite lots of study on the topic, it's not clear to me that DisplayPort offers any significant advantage over the latest version of HDMI. Sure, if you compare DisplayPort against DVI or HDMI v1.1, or LVDS, you can easily point to advantages. But, despite all the hype, DisplayPort has yet to be commercially vetted, so it's really not meaningful to make comparisons to products that are already well-established in the market. And when we do compare the latest and greatest version of HDMI (v1.3) against DisplayPort, the claimed advantages of DisplayPort disappear, and several shortcomings associated with DisplayPort actually stand out. Let me repeat this point, as it is quite important: making promises about what you can offer in the future based on what someone else offers today, is not meaningful. But for almost two years now, that's exactly what the DisplayPort promoters have done, and we're still several months away from when the first products are likely to be released commercially. Don't be surprised if much of what has been promised fails to materialize.

Market acceptance: The DisplayPort promoters have posited that they will eventually replace VGA, DVI, LVDS, and HDMI. In other words, the goal is for this entirely new interface to replace several very-well established and globally adopted interface standards. In recognition of the huge growth in market support for HDMI, the DisplayPort promoters have recently begun to downplay their originally announced intent of converging the PC and CE markets, suggesting now that DisplayPort and HDMI will co-exist. Still, the big unanswered question from the DisplayPort promoters is why we need two interfaces when it seems one will suffice…

Royalties: For some time, the DisplayPort promoters exerted considerable effort describing to us that they offered the advantage of being "royalty-free", which I will certainly agree is an advantage, so long as the claim is accurate. Unfortunately, the DisplayPort folks have had to struggle with numerous problems with their "royalty-free" claims:

• At the moment, the per system royalty for HDMI is only $0.04, and as unit volumes increase, the HDMI Founders are likely to decrease that royalty, as is the historical precedent associated with virtually all successful standards.

• As the DisplayPort promoters increasingly emphasize co-existence with HDMI, then any claimed royalty advantages are diminished since VGA, DVI, and LVDS are all already royalty-free.

• Saving money on royalties is meaningless if you actually increase overall costs in other areas. If coexistence with HDMI means that all devices will need an extra connector (or worse yet – a dongle solution), then $0.04 is a bargain! Moreover, the costs associated with system design, compatibility verification, interoperability testing, etc., could easily add up to more than any savings in royalties.

• Although DisplayPort may not carry any obvious royalties, be assured that Genesis, Molex, and other intellectual property owners identified in the DisplayPort specification, are not going to give away their technology. (Note that as of January 11, three companies have asserted more than 200 patent claims that may cover DisplayPort. These IP holders are free to charge royalties under RAND terms – Reasonable and Non-Discriminatory). Understand clearly: RAND does not mean that DisplayPort is royalty-free, nor that everyone pays the same royalty rate – it only means that one company cannot unreasonably withhold access to intellectual property from another company or charge unreasonably different rates. Translated, this means that big companies with lots of negotiating power will effectively end up paying lower prices for royalties than smaller companies. Let's be clear about this: When companies like Dell and HP say they support DisplayPort because there are no royalties, what they are really saying is that they don't want published royalties where everyone is obligated to pay the same rate. Instead, they want to be able to use their big-company negotiating advantages to achieve lower component prices for themselves, at the expense of their smaller competitors. (Note: I spent fifteen years in big-company procurement, at Texas Instruments and Dell, and can attest firsthand to this procurement mentality).

• In this case, however, the Dell and HP procurement people have apparently failed to recognize that negotiating royalties at the component level may in fact represent a cost to them and not a competitive advantage. With an increasing trend to use multiple HD ports on a single device, if you pay royalties at the device level, then you are penalized if you add devices. HDMI royalties, on the other hand, are at the system level, not hidden at the component level. With HDMI, no matter how many connectors, you only pay $0.04 per system.

• Interestingly, the DisplayPort promoters recently shifted their claimed advantages about being "royaltyfree" to being "license free". But under the "license free" terms associated with DisplayPort, note that additional IP holders may come forward and charge royalties in the future; this is especially true if the DisplayPort standard ever evolves to incorporate new technologies.

• Note also that recently some companies have expressed concern that DisplayPort implementers may be required to pay royalties for both HDCP and the proprietary DisplayPort Content Protection.

• VESA, the standards organization promoting the DisplayPort specification, makes it clear that there may be some IP in the DisplayPort specification that is not covered under the RAND terms and that VESA provides no assurances and assumes no responsibility in these regards.

