TRANSTECH

parallel technology

THE PARALLEL PROCESSING BUSINESS

The last decade has seen the emergence of parallel processing as an accessible technology. Creating the ability to resolve computationally intensive problems, by splitting and spreading the load across banks of communicating processors, led to the development of RISC and array processors, and on to transputers. These silicon solutions allowed the cost of processing power to fall dramatically, 100 MIPs or more on an IBM PC plug-in board. Having brought super-computer power to the desk top, parallel processing had ensured its inevitable route to acceptability.

The applications in business and industry now stretch from dealing systems in the financial world, via video telecommunications, graphic systems satisfying film industry requirements, to flight control systems. The challenge is to ensure that Open System Standards, now accepted world wide, are applied to parallel processing; only then will the increasingly mature areas of application accept and use this power within and alongside current commercial and industrial systems.

Operating as the commercial and technical interface to the users and developers of parallel processing applications calls for an unusual combination of skills. It requires a team that is as comfortable with silicon advances as with new operating systems, people who can customise turnkey solutions for commercial applications as easily as they specify and develop parallel processing kernels.

The TRANSTECH Group is successfully fulfilling this role; it has the expertise, the resource and the experience.

It is the total solution vendor for parallel processing.

HEADQUARTERS HIGH WYCOMBE UK

THE COMPANY

Transtech was formed in March 1986 initially as the research, government establishment and education agent for INMOS transputer based products. The portfolio was quickly expanded, to include systems from the key parallel processing start-ups. Commitment to customer support and service, backed by an expert technical team, has driven Transtech's growth and it is now recognised as Europe's leading transputer supplier. Already a major manufacturer, Transtech has led the development of open systems for both parallel processing hardware and software; this proven on a growing family of host environments.

FACILITIES

Expanding into an international group, the headquarters of the operation is a modern facility, red brick, 4000 sq.ft. and equipped to support the planned growth. It is well located being a few minutes from the centre of High Wycombe, Buckinghamshire, giving easy access to the key industrial and technology zones, and to Heathrow Airport. This ensures fast and easy access to customers throughout the world, as well as within the UK.

SALES AND SERVICE

Transtech has built dedicated sales and customer service teams, these being experienced people in both the commercial and technical requirements of supporting high performance systems. Combining these skills with a well developed contact and information database has given much to Transtech's reputation for satisfying customer demand.

Efficient stock control and shipment expertise that is world-wide are further evidence that Transtech can deliver solutions, when they are needed.

Quality assurance is a crucial element, all products having a 24-hour Burn In before allocation to stock, and then each product is again functionally tested prior to customer shipment. Full hardware and software warranties are given, with maintenance contracts available across the complete range of products; these are supported by the service department. It is fully equipped and trained to deal with the wide range of systems and hosts supported, the aim being a 24 hour turn round. A necessary part of success as a total solution vendor.

TECHNICAL SUPPORT

Nobody can seriously operate in the parallel processing market without a highly skilled and experienced applications team. Transtech's team of graduate engineers are actively working with customers to develop parallel processing applications. The same engineers are responsible for systems integration, with access to the hardware and system software development engineers; responsibility further extends to on-site installation, ensuring continuous involvement.

Headquarters has an extensive demonstration suite, with the current systems and hosts available. The applications and sales teams are able to configure systems to customers requirements and compare solutions built on a variety of hosts. All part of the commitment to total support from one vendor.

Training is vital to bringing new technology on stream quickly, both within a customer's operation and at Transtech. The training facility is excellent, it holds over 30 in comfort and contains all the aids necessary, including a full disc to screen presentation system.

Transtech's combination of experienced engineers supported by excellent facilities for demonstration and training is essential to the proper support of high performance systems.

DEVELOPMENT AND MANUFACTURING

The entry of Transtech into design and manufacture came soon after starting business, and this has evolved into two leading teams developing the range of parallel processing systems.

Hardware has embraced the motherboard/daughterboard concept, bringing product to market from simple plug-ins for standard PCs to fully configured systems based on high performance engineering workstations. These products are among the most advanced available with superb quality of design, performance and reliability; they lead the development of open system parallel processing. This team has been designing parallel system products since the first availability of silicon, some members having been intimately involved in its evolution.

