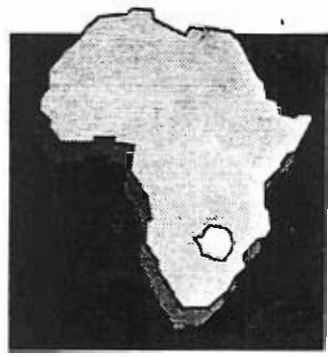
Africa's potential IT leader for the 1990s



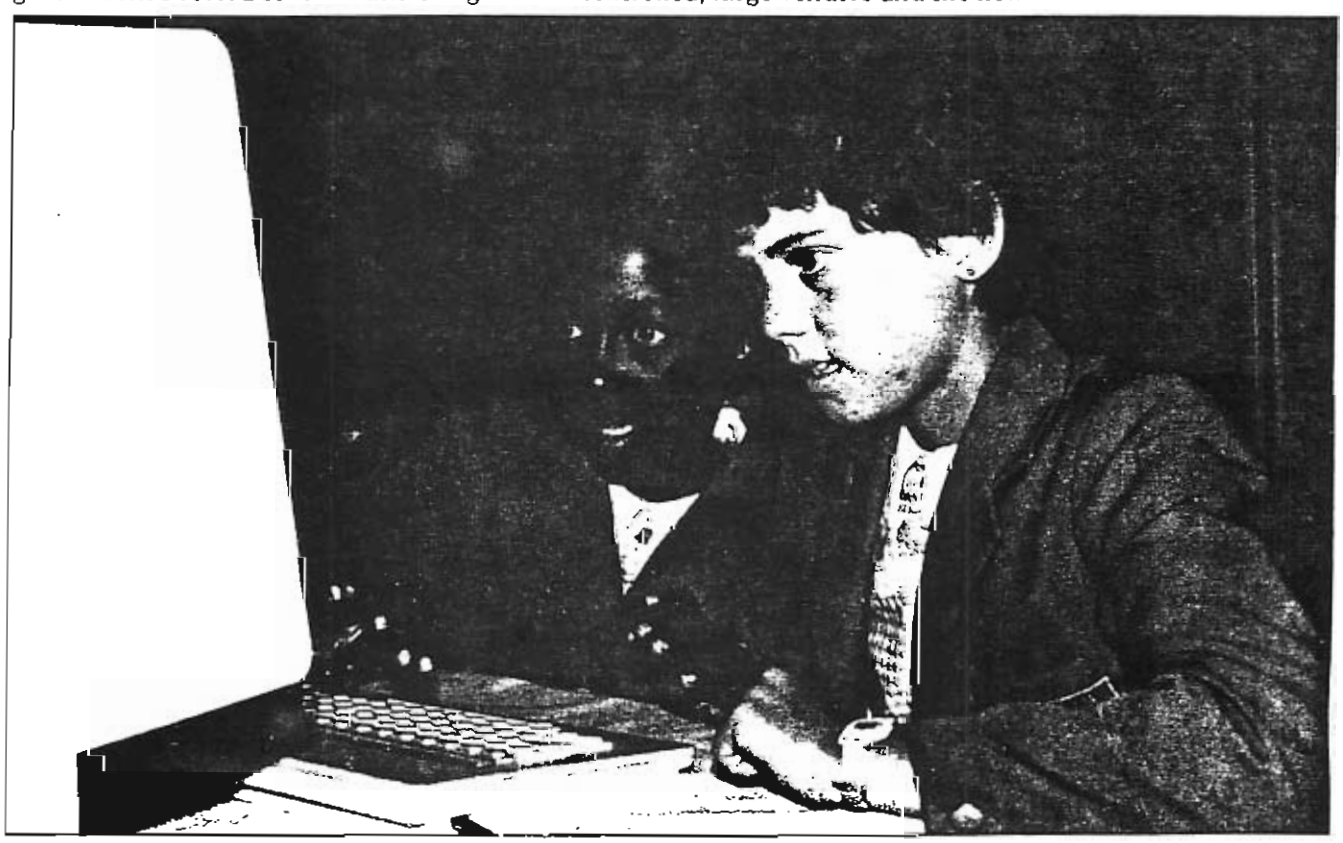
SEAN MORONEY surveys Zimbabwe's burgeoning computer industry and finds that there are just as many problems as there are opportunities.

Although frought with marketing problems, there is no doubt that Zimbabwe's computer industry is one of the continent's most lively. Computers have penetrated all economic sectors and most government departments, from the President's Office to tobacco farming.