• While I am the first to agree that "royalty free" and "license free" arrangements sound appealing, be sure you read the fine print before making a final conclusion. The truth of the matter is that there are always costs associated with IP, even for DisplayPort. Trust me on this – whenever a small group of big companies bands together for a couple of years of secret meetings to create a new industry specification, and then they tell you that

it's a "standard" without royalties or licensing requirements, you can be confident that the primary beneficiaries of such a program are most likely to be that small group of big companies.

Promotional activities: At CES in January, the DisplayPort promoters organized a well-targeted event that served to create a clever illusion that there is indeed broad industry support for their still non-existent interface. At the event, executives from AMD, Dell, Genesis Microchip, HP, Intel, Lenovo, Molex, nVidia, and Samsung, presented what appeared to be a unified front in support of the DisplayPort proposal. But let's take a closer look at this listing of supporters.

• Every one of these companies already offers products supportive of the HDMI standard – from PCs, graphics cards, projectors, TVs, and other consumer electronics products.

• With the exception of the three PC-dominant companies, (Dell, HP, and Lenovo), every one of the companies is already a formal adopter of the HDMI standard. Although HP is not an HDMI adopter, interestingly, they are one of the members of the Simplay testing program, which helps assure interoperability of HDMI-enabled devices. Samsung is also a Simplay member.

• AMD, Intel, and nVidia are all natural supporters of a proposal such as DisplayPort, in that they are providing additional silicon circuitry. More silicon, more complexity, more revenues.

• With regard to Molex, it's actually a surprise that every connector manufacturer in the world is not eagerly supporting DisplayPort – simply because if successfully implemented into the industry, virtually all PC and CE devices will require additional connectors.

• Notably absent from the list of supporters is Philips, whose content protection scheme (called DisplayPort Content Protection), has apparently been dumped by the DisplayPort promoters, (or at best has been put on the back-burner). Two lessons here – first, Philips' support for DisplayPort appears to have been solid only to the point that it would earn them royalties. Second, the DisplayPort promoters demonstrated that they are willing to change their loyalties and their core message regarding even important specification factors such as content protection. And to confuse matters a bit, Philips is one of the HDMI Founders.

Intel: Perhaps the biggest boost that the DisplayPort promoters have seen in some time is their new-found support from Intel. Originally involved in the "Secret SIG" (the group of companies that spearheaded project Greenland which eventually evolved into DisplayPort), Intel initially chose not to support the effort. Without Intel's support, DisplayPort was almost certain to die, as there was no way to assure content protection in a way that would be satisfactory to the content providers. HDCP is an Intel product, and until recently, was only supported on HDMI and certain DVI products. Intel's decision to

also support DisplayPort, UDI, and GVIF, gave DisplayPort a new lease on life. One wonders why Intel changed their position and I've been offered several explanations:

• In attempts to win back some CPU business lost to AMD, Intel simply bowed to pressures from Dell, who is DisplayPort's primary system-level advocate.

• The UDI team inside of Intel was not making progress and so stopped asserting pressure to sustain support for HDMI and its UDI offshoot. Incidentally, one of the primary reasons that UDI appears to have "run out of steam" is reportedly because no-one really wanted to see audio and video de-coupled.

• The HDCP folks inside of Intel did not want to risk losing royalty revenues associated with DisplayPort. They saw the opportunity to displace DPCP, and they took it.

• A recent development effort inside of Intel aimed at popularizing optical interfaces is supportive of DisplayPort. For reasons I don't understand yet, apparently it will be somewhat easier to shift to an optical interface using DisplayPort than with an HDMI device. (Note: I predict that in the near future, we'll start to hear more and more about this from the DisplayPort promoters, even though optical interface technology is still some years away from being commercially affordable. Note as well, that if DisplayPort can indeed provide a superior path to optical interfaces, it is the first real advantage favoring DisplayPort over HDMI that I've heard about to date – and it is a persuasive advantage to consider. That stated, optical interfaces are still a ways in the future and the HDMI folks will undoubtedly be working on solutions that also support optical interfaces.)