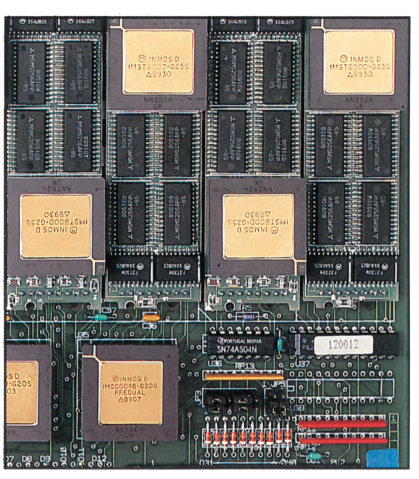
In parallel, the software team's output of both operating systems and support routines fully utilises the power and flexibility offered by the range of host/hardware options. The core of this team was responsible for the first clean interface between UNIX and parallel processors.

Both teams are fully supported with access to all the current host systems and with facilities to configure test and support all the product in development. The schedule of product advances is based on Transtech's commitment to leading the open system expansion of parallel processing.

With manufacture under direct control, new systems and improvements can quickly be assimilated into the range. The feedback from customers, added to market forecast, ensures that the business is controlled to the customers benefit and thus allows the latest specifications to be properly integrated and in a timely manner. The range is built and tested alongside the host systems, ensuring that quality and reliability match the environment within which it has to operate.

CONSULTANCY

Combining the skill base of the Transtech teams gives an unequalled capacity for providing consultancy. Not only can advice be given on systems specification, but on suitability, application and training, all with a range of options and none causing commitment to a closed system. The client will be able to embrace industry standards and match these to his processing need.

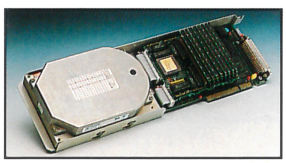


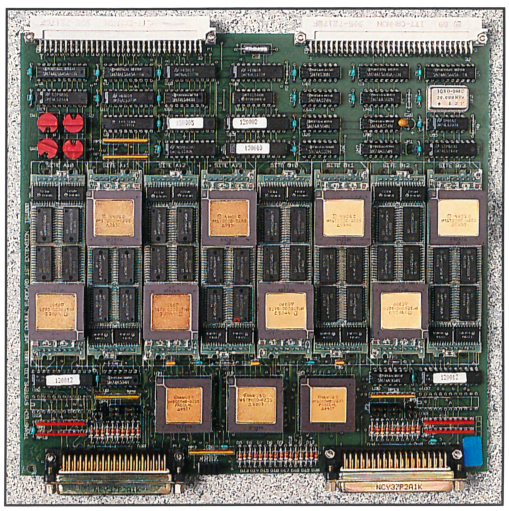
This dedication to customer problem solving, coupled with the commitment to open systems, has lead to Transtech's emergence as the leading supplier of parallel processing solutions.

THE PARALLEL ENVIRONMENT

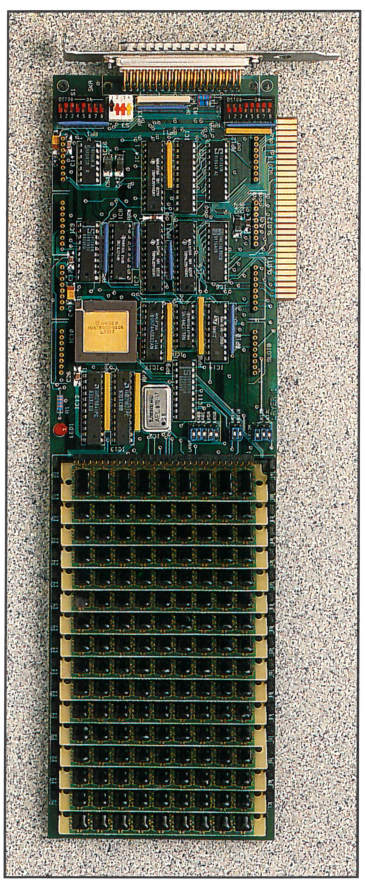
With parallel processors interfaced to a number of host machines, the goal is to create environments where the systems operate cleanly within the industry standards used by the main hosts (PC AT, Sun, HP, VME etc.).

