digital INTEROFFICE MEMORANDUM

TO: Distribution

DATE: September 3, 1973

FROM: Dick Clayton DC

DEPT: 11/45 Marketing

EXT : 3638

SEP 6 1973

SUBJ: WILD IDEA FROM PDP-15 LAND

For some time now the PDP-15 team has been looking for bright ideas that are low cost, high pay off, sell significantly more PDP-15 oriented hardware and software, and don't appreciably interfere with other segments of DEC's business. Some of these items included using the 8K DEC standard memory, software enhancements, and of course the very successful Unichannel project. The nature of most of these projects has been aimed at six month payback and high margin.

In searching for what next, the concept of recoding the microprocessor of the KL10 came to the surface. It is obvious to everyone this idea could never fly, yet it isn't quite so cut and dried as one might like (if you want life simple!).

I am personally enthused about the thought process and the idea appears to demand a bit more digging. As a cold hearted businessman it will probably by put on the shelf. As the manager of a group who is willing to overturn any stone in their quest for good profit as part of a consistent spectrum of DEC products I am very proud of the attached proposal. I am pushing it a few man weeks further to better understand if anything might come of it. We are sending this memo around at this time to let you know what one group is thinking about as well as again request any help you can provide to expand our horizons or clarify our thinking.

Thanks.

DC:vb

attachment

D/C C.

I agree. I am very pleased with the 15 group

Ken

digital INTEROFFICE MEMORANDUM

TO: Distribution

DATE: August 30, 1973

FROM: Gary Cole

DEPT: 15 Marketing

EXT : 4187

SUBJ: THE KL15

The PDP-15 has been a fine, profitable machine which has developed a superb set of software and excellent customer base. But it is rapidly becomming technically obsolete and needs new electronics to continue over the long haul. To engineer a new processor I/O system, etc. not only involves a several year lead time, but also at least $2 million. Moreover, we would arrive at a machine with only marginal appeal over the high end 11 family.

Out of this has arisen an idea which is so attractive that it demands our collective scrutiny.

Emulate the PDP-15 on the KL10 processor.

Since the PDP-10 is a 36 bit machine the 18 bit PDP-15 data structures fit nicely onto the data paths.

There are several areas to consider:

1. Technical - can it be done without redesign of the KL10 processor.

   Mike McCarthy, Dave Rosenblum and I did a brief study of the KL10 microprocessor and concluded that it definitely could be done and would yield some performance increase over the existing PDP-15.

2. Marketing - Can it aid DEC in the medium scale market? Can it be sold easily by the DEC sales force? Can it develop into a large business?

First of all this will be a uniquely saleable computer, independent of all other features, because it can be field upgraded to a PDP-10!

So, industrial concerns will buy KL15's because it's good management sense.

University departments will buy KL15's because it represents such a good long term investment.

Labs will buy KL15's because it's a way to get to a big computer by the back door.

All this natural appeal, combined with great PDP-15 software and high processor (~2 μsec floating add) should make the KL15 a superbly saleable product.

Given DEC's sales volume 18 months from now a minimum volume projection would be 500 systems (@ 120K) per year ie., $60 million.

Cost - The KL10 is not an inexpensive device, hence the minimum sales price will be at least $100K for a 64K DOS/RSX system using PDP-11 peripherals. Thus, we will stay definitely in the medium scale area.

PDP-10 Competition: The basic difference between PDP-10 and PDP-15 would become system size and software. If the performance of the KL15 was too high, we could always introduce delays in the microcode. The real effect would seem to be more pro 10 than anti 10 since in the end there will be a lot more people having PDP-10's.

PDP-11/45 Competition: The KL15 will be capable of competing head-on with current and anticipated "big midicomputers" such as the Datacraft 24 bit series and possible 32 bit Novas or Modcomps. This will save us from having to do a "small configuration" set of PDP-10 software (ie: another RSX class monitor) which might otherwise be required to compete. Such a software development alone would cost several times more than the entire KL15 project.

Corporate Benefits - Increased volume on KL10 processors will help production costs. Increased volume on KL10's will allow more field service personnel and hence better customer service. The KL15 will use all common DEC components except software and a few ROM control boards so it should help the entire prodcution organization. The KL15 will take some of the pressure off the high end 11 family in the marketplace and immensely strengthen DEC's competitive posture in this area.

The KL15 will bring in a large sales volume and should be highly profitable since its engineering cost will be low (both hardware and software) as compared to any discrete cpu/system product. Because it is in the high end of the midi marketplace it will be less susceptible to obsolence than small machines and so have a long product life (5 years? 6?). Moreover, the high income will help fund memory and peripheral development which will benefit both 10 and 15.

Schedule - The KL15 project should be phased about 6 months after the KL10 to avoid interference with PDP-10 operations - this means that the machine would be announced about September 1974 for delivery March 1975.

As a first step, I propose the funding of a design project commencing October 30, 1973 and ending March 31, 1974. This project would

1. Prove technical feasibility by generating a preliminary microcode for the machine using simulation.

2. Provide detailed performance data for the finished product.

3. Develop a production schedule.

4. Develop detailed cost data both of production system cost and development project cost.

5. Select the proper approach for I/O on this machine.

6. Decide what changes have to be made (if any) in each price of existing software and develop software project plans for such changes.

7. Develop system packaging and configuration for marketing analysis and system pricing.

8. Build a technical team which can carry the project through the next two years.

9. Coordinate with all other groups in engineering, production, programming and marketing which need to be involved.

10. Establish the KL15 design review committee and the project schedule.

This project team should consist of five people.

1. Project Leader

2. Production Engineer

3. Electrical/Mechanical Engineer

4. Microcode Programmer

5. PDP-15 System/Microcode Programmer

This project will cost approximately $75K and would finish about 1 year before the first production units are to be ready.

GC:vb

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