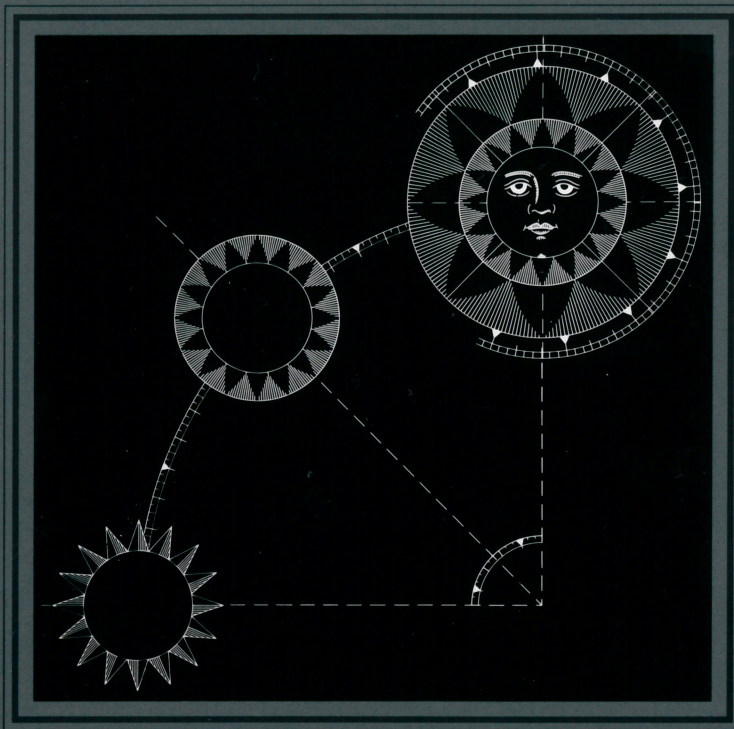


an introduction
to **iq** systems

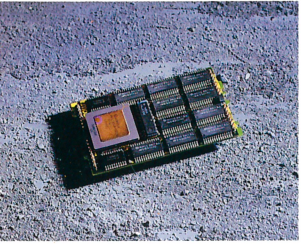


innovation and quality

iq
systems charter

*To provide an extensive range of
innovative modular hardware and software
products to meet the high quality
standards and service requirements
of the OEM and system developer.*

The Foundations



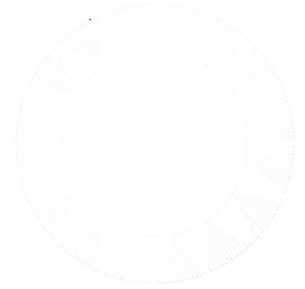
A B410 size 2 TRAM.

This provides a complete 5 MIPS (Million Instructions Per Second) processing subsystem on the same size as a charge card.

For more than a decade, INMOS has been known

as the leading semiconductor manufacturer in the field of parallel processing. The INMOS Transputer has set new industry standards of performance and flexibility.

More recently INMOS has taken another major step forward with the introduction of their new 'iq systems' business. Using the proven capabilities of the transputer as a foundation 'iq systems' has launched a range of 'System modules' designed to revolutionise system design during the coming decade.



Future-Proof Architecture

In the increasingly competitive electronic systems market, time literally equals money – time to design, time to build, and time to market. Saving time gives you a major competitive edge.

With the launch of 'iq systems' INMOS has built upon its established reputation for *innovation and quality* to provide system builders with a future-proof architecture. 'iq systems' is dedicated to the design, production, and support of an extensive range of modular software and hardware products for integration into end-user systems.

This includes TRAMS (Transputer Modules), designed as multi-processing packages to fully exploit the power and potential of the transputer.



INMOS has central facilities in Bristol, Duffryn and Coed Rhedyn (UK), and Colorado Springs (USA).

Headquarters including design and marketing groups are based in Bristol (above top) with transputer fabrication performed in Duffryn (above bottom).



The Modular Approach

System upgrades often require time consuming and costly re-designs. 'iq systems' has overcome this problem!

Complex existing hardware and software combinations become re-usable, the product-life cycle is extended, and valuable extra performance gained at minimal cost.