Foreign currency constraints occupy a large part of management time and every computer vendor has to engage in complex (and sometimes expensive) import procedures. There is a desperate need for rationalisation, implying government intervention. But few vendors would welcome it, fearing the reduction of competition and the possible creation of monopolies, to their own detriment. The government's record so far in allocating import licences and foreign exchange for computer imports in an erratic, inefficient and sometimes biased manner has damaged its possible role as an effective broker in rationalising computer import procedures.

The import licences that government allocates are often "sold on" to established vendors, although the licencee officially does the importing. Equipment imported this way earns the licencee a whacking mark-up, which is passed on to the final purchaser. This excessive profiteering results in Zimbabwe's computer users having to accept prices that are probably the highest in the world, if calculated at the official exchange rate (see box). "Official" vendors claim that they make only 5-10% profit on these licencee imports, deriving most of their revenue from after-sales maintenance contracts.

Besides the gross profiteering by licencees, this system creates tensions in the industry between the established, mostly white-controlled, large vendors and the new



Theirs is the future: Rapt with concentration, eyes alight with achievement, Chiwoniso Maraire and Gail Smit of Chisipite Junior School in Harare typify the growing computer awareness among young Zimbabweans.

"emergent black businessmen", who are favoured with import licences (see feature on KDS). On the other hand, the Computer Suppliers' Association is viewed by the smaller companies as being a largely white-controlled cartel, defending the interests of the vendor establishment.

But the association claims its main objective is to maintain and improve standards and ensure good service for customers.

Whatever the merits of each side of this argument, it is clear that the Zimbabwe business community will continue to suffer until these two branches of the computer vendor community combine forces to rationalise the industry and engage in a collective policy dialogue with government.

And the information basis for such a dialogue is currently being prepared. Francis Hernandez-Lapuerta's **Design & Consultancy** company has been commissioned by the Ministry of Trade & Commerce, the Computer Society and the Suppliers' Association to conduct a comprehensive survey into computer usage in Zimbabwe. A 16-page survey has been sent out to all vendors and major users and returns are expected in September. **Delta Corporation** is providing two personnel to analyse the returns using Oracle.

This survey presents an ideal opportunity to assess the current situation and to formulate a national computer strategy.

Other bright spots

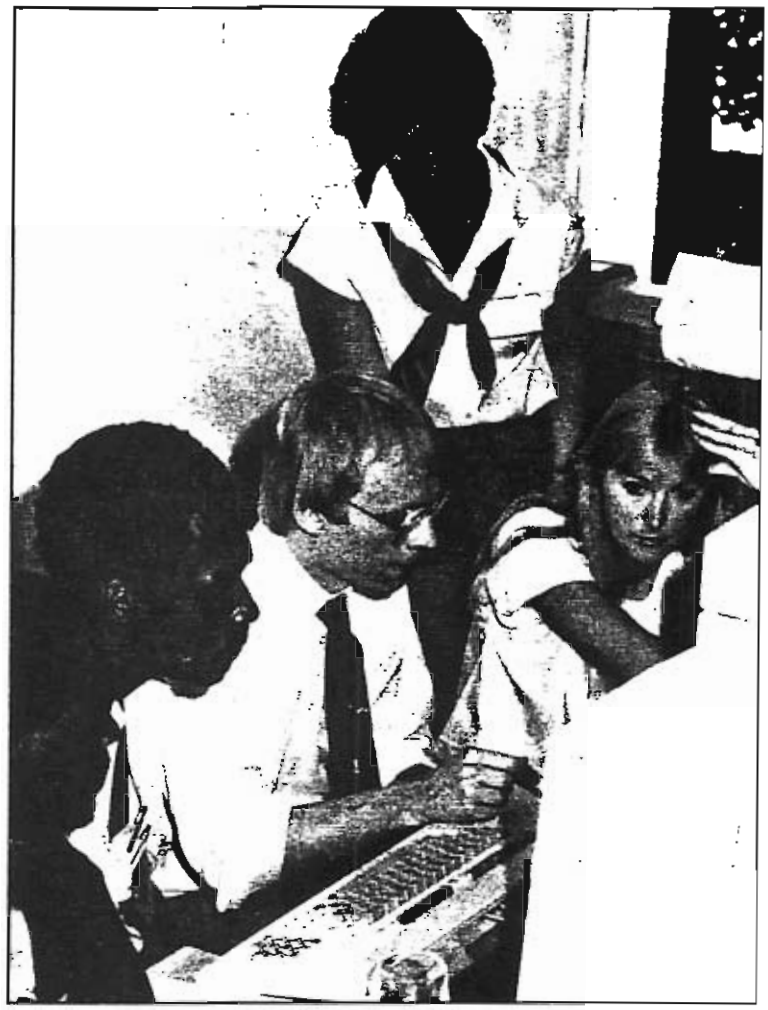
Despite pricing and import problems, the industry is still one of the continent's most vital and most innovative. It has an active computer society dedicated to high standards and promoting an information programme that provides a model for the rest of the continent.