Genesis Microchip: A number of people have indicated that my strongly negative editorials about DisplayPort suggest that I must have some sort of bias against Genesis. Be assured that I have no bias whatsoever about Genesis as a company or any of their employees as individuals. My issue has nothing to do with Genesis, but is purely rooted to the fact that I can see very little reason to disrupt the market with another interface option that seems to offer no advantage. Genesis president and CEO, Elie Antoun, recently remarked that to help the company regain profitability: "Genesis continues our leadership in DisplayPort by supporting the timely launch of our leading customers' flagship programs in the latter part of calendar 2007". It seems that rather than helping to drive down interface costs, as their "leading customers" may be expecting, Genesis is anticipating premium profit margins from their DisplayPort devices.

Silicon Image: It's important to note that there is currently a substantial amount of HDMI silicon available, from numerous competitive companies. Translated, HDMI device pricing is very likely to drop significantly as volumes continue to pick up and as competitive forces between manufacturers kick in. As such, the maturation of HDMI may translate into somewhat mixed news for Silicon Image's investors…

Dell: In the past couple of months, three different groups inside of Dell have contacted me to better understand why their own company is supporting DisplayPort rather than

HDMI. What they really want is "ammunition" with which to fight internal battles that are now underway. I think it's safe to predict that in addition to their Alienware HDMI-enabled PC, we'll see Dell-branded PC products with HDMI ports well before Dell introduces anything with a DisplayPort connector. Doing so, however, exacerbates the inevitable: How do you connect an existing HDMI-enabled device to a DisplayPort-enabled device? Dell currently sells TVs and projectors with HDMI ports. Moreover, Dell recently started selling Sony-branded TVs on their website. We think it's unlikely that Sony, an HDMI founder, will add DisplayPort connectors to their TVs…so, what a dilemma for Dell!

Supposedly at the end of the year, Dell's customers will be able to go to dell.com and buy a DisplayPort-enabled PC, which unfortunately won't connect directly to any other products that Dell has ever sold. Dell customers that have previously purchased an HDMI-enabled projector or TV will apparently be told they need a special dongle if they want to hook up to their newly purchased PC. Maybe if the customer complains, (and they will), then Dell will appease them a free dongle. Or maybe Dell will try avoiding the complaints by shipping a dongle with each new PC.

From my perspective, even if DisplayPort offered some huge performance advantages over HDMI, Dell's donglebased implementation strategy is hugely problematic. I've asked many people at Dell, "Why are you doing it"? The answer invariably comes back to: "Well, because the CTO's office says it's the wave of the future", or some such. It's actually very uncharacteristic for Dell to lead the charge for any new technology – Dell typically prefers to wait until other companies have proved the viability of a new technology. But in the case of DisplayPort, it seems that the CTO's office is intent on demonstrating that Dell can really be a technology leader.

Dell's real dilemma is that by now, they must have made formal commitments to companies like Genesis and connector manufacturers to move forward with DisplayPort. As such, even if Dell's executives suddenly wake up to the realization that DisplayPort is a mistake, the costs of exiting their strategy will be quite expensive. In other words, I think you can expect that Dell will continue to try to bludgeon the DisplayPort specification into the market. Rather than admitting they made a technology mistake, I predict Dell will make a massive effort to convince end users that there is really something special about DisplayPort.

Samsung: I have tremendous respect for Samsung; they have repeatedly proved to be able to deliver on promises and outperform their competition in almost every regard. The most confusing thing about Samsung, however, is trying to figure out which group within Samsung is really making the ultimate decisions. Sometimes I think that Samsung's biggest competitors are different operational groups inside of Samsung!

Moreover, Samsung is so vertically diversified that frequently one group is not even aware of what other groups are up to. For one group, selling Samsung-branded CE devices will be most important; for another group, selling LCDs to big customers like Dell and HP is most important; and for yet another group, designing high-performance

silicon is the primary careabout. It's no wonder that Samsung is the only company in the world that is aligned with HDMI, DisplayPort, and UDI.

It's also not overly surprising that pre-CeBIT rumors are indicating that Samsung intends to introduce a USB-only monitor, (reportedly Samsung SyncMaster model 940UX). I honestly don't know much yet about this approach, but I suppose there will be performance limitations beyond the very low-end, but wow! I guess the graphics processing will have to come from the CPU, but if you really want to quickly displace VGA, this is likely to be a very easy and inexpensive solution. DisplayPort folks, if your goal is really only to supplant VGA and DVI and if this Samsung USB solution is for real, your game's over…

Translated with permission of Mark Fihn. Every edition of the *Display Standard* newsletter provides coverage about the ever-expanding role of HDMI in the consumer and PC markets…