Such a scenario demands that a range of options allows expandability where necessary, as parallel processing calls for variable numbers of processors as an application gets developed or processing power increases. The software environment which can allow such reconfiguration but within standard operating systems, has been enhanced by Transtech and is the key to true open systems.





The natural base for development systems was the PC AT family, and it was from there that applications first evolved. This has lead to new standards of host machine, utilising the performance and operating systems of the sophisticated workstations now available. This equipment includes the offerings from Sun, Hewlett Packard, Apollo and Apple. Similar applications have evolved for industrial standards like VME and Eurocard, which utilise the software standards set by the major systems.



The philosophy behind the availability of such a wide range of host machines is that of small standardised daughter boards married to motherboards targeted at each host. Both types of board can be highly functional, offering a wide range of application specific interfaces and processing/memory options. Extending this philosophy to the communication, protocol and instrumentation standards is now the main challenge.

To further this Transtech has developed a generic system environment, GENESYS, a parallel run time package operating seamlessly on top of UNIX. It is intended to be both host and processor independent.

Combined with the development of simplified installation packages and the attention to ensuring functionality, the total support approach of Transtech has brought integrated solutions to the evolving parallel processing market.

HARDWARE FAMILIES

The basic daughterboard / motherboard design is based on the initial transputer modules, or TRAMs. The first TRAMs containing a transputer plus SRAM or DRAM, with the inter-module communications based on the very effective transputer links.

Transtech has a large and expanding range of TRAMs, a sample of which includes:

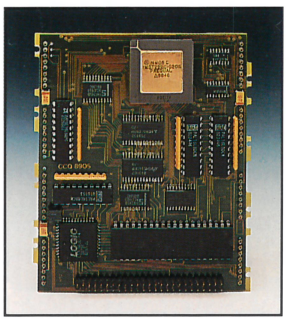
32Bit processoring modules, with an optional on chip floating point unit, and memory from 32KBytes SRAM to 16MBytes of DRAM.

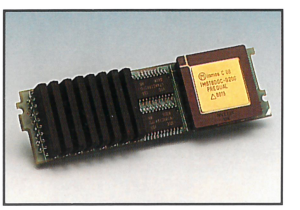
High performance processing modules featuring the IMST801 with a fast non-multiplexed memory interface to between 256K and, currently, 8MBytes of RAM.

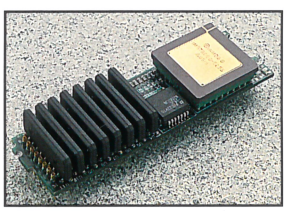
Application specific modules with supporting software for a range of graphics TRAMs supporting 512 x 512 8Bit pixels to 1280 x 1024 8Bit pixels, fast on-line disk storage, D to A conversion and EPROM bootable devices.

Standard interface modules to communicate with the outside world using RS232, IEEE, Centronics, Ethernet or SCSI.

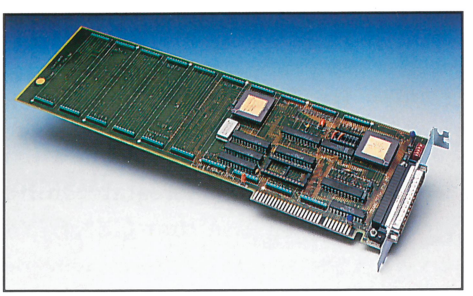
This names but a few, Transtech is currently adding one TRAM per week to its existing range.