There is unanimous confidence in the National Tender Board's impartiality and professionalism in letting out public sector computer contracts. And so far the industry has largely resisted the temptation to offer bribes in order to secure contracts - unlike many other African computer markets.

Advanced local software development is pursued, with the potential for a major regional export-oriented software industry to develop. Len Barnes, MD of **Computer Business Services**, a specialist software developer, feels that with appropriate government backing and co-ordination a major software industry could develop. There are already discussions about the possibility of the government underwriting a software development house for the SADCC region.

On the hardware side, screwdiver assembly is already being undertaken by companies like **Compuserve, TransAfrica** and **KDS**. A range of companies provide excellent service facilities. New dealerships and agencies are increasing competition and providing access to a wide range of leading products.

All these trends mean that despite all the difficulties, Zimbabwe is at the forefront of Africa's IT revolution as it enters the 1990s. ❑



Cluff Minerals staff being trained in Harare on Lynx geological software, marketed by Systron. Mark Stokes (centre) from Lynx Canada is assisted by Joanna Leid (standing) Systron's manager of computer products.

The Licencee's mark-up

The following costings show what a typical XT system* would cost before the licencee takes his cut and passes it on to a vendor to sell to a computer user:

	Z$	
Processor, keyboard and monitor	4,180	
Printer	2,500	
Freight (from South Africa)	500	
Total landed cost		7,180
Assume a 100% mark-up	14,360	
Sales Tax 20%	2,872	
		17,232
Super-profit	5,468	
Current market price		22,500
TOTAL PROFIT	12,648	

* An 8-10 MHz Turbo 8086 processor, 640 RAM, 20Mb hard disk with a mono monitor and an FX105 printer.

Software - The computer industry's Achilles heel?

A special correspondent writes that despite all its potential, the country's software industry is sadly lacking.

While there are virtually no problems with computer hardware that cannot be solved quickly with a chequebook - and some foreign currency - the same cannot be said of application software.

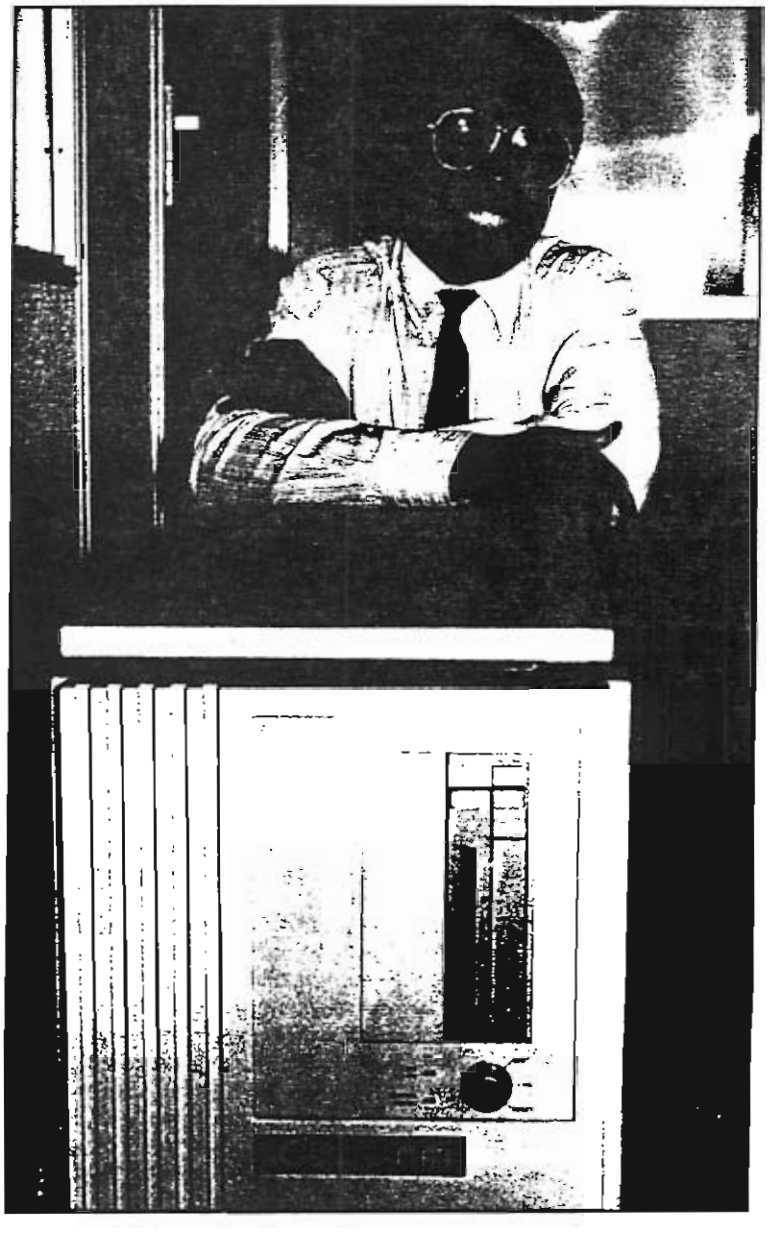
This obvious truth applies with a vengeance in Zimbabwe, whose computer industry lays claim with justification to being a technology leader in Africa but where local software development is lagging.

