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W.S. 12/6**Microsoft**

To: Steve Ballmer, Russ Werner, Phil Barrett, Mike Dryfoos, Gordon Letwin

From: Bill Gates

Date: November 29, 1989

Re: Future versions of DOS

While DOS continues to be our most important and most profitable product over the last four years we have done very little with it technically. Only over the last year have we started to build up a DOS team that could respond to special customer needs (ROM, Feprom) and improve utility level code (new shell). Meanwhile, the widespread belief that DOS 4 offers no real benefits, might have bugs, takes more memory and breaks things like redirectors has increased the piracy of DOS and made it more difficult to sell. People selling DOS add-ons have been doing excellent business. DR DOS is "as good as" our DOS so we get into purely price oriented negotiations.

The ideal is to come out with new versions of DOS that are not only reliable but are "smaller", "faster", "sexier" and "more powerful". In order to do this we need to rewrite some of the existing code. Undoing IBM's DOS 4 work is a step in the right direction but neither IBM nor the market place will accept something that is simply that.

The core code in DOS (I include the redirector and Command.com but no utilities) in this definition is fairly disorganized. No one has been willing to do major work on this code for a long time. One of the reasons I am excited about having Gordon involved in this project is that he can take the entire source of all these pieces and really learn it quite quickly. I am sure he will write a memo about how bad it all is. I want us to take on large pieces of this and improve the size and speed. I think cache management can be improved. I think the allocation algorithm can be improved. I have always thought our need to have a huge piece of redirector code when our competitors simply hook into Int 21 was silly. I don't think it makes sense to involve Gordon in the utilities much because a combination of the current team and paying third parties to modify their packages and sell them for a fixed fee will be able to do an excellent job. We need to have an explicit goal of working with some outsiders on the utilities and be willing to spend money to buy code that can improve the product.

I am not sure how we should tackle the core code. I don't even remember how it breaks down. Of course compatibility makes working with this code very difficult. I think we should break it down into categories after we have studied it and done some taxonomy. These categories should probably include parts we won't touch, parts Gordon will rewrite, parts someone else will rewrite and Gordon will review, and parts that Gordon doesn't need to worry about although we will redo them. I think the next six weeks give us enough time to form a plan of attack.

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The ideal for me would be to have a release that undoes the DOS 4 stuff and has all the nice things we have been planning. If there was something simple that could be done for disk speed as well, that would be nice. This release should come out in the next three to six months. Then we should have a release for January 1991 that contains the "rewritten" elements. I am thinking that big rewrites and additional third party stuff will all be focused on this release. This means that, except for some nice speed clean up, Gordon will focus on the second release that we might think of as "ultimate DOS".

It is up to the team to determine the best work split and working style. However, I want to make sure that the team as a whole (including Gordon) has a plan for more than just the short term release and that it is an ambitious plan based on being willing to improve any of the old code that needs it.

I would like to have a presentation in the second half of January on these plans. I want to feel like no one will be able to write a better DOS and that people will be amazed at what we have been able to do. The revenue potential for upgrades and differentiating our product more and improving our reputation are very large.

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