

THE OMNIPOTENT ST?

Can the ST run the worlds most powerful operating system? Clive Parker investigates one possible future for the ST

Imagine the scenario. The biggest corporations in the world have trashed their mainframes running UNIX and other powerful "professional" languages in favour of a new multi-tasking operating system running on a bunch of Atari STs!

You may think that the very idea is just a fantasy, but the ST actually has the potential to become one of the most powerful computers in the world using a standard 68000 processor running at 8MHz. The operating system actually exists and you can buy it today, it's called SMS2 and is supplied on a cartridge that simply plugs into the side of your ST.

Amazingly, the actual core of the system consists of just 7K of data – a true micro-kernel – the rest of the software on the Program

able Erasable Reader Only Memory (PEROM) in the cartridge takes up about 150K and consists of device

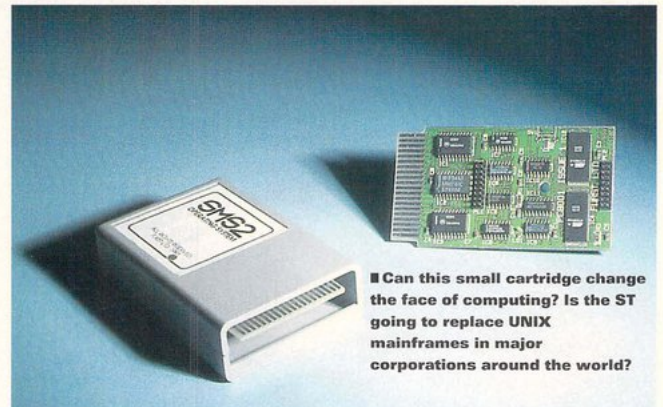
"Five STs with 20GBytes storage, running SMS2, can process the daily transactions of Barclays Bank"

drivers for the screen, parallel port, SCSI hard drive drivers and so on. Also included as part of the OS are built-in application problems enabling you to use the operating system. Micro-kernels developed by the major developers are typically 1MByte or more, not small enough to be used in anything but a computer.

Also included on the PEROM is a complete windowing environment based on *Xwindows* as used by UNIX machines, cramming all this information into just 160K is an real achievement. When any part of the OS is upgraded all you do is load the new versions and update the PEROM.

Technicalities and trivia

We visited Furst Ltd at their UK office in Southampton and talked



■ Can this small cartridge change the face of computing? Is the ST going to replace UNIX mainframes in major corporations around the world?



■ Left: Every creation has its masterminds, Graham Goodwin and Philip Gutteridge are the brains behind SMS2.

written. SMS2 is doing computing in a different way to the big SQL file servers used by large corporations, five Atari STs with a couple of GBytes of storage space can outperform some of the big modern mainframes that are used in banks, capable of processing more transactions per second than the mainframes are capable of. Five STs with 20GBytes hard drive storage running SMS2 can process the daily transactions of Barclays Bank for the UK.

It's not just a good operating system, the reason it is so much better is because it is different in almost every respect to any other operating system that has ever been written. The only part of the system a traditional software author might recognise, if he looks at the code, is the scheduler, the rest of it is unrecognisable to authors of conventional systems, they just wouldn't understand how it's working.

Furst looked at GEM multi-tasking systems for the ST, MultiTOS, Mag!x, MultiGEM and Geneva, the best any of these can achieve is to produce something like System 7 on the Macintosh. System 7 cost millions of dollars to develop and it is not what Furst

The system

To run SMS2 seriously you need a 1MByte ST with a high resolution monitor, the operating system does run on a 512K ST but it doesn't leave you much room for running large programs or developing your own software. The system runs perfectly well using floppy drives, but for serious work a hard drive can be considered a vital addition to SMS2. The operating system can use any spare RAM as up to eight RAM disks, each RAM disk expanding or contracting dynamically as data is stored or removed from it.

Why develop a new operating system?