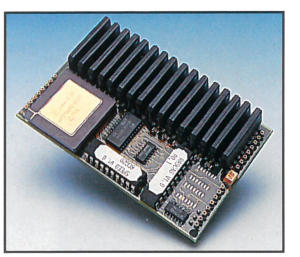


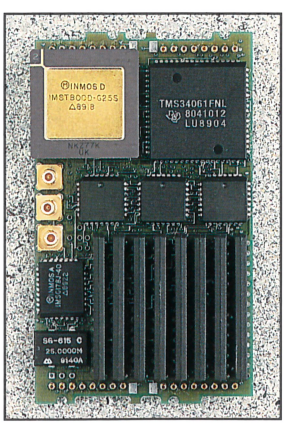


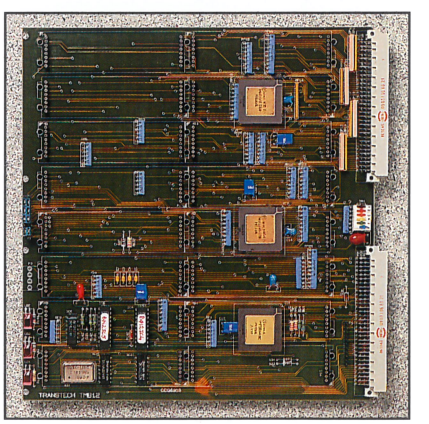


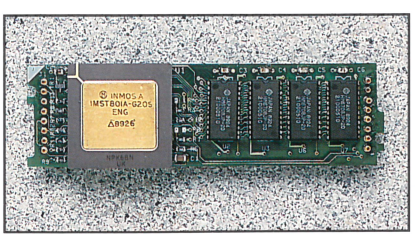
Motherboards are available for a wide range of hosts, these including :- PCAT, PS/2, SUN, HP, APOLLO, MACINTOSH, ATARI ATW, VME and EUROCARD







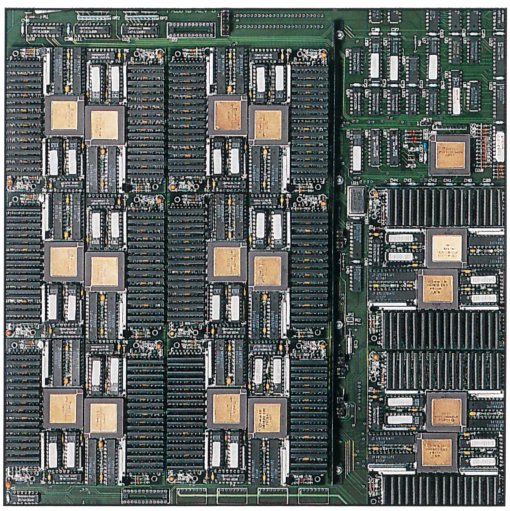




MULTI-COMPUTING PLATFORM

Taking the TRAM range and designing them into the Sun workstation, via a versatile motherboard , has resulted in the evolving family of Multi-Computing Platforms. These offer unrivalled price performance capabilities, based on a modular parallel processing system capable of up to 2.25 MFLOPS per node operating within the Sun environment.

A system in excess of 480 MIPS or 72 MFLOPS is possible from one platform, and with a chassis holding up to 12 platforms the result is staggering amounts of compute power. This operates under the standard UNIX system while running the compilers and library routines available for parallel processing.

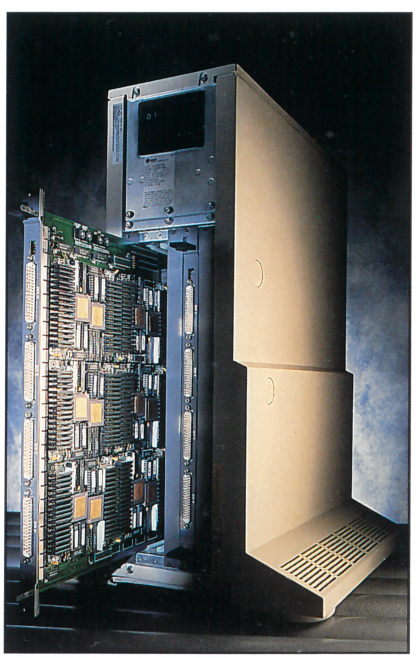


GENESYS

GENESYS is a GENEric operating SYStem which has been designed specifically to meet the requirments of distributed memory, multiple processor systems. Initially implemented on the transputer, GENESYS provides the applications programmer with a flexible but consistent interface to UNIX which allows for maximum utilisation of existing software.