Currently viewed by some specialists as the Achilles heel of the Zimbabwean computer industry, software development will be a prime determinant of the country's IT industry over the coming decade.

Another truth - that software sells hardware - is no longer questioned here. The functional demands of application software have become the overriding consideration in the design, configuration, installation and use of computer systems in all sectors of the economy.

For the size of its economy, Zimbabwe has a computer user base that is remarkably wide and continues to grow steadily, despite the severe foreign exchange constraints. Most large and even medium to small organisations have at least five years of applications experience behind them. Many have had some painful systems implementation experiences, and they will look much more critically at software products the second time around.

But with so much development work to be done, there are too few qualified programmers to do it - qualified, that is, in



Opting for Unix: Project assistant Cuthbert Dandiro with the ICL DRS400 central processor that will support the new network on the 42-hectare site at Willowvale Motor Industries assembly plant, Harare.

Unix takes off

The Unix operating system, rated a key industry standard worldwide for the 1990s, is beginning to make its mark in Zimbabwe, with a number of suppliers promoting it and user acceptance growing.

Most active Unix proponent in the country at the moment is **ICL Zimbabwe**, which is making a strong push for the product this year. The company is working on major Unix sites and is highlighting its DRS systems at a week-long series of presentatios in Harare in August.

ICL's main Unix site is the Willowvale Motor Industries assembly plant outside the capital where an NCR 9020 system is being replaced by a DRS400 network with an initial 116 terminal and two MS-DOS micros. Networking on the 42-hectare site will include the use of a Datex 100 voice-and-data system using the existing telephone cabling.

Software protocols - who owns what?

Important questions relating to ownership in the field of software development and usage need answering satisfactorily in Zimbabwe, and no doubt in other African countries too.

They include:

- Does a programmer who works for a user organisation have the right to take copies of the programs he has written when he leaves their employ? Do data processing departments include clauses regarding this in their letters of appointment?
- Who really owns the bespoke software developed by a software house for a client? Is the software house entitled to make use of part of all of those programs for another client? What special conditions would apply if the second client was a direct competitor of the first client? What about subsequent sales?
- Is the client who has a bespoke system entitled to disclose the software to another software house? Should such disclosure be permissable only if the developer house no longer provides adequate service?
- What guarantees are there that a client will protect a software house's interests? Are such guarantees/assurances really practical?

Opinions differ, of course, but workable solutions to these thorny issues could be:

- The programmer is entitled to copies of all his work, but should be subject to a restraint-of-trade clause for a period of perhaps 18 months.
- Both the software house and the client should have equal rights to bespoke systems, with a clear written agreement between them before the software development begins so that there is less chance of misunderstanding later.

the creative rather than the purely formal sense. Too many of them, says a leading consultant, go through the motions of writing programs that largely parallel manual systems, rather than using the power of the computer in an original way, to innovate and enhance.

One reason for the shortage of good programmers is the ease of use of the programming languages, which has drawn many people into the software industry who are not problem solvers. Before the introduction of Cobol the languages were very difficult to use, and that put off all but those who had real aptitude and ability. There is a need for the new languages and system development tools, but there is also the negative result of less-than-qualified personnel.

With a relatively small market, the financial returns on investment in software development is limited. "From a profitability point of view, writing software is a dead-end," says Alastair Watermeyer, one of the country's leading software consultants. Zimbabwe needs to look to the regional market and government backing will probably be needed if real software development is to take off.

With notable exceptions, over the years the better programmers have moved into the hardware organisations, in sales and support and development, or have joined software houses. User organisations recognise this and invariably go outside their DP departments for the more complex work, using their own in-house capabilities for maintenance.