For the first time the goal of 'scalability' is actually achievable – thanks to the unique processing and communications characteristics of the transputer. TRAMS have the advantage of enabling the system builder to increase the functionality and performance of a system

incrementally and at low cost. There will no longer be the need to change existing software or re-design the hardware.

The 'iq systems' modules are based on the advanced INMOS semiconductor components. These modules mount onto a range of motherboards which interface with a number of standard buses and communications protocols. Communication between modules is facilitated by the dedicated high performance communication channels of the transputer.

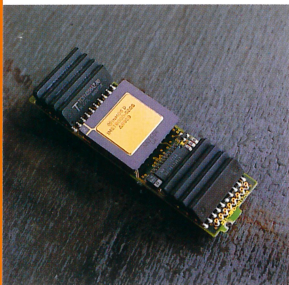
The 'iq systems' family of TRAMS has been designed to be compact, versatile and easy to manufacture using low-cost production technology. TRAMS have a standard format; with a 16 pin communications interface. The smallest member of the family is half the size of a credit card and contains a 32 bit microprocessor complete with a 64 bit floating point unit and 1 Mbyte of memory. No other 32 bit microprocessor provides such a compact solution. There is no limit to the number of TRAMS that could be used in a single system. The TRAMS

can be incorporated into almost any system when plugged into a choice of standard motherboards such as PC and VME.

'iq systems' also offers a custom design service for those applications requiring special motherboards or modules.

The TRAM philosophy means that at last systems can be designed to be truly 'scalable' – further TRAM modules can be added without the need to redesign the software. This enables system designers to develop new products based upon a common software and hardware architecture – with obvious advantages such as lower development costs, an easy upgrade path, and reduced component inventories. These factors give benefits for a whole spectrum of end applications including fault tolerant control systems, robotics, instrumentation, telecoms, office automation, PC accelerators and low cost supercomputers.

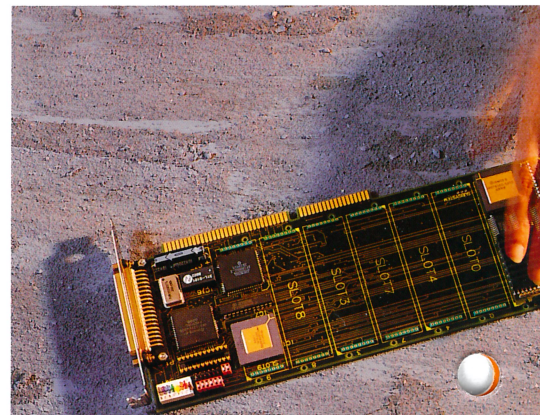
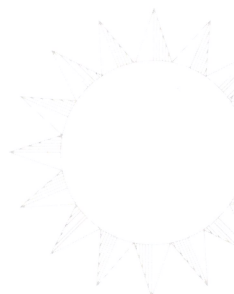
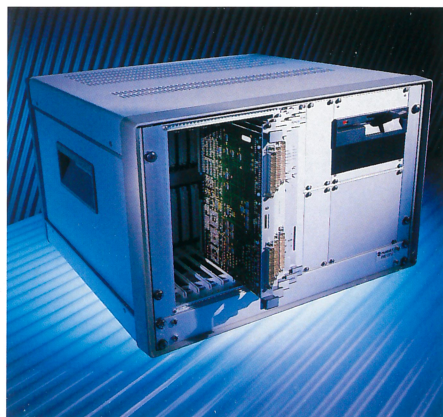
The same modular hardware may be used for development and end systems. This drastically reduces time and cost of prototype to final product migration.



Above: Transputer module incorporating IMST800 32 bit transputer with 64 bit FPU, and 1 Mbyte of zero wait state DRAM.

Right: Motherboards are available for a variety of platforms.

It is possible to build a system providing over 800 MIPS in a 6u 10 slot VME system using TRAMS and standard boards from INMOS.



Development Capability

As part of INMOS, and with the strength of the multi-national SGS Thomson Micro-electronics behind it, 'iq systems' can offer customers the highest level of service including an established design capability and a worldwide network for pre- and post-sales support.

The 'iq systems' development team makes extensive use of computer aided design (CAD) techniques to ensure total design accuracy and short development times. Employing CAD through from schematic entry to artwork generation means fast, high-quality design engineering. All designs are then subjected to rigorous validation procedures, including environmental testing.