GENESYS is both host and processor independent, and as such embraces the concepts of Open Systems. Transtech is establishing a world-wide collaborative programme to ensure that GENESYS is enhanced and integrated in line with the needs of open systems and parallel processing.

The most important result of this programme is the simplicity and flexibility of creating turnkey high performance systems capable of many 100s of MFLOPs, yet operating within known environments without forsaking any performance or flexibility.



SOFTWARE SUPPORT AND SYSTEMS

All of the current parallel software, compilers and development systems for parallel processing run on the Transtech equipment. Following its total solution commitment Transtech has developed the necessary system installation modules and TRAM support modules, in addition to GENESYS .

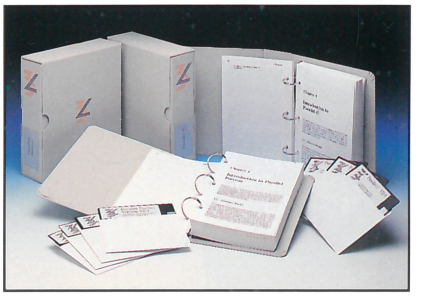
A sample of the software packages available includes:

Standard programming languages such as C, Fortran, Pascal as well as the parallel language occam.

Parallel operating systems for example GENESYS, Trans-Idris, Helios and Express.

Applications packages for X-Windows, disk filing, graphics and engineering analysis.

All relevant new software packages will be supported by Transtech in addition to new products being developed in-house. As future developments come through, Transtech's open system structure will ensure that new software packages will run, where the standards have been adhered to.



FULLY CONFIGURED SYSTEMS

The ease of combination of the Transtech range of products, combined with direct supply agreements with the key hardware suppliers gives Transtech all the elements to supply configured systems.

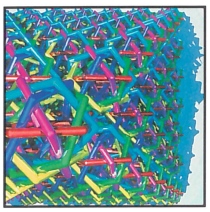
This is further supported by the Transtech open system philosophy, where industry standards are the basis for expansion and evolution, conforming to bus structures, interfaces and data transmission protocols. Future compatibility is ensured via this discipline and it is the only way for the systems designer to avoid the impossible upgrade trap, not least of which is the associated expense. The capability of combining the elements of their product range and to configure the necessary hardware and software in the correct host for the application give Transtech an unrivalled ability to supply solutions, for today and for the future.

With its combination of expertise, support and experience Transtech is the best choice for the supply of fully configured turnkey solutions to parallel processing needs.

APPLICATIONS

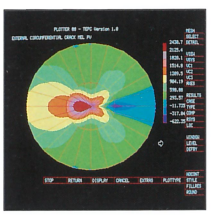
Transtech has delivered over 900 systems and the applications range from financial modelling to real time image processing. Parallel processing has gained recognition world wide as the answer to compute intensive, variable power and distributed processing needs; it is in production equipment for military, space and commercial uses. It is being applied in all areas of computing and by the largest electronics and computer corporations in the world, with particular success in the USA and the Far East.

Further examples of Transtech's influence in leading this technology are:-



CENTRAL ELECTRICITY GENERATING BOARD

Engineering analysis plays a vital role in the Nuclear Industry particularly to resolve the questions posed by the Installations Inspectorate. Transputer based PC add-in boards have allowed dedicated and powerful computing resources to be allocated to individual engineers. For instance the multi-tasking of parametric surveys is run at twice the speed as with a VAX 11/780.

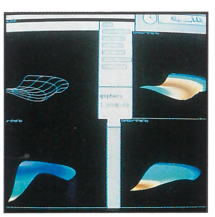


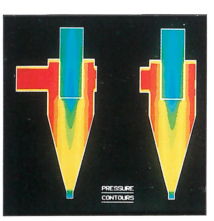
DIGITAL COMMUNICATION SWITCH, CAMBRIDGE CONSULTANTS

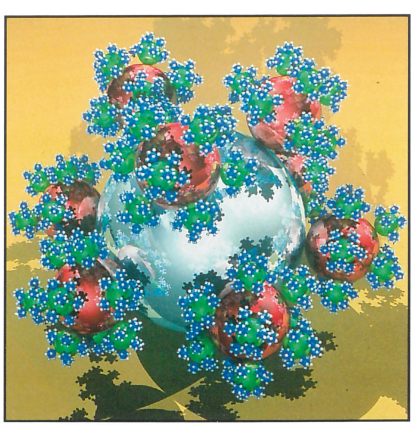
The system is a high density local area network supporting several hundred users and includes a design tolerant to all single fault conditions. Involving 20 man years of effort the project utilises the GENESYS run-time environment to provide communications between software processes on the Sun host and embedded transputer hardware.

