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European Development Centre
General Purpose Operating Systems.
Engineering and QA Groups.

Report of Meeting on possible GPOS Futures.
(15 January 1990).

I have attempted to summarize the discussions and present the majority views and opinions of all who attended. I hope that it covers all that was said and that I have not added anything for the sake of clarity that was not in the spirit of the meeting.

Andy Wightman.

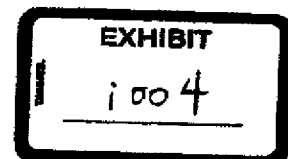
Attendees.

- John Constant, Colin Cracknell, Richard Deane
- Linda Friday, Edward Hill, Mike Greenwood
- Roger Gross, Anthony Hay, Ian Jack
- John Linney, Jenny Shelton, Glenn Stephens
- Neil Thomson, Joe Wein, Andy Wightman

The meeting was held at The Stakis Hotel from 9.30 a.m. till 5 p.m. The engineering and QA groups attended. The meeting started with the usual introduction outlining the agenda and the organisation of the days events. It was emphasized that this time the discussions should be wide ranging and that all should try and contribute.

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Hardware trends.

The standard hardware today is an ISA computer with a 80386 processor at 20Mhz, 4Mb memory used for Ramdisk/LIM, VGA graphics, VGA plus or 5412, 60MB hard disk and floppies 3" or 5" for backup/data transfer. There is an increase in the market for smaller laptops and notebook type computers (usually with CMOS processor). We are also seeing the Network server type of machine as well.

The expectation is that over the next few years the same money will buy a 486 processor with 4-16MB memory, HI-RES graphics, 300MB hard disk. We shall see floppies still used for data transfer. New developments will include CDROM, WORM, DAT, Solid-state and optical disks. Not all of these technologies will be successful. CDROM has a head start due to the home audio market and advances in CD-I standards. The optical disk is being used in the Next computer. Although multiple processor machines have been designed at the moment they are used for specific parallel array like problems and are expensive. There is no standard emerging.

Chip technology will put multiple processors on one device and will create a standard. This will enable programming languages to control the processors and allow application writers to increase the performance of their products. It is not clear whether the operating system needs to be involved in this except for task switching, it is really an extension of the Numeric data processor we already have.

Advances in communication with cell portable telephones will allow portable computers to be connected more simply without leads. This will encourage the use of computers in the home for de-centralised office workers as well as travelling professionals such as doctors, service and sales persons. Many manufacturing plants will also benefit from mobile computers with a radio communications link.

We can now see computer manufacturers supplying low cost Gigabyte data access via CD technology. This will allow programmers to improve the human interface to the computer with better audio/visual output and audio/expert input. Embedded application systems will be available for vehicle navigation, machine servicing, legal records, retailing, medical diagnosis, education and many others. With embedded applications the hardware can be more cost effective than a general purpose system and need not adhere to rigid standards. In situations where multiple applications are required or where computers already exist the CD-I/DV-I addons will be provided for PC's.

*OS -
Multi
Process
Parallel
Stack*

*Annex
v. 1.0
by IBM*

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Multi-user systems will still be cost-effective where the computing task is modest, the bandwidth required is small but continuous, and "on-line" response is needed. For example booking systems, EPOS, process control and general business. The work stations in these cases can be more simple than general purpose PC's. However hardware and software manufacturers will not in general promote shared hardware solutions since it is not as profitable to them.

Apple

Set the standard for applications on the Mac and enforced it well. The applications are consistent, intuitive to use, appealing through use of graphics and this has encouraged 3rd party developers. The machines encompass home computing as well as business use. Connection to mainframes and other computers is possible through communications and networks. The Motorola 68k was a better starting point since it had 32bit addressing the applications could grow as hardware improved without invalidating earlier work.

Apple have maintained a monopoly on hardware supply and have plenty of applications, they should continue to prosper although the application advantage will now be eroded by 386 PC's and Windows/Dos or even PM/OS/2 applications and O/S.

IBM

Would prefer more steady progress, the PC market has been very unstable for them. They want to establish an IBM solution from workstation to mainframe. They introduced standards such as CUA to allow this to happen. They have a traditional Customer Base and will develop their own applications to supply complete solutions. They would prefer to sell proprietary hardware (PS/2) O/S and applications but will continue to compete in the PC clone market while they are dependant on 3rd party applications.

Clones.

Selling more to the end user and non IBM dominated companies. Offer better price performance than IBM hardware. Will produce both ISA and EISA hardware but not OS/2. Pressure from users and indirectly from IBM force clone OEM's to bundle Microsoft O/S. Manufacturers could force IBM to follow them if they worked together on standards. Some moves in this direction with EISA and OS/2.

*direct
not true Apple
with*

bundles not expected

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Microsoft

Supply both O/S and good applications. Supports and encourages most standards PM-OS/2, Motif, Xwindows-Unix and windows-DOS. Loss of revenue over DR DOS could force legal action, buyout or lockout by combining windows and DOS in one. Will continue to improve the DOS standard to compete with Apple. If a new windows-DOS standard is useable on existing machines it could provide a retail opportunity for Microsoft for both the O/S and applications. Microsoft also active in developing overseas markets. OS/2 still much delayed and larger than expected. Release 2.0 for 386 computers will be the first acceptable version in terms of performance. This gives the existing 286 machines to Windows/DOS.

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Flexos product: this can continue to exploit vertical markets where API standards are less important. Network, communications and disk standards must be met. CUA adherence of XGRM is necessary but not essential. Needs to consider other embedded markets for real-time applications such as simulation which are able to exploit new technology like CDROM/XA. Other possibilities include network servers, multi-processor architectures (parallel processing) and vehicle control. Perhaps it should be ported to other processors e.g. RISC or minicomputers. Emulation of the OS/2 API should be considered although this would have to include PM. *Good?*

PM/Windows graphical applications: this should also remain a viable market, it seems the same application can be run on either platform with very little modification. This will encourage application writers to develop new apps. solely for the PM/Windows API. Existing DOS applications will remain but enhancements will be limited to international language and driver support and conversion to notepad type computers. DR can port its presentation and publication graphics applications to the windows/pm standard. ✓

DR DOS product: this can be strong in the embedded systems market. Hardware below 2Mb with floppy disk or memory cards as the primary storage. Hardware with LCD screens and no mouse. This will be the Notebook and Laptop PC's. Vertical application machines might also use all or part of DR DOS as the operating system. Selling against the Windows 3/DOS 7 combination to major vendors will continue to be very difficult on standard 386 PC's. *needs definition*

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Concurrent DOS: The "Power DOS" single user retail market where CDOS is seen as a possible upgrade to DOS. It provides an increasingly better virtual machine for easy switching between applications. The "Multi-user" DOS market using MSX type hardware continues to provide a cost-effective solution for small business's, however it needs good dealers to put together solutions in this area. CDOS is also useful in the embedded market where DOS compatibility and multi-tasking are required.

The end.

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