The effect of the departure of talented programmers from the public sector is particularly serious and threatens the efficiency of major computer sites whose output affects many thousands of people. At present, the loss of key staff at the government Computer Bureau may result in the Central Statistical Office having to abandon its census of industrial production. Some sites within the public sector rely to varying degrees on private sector companies to keep functioning. arrangement can work situation will continue until the public sector can attract and retain sufficient competent staff to be independent. ❑

Piracy takes its toll

Regrettably - but inevitably, in a market environment dominated by severe foreign currency shortages - illegal copying of imported software products, particularly in the micro field, is common in Zimbabwe.

Software piracy is deplored, but the pressures that encourage the practice are acknowledged and this has resulted in an expectation among users that vendors should supply free pirated software with the expensive hardware they have bought.

There are degrees of piracy, as it were. For example, copying a borrowed program for use within one's own organisation tends to be regarded as quasi-justifiable although essentially dishonest. However, doing the same thing for the purpose of sale is roundly condemned as reprehensible.

This convenient distinction is certainly not drawn by the Computer Suppliers' Associaton of Zimbabwe, which is mounting a concerted campaign against the pirates. "We will do everything we can to eliminate the blatant theft of copyright software products which is so prevalent in Zimbabwe and is giving this country such a bad reputation internationally," says its chairman, John Dawson. The campaign will include publicity to make corporate and other users aware of their responsibilities and to encourage them to be more discerning in their sourcing of software.

Ironically, the recent appearance of at least four types of computer virus (causing the failure of a number of systems and sending an AIDS-like tremor of apprehension through the local data processing community) is having a positive spin-off in highlighting the hazards of using illegally copied programs.

John Dawson notes that the virus threat is prompting users to be much more cautious about what software to accept onto their systems, and he welcomes this as "bad news for the pirates".

How good is Zimbabwean software?

How good is software developed in Zimbabwe, and can it compete with imported products? Local developers have shown that they can write acceptably good packages, which are widely used; for example, there are about a thousand user companies of locally written payroll systems.

But the competition is keen, and the developers see the need to try to specialise and exploit niche markets rather than fight so much for the same turf.

The major hardware supply companies fall into two categories when it comes to providing software products. A minority (notably large all-Zimbabwean companies such as **Computer Processing Group** and **CF Tulley Associates**) draw from their own extensive suites of application packages, developed entirely in-house, when implementing computer systems. Others rely essentially on the software products of the international companies they represent, and undertake package modification or bespoke development as required. Some very large and complex systems have been written from scratch and successfully implemented, although not always without delay and trauma.

The software houses in Zimbabwe offer a combination of imported packages and their own, and also carry out package tailoring and bespoke development.

There has been a marked swing to packages in recent years. Development costs are now so high that even major user organisations which used to employ large numbers of analysts and programmers now adopt a much more flexible approach and

Tessa Colvin

Ron Hyslop (left) of Realtime with Phil Cheney, MD of Silicon Computer Corp. of Australia. The two companies recently signed a joint venture agreement to market Silicon's Unique software throughout Africa.

will use packages in areas they would not have considered even five years ago. Users are more prepared than in the past to change their systems to suit the package, rather than embark on costly custom writing.

As a result, there is much energetic marketing of imported products which, because of the considerable development time and investment built into them, are slicker than local equivalents which tend to be less robust and bug-free. But there are also definite advantages to using local packages, which are designed specifically for local conditions, for example accounting procedures, and are readily customised for particular needs.

A major sore point among local software developers, some of whom have impressive bespoke systems to their credit, is the general use of external software expertise for large aid-funded installations, of which there are several in the pipeline. It is argued that the donor agencies could incorporate local software products and services at much lower cost. However, Zimbabwean software must win a reputation for excellence if the industry is to expect to harvest more of these software "plums". ❑

Wang's Africa-wide software coup

An unusual software product conceived and developed in Zimbabwe and used in several African countries is G.BECS (Government Budget and Expenditure Control System). Its architect is John Tipler, managing director of Computer Processing Group, the Wang supplier in Zimbabwe.

CPG and Wang caught the opposition flat-footed last year when they collaborated to make a gift of 40 minicomputer systems and software to eight African governments. The Zimbabwe government received the lion's share of ten systems, with the others going to Zambia, Malawi, Kenya, Uganda, Ethiopia, Ghana and Nigeria.

Wang put up the hardware and CPG supplied the software and attended to the installations in Zimbabwe, as well as providing G.BECS training in Harare for personnel from the other countries.