SMS2 has been developed because of the ever accelerating increase in the development of electronics, the problem is that software – especially system software – has not developed at the same rate. This is because developing software is such an enormous task compared to developing hardware, so all existing operating systems are based on technology that was well established in the late '60s.

What Furst have done is develop software that's on a par with modern hardware and doesn't have to rely on brute force to run on modern electronic hardware. Because the big companies have such a large established user base they

■ One of the first graphics programs for SMS2 is a brilliant vector graphics package displaying the Joker. The real jokers are those who don't recognise a good thing when they see it.

can't afford to turn around and say "scrap all your DOS and Windows software, here's a brilliant new operating system." That's what's happened with OS/2 on the PC, and that's why nobody uses it.





■ A small network set up in the Furst office in Southampton, there are two other STs on the network in other offices in the building.

consider to be a multi-tasking system by any stretch of the imagination, the Mac was designed to be a single-user, single-tasking system using multiple windows, that's just not the same as a multi-tasking

"SMS2 is highly accessible and easy to use system, everyone can get it and use it"

multi-windowing system. Just adding bells and whistles to an operating system doesn't make it multi-task.

Disk access using SMS2 is very fast and can read the entire

directory of a 245MByte hard drive on a MegaSTE in under five seconds. In contrast, our Mega STE takes ten seconds to read a single 25MByte partition under TOS. The only limit on the drive access speed is the time it takes to read data from the hard drive, tests have proved that SMS2 accesses drives at within five per cent of their theoretical mechanical limits – this is because the operating system puts so little overhead on data transfers. SMS2 can access data at about 50 times the speed of a typical mainframe system.

What's in it?

One reason for the development of SMS2 is that all the giant computer

SMS2'S MULTI-TASKING SYSTEM

SMS2's version of multi-tasking is different from MultiTOS, Windows and System 7 because all open windows are always active. With the other multi-tasking systems you only have one active menu bar on-screen at

once, hence only one truly active task.

With SMS2 each window is active, if you move the mouse pointer over a text editor window you can type text directly into it, if you move the pointer over another program you can enter keyboard input directly into that one without selecting the window first.

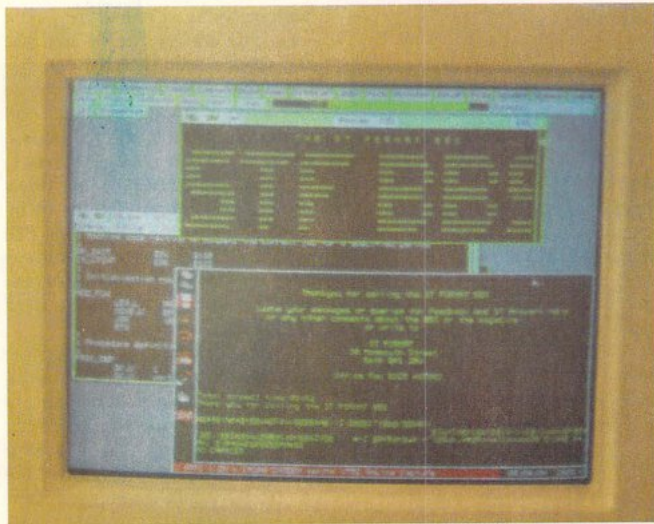
■ SMS2 running a PD fax program, a spreadsheet and a disassembler/monitor at the same time – each program is always active.



manufacturers are trying to produce small, embedded, intelligent operating systems that can be distributed – that's what they're all aiming for. These systems must be small enough that you can use it in telephones, TVs, video recorders and so on. The systems that have appeared so far have all been so gigantic that they only work with hard drives – try sticking one in your telephone!

SMS2 uses just 160K of code including the main kernel, all the device drivers for floppy, RAM and hard drives, the MIDI network, the serial port(s), the parallel port, the DMA devices, the keyboard, the screen and the ROM. There's a graphical user interface built into it and enough application programs built in to do some sensible work. 160K is considered a micro-kernel by modern standards yet SMS2 has a complete operating system on board and has all the objects needed to extend it. SMS2 contains everything that the industry giants have been paying millions to develop – and runs on an ST.