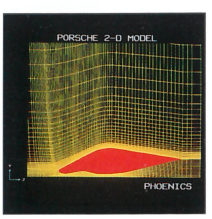
FINITE ELEMENT ANALYSIS, ROCKFIELD SOFTWARE

The applications packages include stress and shock modelling, and simulation of dynamic, transient and fluid systems. Transtech's boards provide the powerful and cost effective, desk top, parallel processing facility.







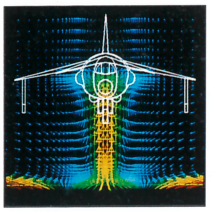


Transtech wishes to extend its thanks to the following companies for their help and contribution to this brochure :-

University of Bristol Department of Computer Science, C.H.A.M., National Power Berkeley Nuclear Laboratories, Rockfield Software.

CORNELL THEORY CENTRE, CORNELL UNIVERSITY

The centre, along with the Ohio State Supercomputer Centre, developed the transputer based operating system, Trollius, which forms an integral part of GENESYS. Both universities use the MCP1000 as their main development environment. Transtech is working with both teams to enhance Trollius for other 32-bit processors.



TRANSTECH CUSTOMER LIST

A.E.R.E.

A.R.E.

BBC

BP

BRITISH AEROSPACE

BRITISH TELECOM

B.T.R.L.

C.E.G.B.

C.E.R.N.

CIVIL AVIATION AUTHORITY

COMPUTING DEVICES

DOWTY MARINE

FERRANTI

G.C.H.Q.

G.E.C.

GENERAL ELECTRIC

HEWLETT PACKARD

IBA

IBM

INMOS

I.T.E.C.

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ROLLS ROYCE

ROYAL AIRCRAFT ESTABLISHMENT

R.S.R.E.

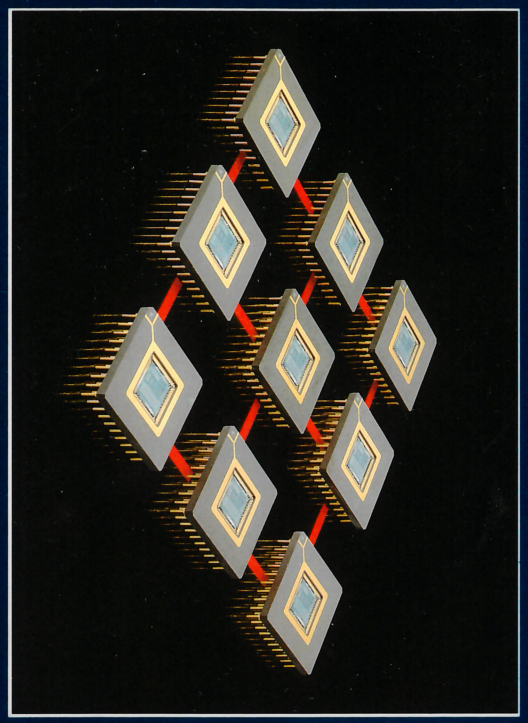
RUTHERFORD LABS

SMITHS INDUSTRIES

TATA ELECTRIC

THORN EMI

UKAEA



TRANSTECH Devices Ltd.
Unit 17
Wye Industrial Estate
London Road
High Wycombe
Bucks
HP11 1LH
UK

Tel: (+44) 0494 464303
Fax: (+44) 0494 463686
Telex: 838844

TRANSTECH Parallel Systems Corporation
120 Langmuir Laboratory
95 Brown Road
Cornell Business and Technology Park
Ithaca
NY 14850-9430
USA

Tel: 607 257 6502
Fax: 607 257 3980

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