

- I would say the same for apps. Pen Windows started from thinking about doing apps for palmtops, but this opportunity alone should keep them busy for a while. In both the PWK and HDTV markets applications third party apps will be important, but it is hard to think about this until the machines and operating environments themselves are thought through a bit more - the applications s are a "second order vision" at this stage.

- Finally, we could start a new group - hire somebody to lead a new business unit or division - either as a GM or a new VP. This is actually a very interesting idea. If we want to do this I would propose that the best way to implement this would be to hire the person into ATBD initially and work through the strategy here. The reason is that I believe we would have a lot to contribute.

This may sound very arrogant - I don't mean it that way. I think that finding a good manager and leader for the ongoing development is a lot easier than finding somebody who can do BOTH the ongoing management and also create the strategy from scratch (including the technical understanding etc). I don't think that this area is like Consulting - where the field is established and you can go get a guy like Bob McDowell who knows the ropes to set it all up. There is no good existing model, and it is very tricky - blending all of the issues from the consumer electronics market with the computer industry. I think that your memo defines a very good strategy at a high level, but there is a range of problems where we could help.

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Finally, I want to say that we are very flexible here. There are advantages to doing this in ATBD, but I also recognize that there are disadvantages, and we may decide to do one or both of these elsewhere. Both Karen and I want to cooperate with whatever form this takes in the company.

Nathan

From nathanm Fri May 17 22:49:55 1991

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Subject: PCs that aren't PCs

Date: Mon Mar 16 11:25:49 PDT 1992

Bill's recent memo raises a number of very interesting issues. Here are some quick comments (more in a future memo).

First, there is an overall strategic point that is very important - we need to

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address a new set of customers. Most of our projects to date have been selling new things to the same basic constituency. Pen Windows and MPC are both examples of this by and large - the primary thrust is PC companies moving into new markets segments. There are always a few crossovers from other fields, and a few start ups, but this not the core thrust. Even when we do work with a company like Sharp, Sony etc, we generally work with the PC division, not the calculator/gadget/consumer electronic side. (there are exceptions, but this is the general rule).

This isn't bad - it is a reflection of working from our strength and gaining leverage from the rest of our business. Nevertheless, in order to succeed in the new markets that Bill describes, we will have to really create alliances with consumer electronics companies as they move toward computers not keep selling to computer companies going the other way. I think that this has to be an explicit goal of these projects to do this, and in the long run it is the largest single benefit that we will receive. Consumer electronics companies may well create the dominant platforms for software in the next decade, and we must establish a position with them similar to that we current enjoy for traditional computer manufacturers.

This has a number of pretty far reaching implications for how we organize and approach the projects - more on this in another memo. KarenH has been building this sort of relationship with FAX companies for the Efax project, and so far there has been a very good reception, but there are a lot of factors which differ sharply from the PC case. Two key things which hit you immediately is that, first, we do not have the power, influence and position we usually expect and as a direct consequence we have to really sell these people on benefits, get them to like us etc. Second, the "culture" is utterly different from our industry. This is true business wise (proprietary approaches, rude licensing schemes...) and is also true technically (little concept of architecture versus implementation, extensibility...). One interesting cultural point is that these guys appear to be a LOT more aggressive than computer companies.

A specific sub goal of working with consumer companies is that we create a very strong relationship with Sony. They are not the IBM of their market - the analogy does not really hold - but I believe that they are a very important place to start if we want to do this right. Of all of the consumer electronic companies, they scare me the most as a potential competitor (for example if they started buying US software companies in the manner in which they bought CBS Records and Columbia Pictures). I'd rather make peace than war with these guys. Creating this relationship is going to be a long process - it does NOT mean one little project. Of course there are other important companies, and Sony is by no means the only one to worry about.

Moving on to "PCs without keyboards" - or PWK for short, there are several key points:

- We must be careful not to dilute the Pen Windows message. This requires a digression on our Pen strategy. The unique point we can make about Pen Windows

is that it is a minor extension from Windows - your apps run, you can transfer learning etc. Go is selling themselves as a PWK OS for NON PC users.

At present, I believe that Go is largely irrelevant to the market we care most about - PC OEMs and PC ISVs. Go may sell for dedicated markets (insurance companies, clipboard and forms machines, warehouses, truck drivers...) but people that buy a Go machine for that purpose are not likely to drop into Egghead and buy a lot of apps - it really cannot be compared with a Windows machine. There may be a bundled PIM, and one or two high visibility apps (analogous to 123 on the new HP calculator sized PC) but the scenarios that Go describes as its target market are not used to buying apps. Go has positioned themselves in what amounts to a new channel, and they have to grow it, grow themselves, and grow a channel for software as well.

When we make the case to an ISV, the issue should be both the investment necessary to address the system (minimal if you are on Windows) and the fact that we are targeting a market, channel, user community etc which both we and the ISVs know how to address. Go is in a pioneering, market education mode to get non PC users to try something new. It happens that computer companies are farther ahead than consumer electronics companies in this market at present (mainly because both Go and Pen Windows require too much hardware which is too expensive for the consumer guys at present - thank god). I believe that if we execute well, that we will gain enough of an advantage that they will not be able to come from behind and win. When people make cool new apps for the non-PC user, they will be able to host them on Pen Windows as well as Go, and we'll eventually get that market too.