■ Calling the STF BBS using a PD comms program written in SMS2. The MegaSTE has a graphic card and SMS2 can cope with large screen monitors and 256 colour displays.



THE ADVANTAGES

SMS2 is a very low cost system to buy and install, the price is comparable to buying DOS and Windows for the PC – and that doesn't even come in hardware form. Add to this the fact that you can pick up a 1MByte ST and a high resolution monitor for around £150 and you have an inexpensive and powerful setup.

For example, using LBasic – the current title of the BASIC language under development – it's possible to write networking E-mail systems in about 20 lines of BASIC code, the same sort of software that large companies spend millions of pounds developing to run on their mainframes using teams of soft-

ware developers. SMS2 inherently understands the differences between different types of storage media, device drivers are built into the operating system itself. UNIX and similar operating systems have a real problem understanding the concept of removable media such as optical drives and CD-ROM drives. SMS2 supports the ICD Link and other ICD SCSI host adaptors with full support for 5.25inch SyQuest drives.

All this is built in to the hardware, there's no messing around with configuration files and stuff. When a new driver is developed the PEROM is updated by loading the new data into it.

Furst have plans for building some amazing systems in the future, but they can't indulge in these plans unless there is some real interest in what they've already done with SMS2, it's impossible to continue as a pure R and D (research and development) company unless people look at SMS2 seriously and consider it as an option.

The system has been offered to several major computer companies, typical reactions range from glazed eyes and blank expressions to SMS2 being regarded as a joke. One company rep thought that it was some kind of simulation game and another was convinced that the inkjet printer, being used as part of the demo, contained a powerful mini computer or a parallel processor and tried to dismantle it. A couple of Japanese companies have expressed real interest and can see the potential, then again, the Japanese usually spot the good stuff first.

So could SMS2 be the first of a new line of powerful operating systems for the ST with the capabilities of a mainframe computer? Fantasy? Perhaps not, the mainframes in use at the end of the '70s only had the processing power of the ST and typically used a maximum of 2MBytes of RAM. **stf**

SMS2

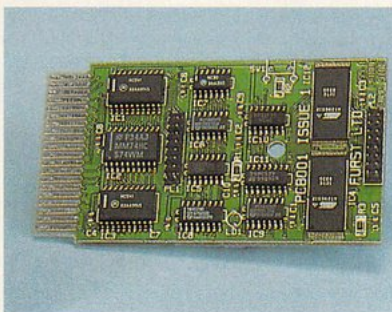
SMS2 is the powerful new cartridge based operating system for the ST, but what is it good for?

It's claimed to be the most powerful and versatile multi-tasking operating system in the world and it runs on your ST. In fact, you can only run it on your ST – there's no version for any other platform yet.

SMS2 doesn't physically look like much, it's just a standard little cartridge you plug into the side of your ST. Inside the deceptively normal case is an operating system that's on a par with UNIX, VMS and other powerful mainframe operat-



SMS2 comes packed in an unprepossessing cartridge with no indication of the powerful operating system lurking within.



Furst have used PEROM technology and squeezed everything onto a standard sized cartridge. The build quality of the cartridge is the best we've ever seen.

it runs at speeds rivalling that 66MHz processors – all this on a standard 8MHz ST.