Over a number of years the Company has built up an extensive library of system functions and circuit designs which can be used for the rapid development of new standard and custom products.

The service offered by 'iq systems' extends to customised module design, advice on integration issues, and the writing of application software.

The extensive range of 'iq systems' functions means that integration and prototyping is simplified; but where there are difficulties the 'iq development group will help to address the hardware/software relationship to ensure optimum system performance.

The combination of experience, design and development capability, and worldwide customer support, make 'iq systems' an exciting innovation for the system builder.

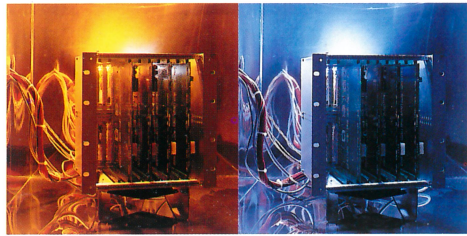


Simulation and layout using Computer Aided Design techniques provide on line design rule checking. Optimisations of electrical and layout characteristics using CAD ensure efficient and reliable implementations.

Designs are accomplished using the very latest quality design tools. This ensures total design accuracy and short development times at INMOS design facility in Bristol.



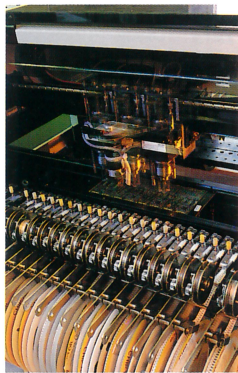
Manufacturing and Quality Assurance



'iq systems' products undergoing hot and cold cyclic testing.



INMOS products are subjected to extensive functional testing both before and after environmental stress testing.



Automatic insertion technology reduces production lead times and improves product quality and reliability.

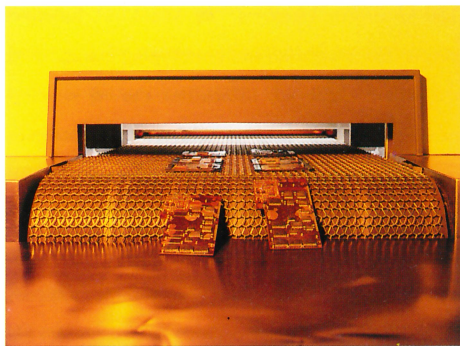
All 'iq systems' products are assembled at INMOS approved facilities, conforming to the rigorous requirements of the INMOS quality program. Assembly is multi-sourced as a matter of policy, taking advantage of supply and skill resources worldwide.

All 'iq' manufacturing facilities are subject to QA auditing to verify adherence to agreed assembly and QA procedures. INMOS QA takes samples of every final production batch to correlate outgoing quality levels.

INMOS quality procedures cover the build specifications, data logging, product testing, and documentation standards.

Full records are maintained throughout the manufacturing process to ensure batch traceability.

Prior to shipment all products are subjected to a high temperature soak and final test screening. Customise test flows can be arranged on request. Data gathered during product testing and product use is continually analysed to further improve 'iq' product performance.



INMOS products going through automated flow soldering process.

PRODUCT FLOW

- PCB components
- PCB clean
- Mask
- Solder cream
- Place SMT components
- QC inspection
- Reflow
- Glue
- Place SMT components
- QC inspection
- Cure glue
- Insert through hole components
- Wave solder
- QC inspection
- ATE in circuit test – first pass
- Environmental stress cycling
- ATE in circuit test – second pass
- Functional elevated temp. soak test
- QC inspection
- Final packing
- INMOS QA sample test and inspection



- Raw Material Procurement
- Manufacturing Process
- QA Gate

Worldwide Support

The 'iq systems' are supported worldwide by a comprehensive network of field and regional based engineering centres; from here engineers are able to support the design-in and use of all iq products. Many of the engineers have been closely involved in the iq product development groups, and can therefore provide technical support at the highest level.

In addition to design assistance, training and application advice, there is a fast board replacement service, and comprehensive maintenance contracts for all software components.