The summary is that:

Go = PC hardware + ? apps + consumer users/positioning (non PC)  
Pen W = PC hardware + PC apps + PC users

This could be really messed up if we stand up and say "Pen Windows is great because it is Windows, but look at all of these Go like features for general PWK machines". We have to really focus on making Pen Windows BE Windows. Cameron made a great comment to me the other day - we should totally eliminate the idea of "Pen extensions to Windows" as a concept (not the code or features!). When you look at those features they are basically about writing better Windows apps in general - it is analogous to Mac apps not being 32 bit clean, apps depending on single resolution like VGA etc. They should be positioned as an update to the general Windows style guide - here is how to write a better app that works more places than before, including this new input device. We can still have a Pen OEM product, but we should NEVER ask an ISV to "support the Pen extensions" - we should just make them be interesting new Windows features. The question is then "do you intend to support Win 3.1" or some such, and the answer is a lot more obvious.

The issue for PMK machines is therefore that we want to bracket Go on the low end:

PMK = Consumer hardware + ? apps + consumer positioning

We should market and position this as something quite different than Pen Windows to avoid conflicting with its message. We can still leverage Windows as an asset, and when I say "? apps", we will still run Windows apps (although perhaps a strictly defined subset). The nature of the apps sold into the markets that Bill's memo describes is going to be different, and it may or may not include the today's Windows apps. The issue of our hardware requirements is very important to pulling this off, but it is not as simple as raw cost. The issue is timing and which market we address at what point in time.

Here are some examples of questions that are interesting to think about:

- Do we want old Dos apps to run? You can make a case that says NO. Those are for people in the PC user community, not consumers. Stripping Dos, and dos related features out saves a bunch of code/memory etc., and makes UI issues simpler etc.

- How many bits? There is a real question on whether this should be 16 or 32 bits. Given cost and other points, it may sound crazy to consider 32, but a case can be made for stripping out 16 bit stuff and making PMK Win be a subset of Win 32. This is especially true if a cheap RISC chip is to be used instead of x86 - which is a serious question. The other approach - to dump 32 bits and go for the 286 has some advantages, but it is not obviously better, even if we want to go for the low end.

- Technology. There are lots of neat tricks that we can apply - Pcode for making the OS and apps small (perhaps build the Pcode interpreter into the system), compression technology for increasing apparent storage, RSA security for making the PMK your "authenticator" (Bill's comment about the machine being only a little bigger than your a checkbook is inspiring - the machine could BE your checkbook - storing digitally signed receipts for transactions done via ATMs, credit card verifiers etc.).

- End user scenarios. It is very important to think about what users will do with these machines. This is an obvious comment to make, but I think that there is a lot of value in thinking about it.

The HDTV PC is another great project. I agree with Bill on almost of the points. Here are a couple more detailed comments:

Politics is an interesting angle here. I am not sure that I agree that US standards are not applicable. The FCC will not set the local software standard directly, but I think that we could work with the people proposing those standards to get ourselves slipped in anyway. The reason is that there is intense political lobbying based on arguments about the competitiveness of US industry, synergy with the computer industry etc. There is also a lot of competition between the various proposals. None of them have thought very hard

about computer issues - the fact that they are digital is nice, but they do not really have good protocols or a general architecture for adding computers to the machine. If we worked with one (or more!!) of the proposals we could help them get the computer stuff right, perhaps establish some of our protocols and features in the broadcast standard, and position ourselves well for being put into the TV itself. From the point of view of the people putting forward the proposals, we would be a welcome addition - they could claim that adding software (a US dominated industry) is good for the country (we just have to avoid the magic quote "what is good for Microsoft...") and is a huge win feature wise that the US standard should have (versus european and Japanese standards). Done properly, I think that we could get the software connection to be a very important feature and that multiple proposals would seek our endorsement.

Meanwhile, on the other side of the Pacific, we can play the game in reverse. The Japanese are smarting from the fact that the FCC dog and pony show, which started off as xenophobic protectionism to fend off their system is now actually better. The original Japanese system is analog - the US systems started that way, but in the last year all converted to a digital (which has enormous advantages, but was considered too far out initially). At the same time that we work publically with some of the US proposals, we can work privately with the Japanese. I agree with Bill that prototypes are the way to go rather than directly saying we will announce standards.

One feature which is super important is tying in well to the basic technology - digital video compression and imaging architectures, high end computer graphics etc. I believe that the compelling features in this market will come from the intersection of the two fields - not just the fact that you can run existing Windows on an HDTV screen. The TV industry is not very sophisticated about these things - that may sound patronizing, but it is true. The notion of architecture versus implementation is very important, and well known to us, but is almost unknown to the TV people. The actual image compression algorithms are not all that hard if you think of them in software. Real implementations for mass market TVs will be in dedicated chips which will be heroic hardware engineering efforts, but the research is all done in software, and I think we could make some contributions.

One point where I disagree with Bill is on CD-RTOS - I am far from convinced that there is a benefit in doing this. Perhaps it is so, but I think that we need to consider it carefully. The connection to CD-I is not necessarily strong - especially if you believe the point about tying in well to the technology. CD-I is so terribly primitive that it is really in a different market and different class from the HDTV PC. You are not going to be able to do the data streaming, graphics and other things - even controlling other chips - with CD-RTOS. By the time you extended it, the extensions would be the bulk of it. I could be wrong on this, but I think that we should concentrate on a kernel technology specialized for the specific problem (either our own effort, or perhaps bought outside) with a Win 32 variant on top.

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