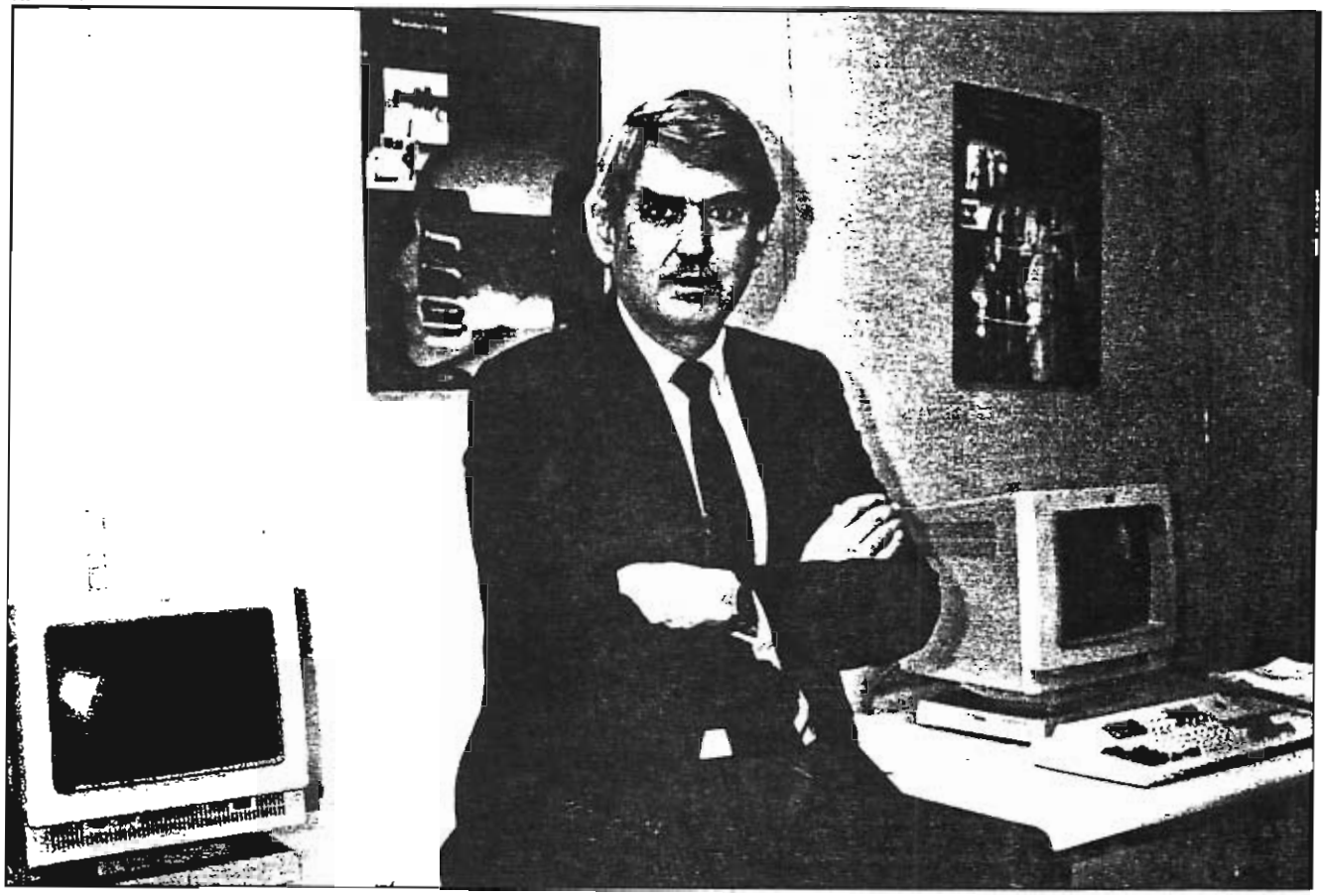
As well as being a resounding marketing coup (which ruffled some opposition feathers), the gift was made to help African governments address an area of deep and common concern in the corridors of administration - namely, the accountability of ministries for funds allocated to them by parliament.

G.BECS is tailored to mirror the accounting structure used in government ministries in English-speaking African countries, and also provides a range of reporting levels to improve communications and control within ministries.

Wang says it gift underlines the company's commitment to Africa, where it has been an influential force in introducing computer technology and where it is represented by dealer organisations in 42 countries.

Each gift system comprises: A Wang VS5ES processor with internal disk capacity of 72 million characters of on-line storage, three workstations, a printer and a cassette tape drive of 60 million character capacity for off-line storage, data back-up and security.

Tessa Colvin



John Dawson: Misgivings over local manufacture.

Local manufacture: A hot issue for the 1990s

SEAN MORONEY examines an issue that has split the Zimbabwe computer industry down the middle.