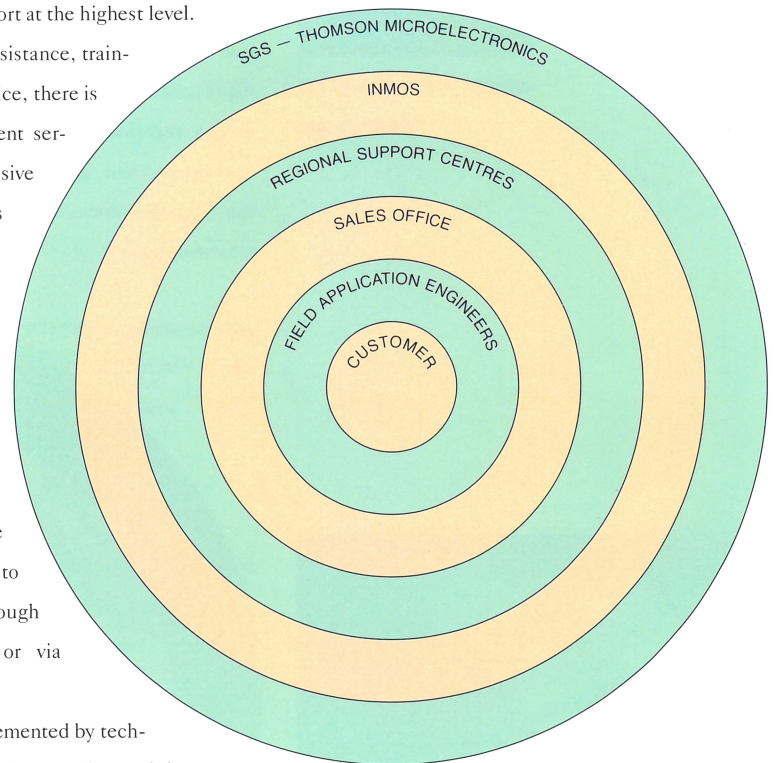
Help is provided through a number of channels.

Each sales office includes field engineers to provide first-hand assistance to customers either through visits, by telephone or via Email networks.

Sales offices are complemented by technical support centres, where product training, demonstrations, and long-term technical support is handled. Here, engineers will generally be working on a number of customer projects, and in some cases providing an additional software design service.

Where appropriate, customers can visit our iq development centres. This is particularly useful when custom products are required, and customers need to discuss current and future design needs directly with the engineers.

Commercial support is made available through the network of local sales offices, who will liaise with the engineering resources described above.

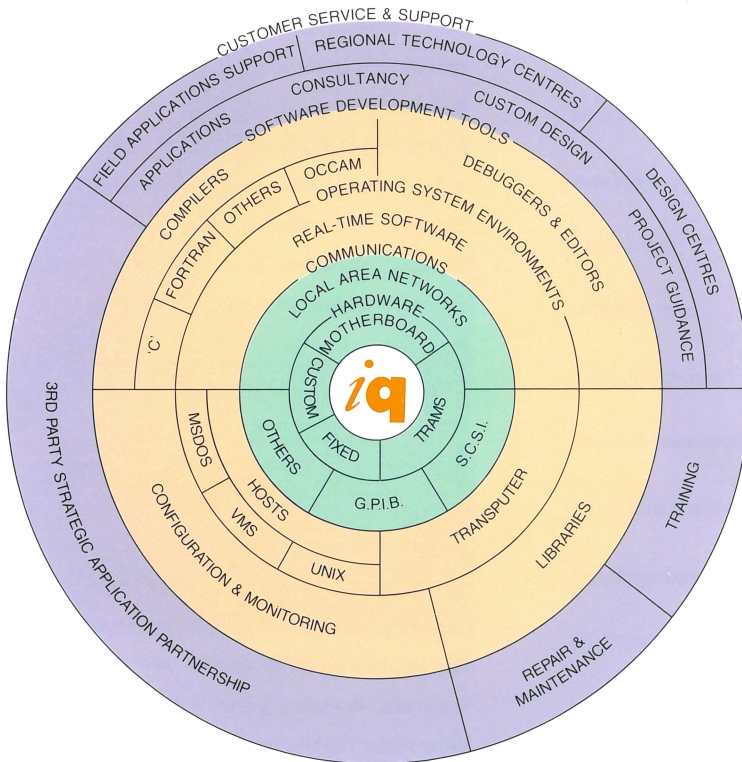


INMOS believes support and service for its 'iq systems' business is the key to its success. It has therefore developed a comprehensive network to provide the right level of support to the customer both locally and centrally, before and after sales.