Using the new operating system is quite different from the GEM

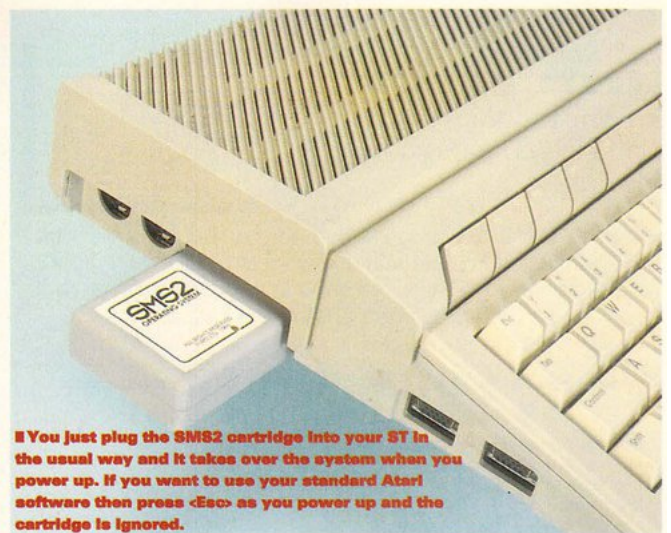
Desktop you are used to, it's much more like Xwindows on UNIX machines. Most of the familiar functions of GEM windows are retained although some of the window gadgets perform some unexpected functions.

There are none of the familiar drop-down menus of GEM, instead there are around a dozen built-in application programs stored in the PEROM that you can access from the keyboard using hotkeys or by selecting the program's button.

ing systems, all crammed into 160K of code and running on a standard 1MByte ST with a high resolution monitor. The cartridge completely takes over the system of your ST, in fact, the ST's own operating system is bypassed and SMS2 accesses the ST hardware directly.

It's really fast

Because SMS2 interfaces directly with the ST hardware, all operations run at a phenomenal speed. Disk access, printer operations and the built-in networking are as fast as you're ever going to see on any system whether it's on a mainframe, mini or micro computer. The built-in MIDI networking is so efficient that its speed is on a par with ethernet systems used on mainframes and office networks, even though the ST's MIDI ports have an abysmal 32K per second throughput rate as standard. Every part of the SMS2 operating system is optimised to such an extent that



You just plug the SMS2 cartridge into your ST in the usual way and it takes over the system when you power up. If you want to use your standard Atari software then press <Esc> as you power up and the cartridge is ignored.

Each application is loaded into memory as an executable object – or Thing – and appears as a button across the top of the screen, you can decide how many or how few of the applications you want to load.

SMS2 uses a CLI (Command Line Interface) for many of its functions – but don't cry out in despair, it's not as complicated as MS-DOS or any of the hoary old PC style systems. In fact, the CLI instructions are quite easy to get used to after a couple of sessions with the OS and you're soon bashing away at the keyboard like a lifelong CLI addict. The fact that



An SMS2 screen packed with different applications running at the same time, and each one is active. All you do is move your pointer over a window and you can enter data directly into the application – you don't have to select the window because it is already active and recognises that the pointer is over it.

"SMS2 is a powerful operating system with a smattering of software"

all the commands are clearly explained in the manual is a big reason why it's so easy to get to grips with the CLI.

Is it worth it?

SMS2 is a powerful operating system with a smattering of software converted from UNIX already available. There's not a large choice of software available for it as yet, but you can always revert to your ST operating system by holding down the <Esc> key when you boot your ST. SMS2 is designed to be used as a basis for a powerful processing system using your ST as a dumb terminal, you can use SMS2 to develop your own software or use it for an office-wide networking system using one ST with a hard drive as the main file server.

SMS2 has great potential as an alternative – and powerful – business and development operat-

ing system, but there is no clear idea as to what to do with it if you are just a run-of-the-mill ST owner. You can plug it in, switch on and have a multi-tasking environment running immediately, so that's ten out of ten to Furst for technical innovation, but only about six out of ten for general usefulness. It's a hell of a system just waiting to be exploited, so exploit it! **stf**

SMS2 software

SMS2 has been around in one form or another for around two years, and has been in development for around five years. This long development period means that there is already a quite substantial base of PD, Shareware and commercial software available ranging from spreadsheets to fax software. More software is being developed by existing SMS2 users.

SMS2

£135 per cartridge from First Ltd ☎ 0489 894674. Mono monitor required, minimum 1MByte recommended

Highs

- Just plug-in and go.
- Built-in networking.
- Fast and powerful.
- Simple to learn and use.

Lows

- Not much software yet.
- Expensive as a one off.

What else?

- UNIX computers
- contact IBM for details ☎ 0705 561000.

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