"None of us is very happy with the concept of local manufacture, but none of us wants to be left out." That's how John Dawson, chairman of the Computer Suppliers Association, sums up how its members feel about the prospect of local manufacture of computers.

Three immediate projects mean that assembly and manufacture are going to continue despite the misgivings of the vendors. Zimbabwe's shortage of foreign currency has driven the government, some feel, into a disadvantageous barter agreement with Bulgaria in which tobacco will be exchanged for Isotimpex PCs in kit form for assembly.

Apparently the Zimbabwean tobacco has been undervalued - some sources said a tobacco price of $2.00 per kilogram had been agreed but in fact it was being valued at $1.90. It was unclear at the time of going to press whether this discrepency in the barter deal had been resolved.

The Ministry of Trade and Commerce has assigned the kits to seven distributors: **CF Tulley, ICL, Realtime, CPG, TA Computers, Systron and Burco Electronics. Communications Systems of Zimbabwe (CSZ)** will assemble the PCs, following approval by the Ministry of Industry and Technology. CSZ has assembled sample complete knock- down kits for both CPUs and keyboards and they have been subjected to rigorous tests without problems, it says.

The second project will take Zimbabwe beyond assembly and into actual

manufacturing. CSZ is installing a new Z$800,000 plant to manufacture through-hole plated printed circuit boards for a range of high-tech electronic products.

And in yet another project **KD Systems International (KDS)**, headed by Paul Tiago, a young Canadian-trained Zimbabwean, is also gearing up for manufacture and has also imported expensive equipment to etch and assemble circuit boards (see following article). There seems to be no co-ordination of these two projects, either voluntarily or by government intervention, to ensure complementarity rather than duplication of work and the importation of expensive equipment. A spokesman for CSZ said: "CSZ will definitely not be involved on any project with KD Systems International."

Monopoly threat

Speaking in his capacity as MD of **IBM** distributor **Infotec**, John Dawson says that he is very opposed to the concept of local assembly. His arguments against can be summarised as follows:

- The foreign exchange savings will not be great.
- Zimbabwe will run the risk of locking itself into a particular level of PC manufacture which may soon be outdated because THEtechnology is developing so quickly.
- A monopoly situation may be created. If the country invests heavily in the production of a particular make, the government may be inclined to exclude other makes.

Dawson dismisses the sort of motherboard etching and assembly being planned by KDS as low-level manufacture, which will do little to reduce the foreign exchange cost of the resultant PCs. "International manufacturers achieve vast economies of scale in highly robotised production lines which we cannot possibly hope to match....At present we (Infotec) can offer products to our customers at the same time as they are available internationally. That will not be the case if we get locked into today's technology for future production."

Putting his vendor's association hat back on, Dawson says he understands why CSZ is keen to get a manufacturing project going. It has the facilities and skills base on which an effective operation could be built and he would like to see it develop on a co-operative basis along the same lines as the Isotimpex project.

CSZ is a joint venture between **Plessey** and the parastatal Zimbabwe Development Corporation. It boasts some Z$4.5m worth of state-of-the-art electronic plant and electronic test equipment. Formed in April 1988, the company has concentrated on the manufacture of VHF military radio equipment for use by the Zimbabwe army, as well as in other SADCC countries. CSZ is proud that of the 6,000 radios it has so far delivered, only one has ever been returned for repair under warrantee.

IT product range

The Isotimpex and printed board projects are not the only new IT developments CSZ is undertaking. It is currently manufacturing electronic PABX systems supplied in complete knock-down form by **Harris** in the US. The manufacture of Alcatel equipment from France is scheduled to start in August.

And the company is gearing up to manufacture telephone sets, waiting for a PTC decision on the type of telephone to be manufactured locally. CSZ expects it to be GEC's IXT, already type approved.