The INMOS Service

INMOS Ltd is a member of the SGS Thomson Microelectronics Group and through its international presence can provide effective commercial and technical support for 'iq systems' products worldwide.

With the INMOS reputation for *innovation and quality* behind it, 'iq systems' can provide customers with everything necessary to bring true scaleable systems to market in record time. 'iq systems' products can also help designers extend the product life cycle, maintain R & D investment, and get ahead in the race towards the high-performance, cost-effective systems of tomorrow.



INMOS customer service and support complements the range of modular hardware and software products to provide the innovative and quality solutions required by the systems builder.

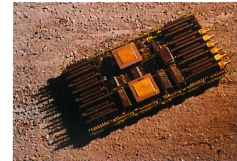
Hardware

The following are the 'iq systems' products currently available. The range is being constantly extended, so please contact your INMOS representative for any functions required that are not listed.

1. TRAMS:

Compute only – 32 Kbytes – 8 Mbytes with choice of 16/32 bit transputer, with or without FPU.

Special applications – Graphics, Ethernet, SCSI, Flash EPROM, GPIB, Vector Processing.



B419 Graphics application TRAM

2. MOTHERBOARDS:

VME (Master and Slave), NEC 9801, PC XT/AT bus, SUN

Interface boards to 'iq systems' products are also available for: VAX, MACINTOSH 2, HP, APOLLO, plus many others from third party suppliers.

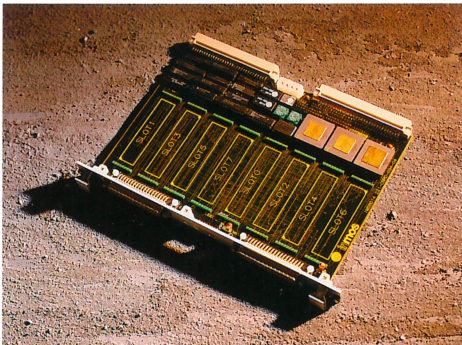
3 SOFTWARE:

Applications.

There is a wide range of application tools available for the transputer including packages for vector processing libraries, simulation, probability analysis, finite element analysis and many more.

Development.

For development INMOS supports 'C', PASCAL and FORTRAN, in addition to occur the industry standard language for parallel processing. Hosts include: IBM PC, SUN, VAX and NEC 9801. Other tools and compilers available include ADA, BASIC, CSPROLOG, Numerical libraries, Profiling tools and more.



VME Motherboard



Other Associated Literature

Corporate Brochure "Inventing the future"

INMOS Approach to Quality and Reliability

Transputer Development and iq Systems
Databook

Transputer Family Brochure

Transputer Development Brochure

The Transputer Databook

ADA on the INMOS Transputer

INMOS Spectrum

Reliability Update

Technology for Defence brochure

Transputer Applications Notebook:
Architecture and Software

Transputer Applications Notebook:
Systems and Performance

Transputer instruction Set / Compiler
Writer's Guide

Tutorial Introduction to OCCAM Programming

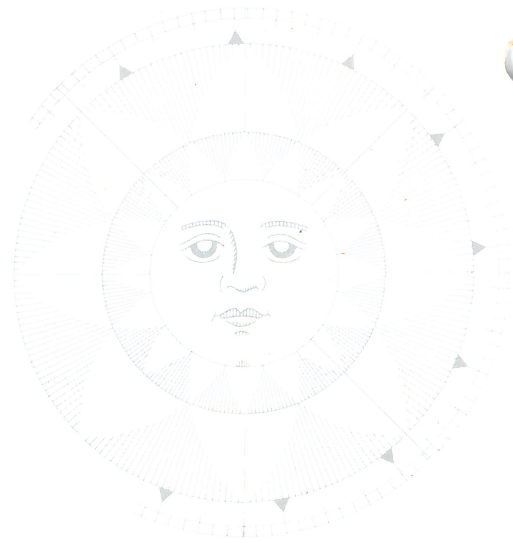
Transputer Technical Notes

Transputer Architecture

Transputer White Pages
(Software / Consultants)

Transputer White Pages
(Hardware and Systems)

occam 2 Reference Manual



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