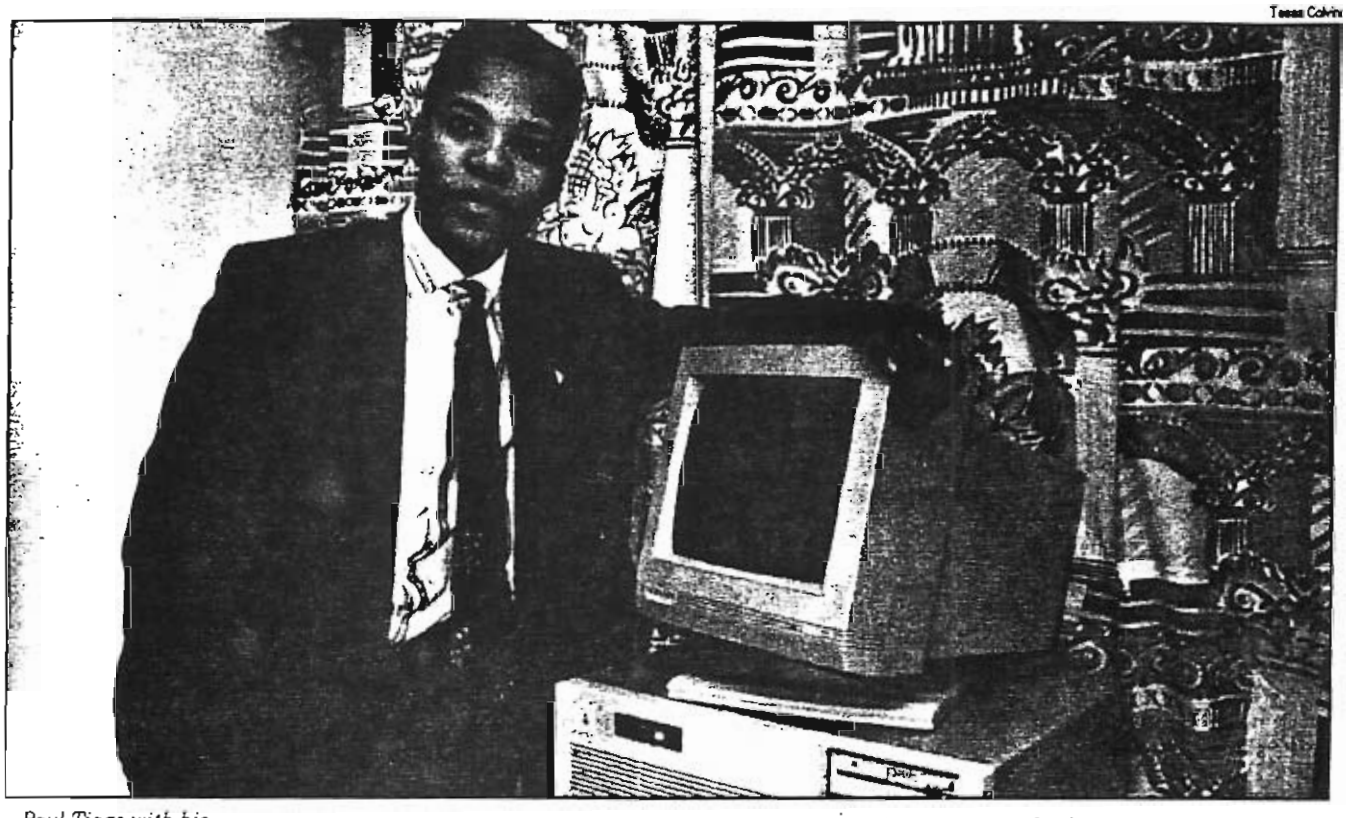
Another major product line for CSZ is surge protection equipment in response to the high incidence of damage to electronic equipment caused by lightning and power supply fluctuations. It has carried out studies into surge protection for mains, data and telephone systems in conjunction with the Electrical Engineering Department of the University of Zimbabwe.

CSZ's expertise suggests that Zimbabwe does have the skills base from which co-operative microcomputer manufacturing could develop. But there has still not been a carefully documented cost-benefit analysis before manufacturing goes ahead. A barter deal (of dubious business value) and the drive of an enthusiastic young entrepreneur, rather than rigorous economic analysis, seem to pushing Zimbabwe down the assembly/manufacture road. ❑

Computer imports into Zimbabwe (based on official figures)

	1986		1987	
	Quantity	Value ('000 Z$)	Quantity	Value ('000 Z$)
Analogue machines and hybrid machines	26	86	25	127
Complete digital data processing machines (comprising in the same housing the central processing unit and at least one input unit and one output unit)	736	2,546	572	3,135
Complete digital central processing units; digital processors (consisting of arithmetical, logical and central elements)	175	4,990	507	5,914
Separately consigned digital central (main) storage units	4	3	14	34
Peripheral units, including control and adapting units	1,189	2,391	1,961	3,114
Other	1,128	2,993	1,017	2,509
Parts and accessories	19,878	34,124	27,610	2,401

The Nehanda is rescued from disaster



Paul Tiago with his Nehanda.

SEAN MORONEY interviews the controversial entrepreneur determined to bring computer manufacturing to Zimbabwe.

Controversy has surrounded Paul Tiago's venture into PC assembly in Zimbabwe. He admits that mistakes have been made along the way but he is still determined to introduce meaningful down-stream manufacturing.

His company, **KD Systems International (KDS)**, started business in 1986 when it received a large foreign currency allocation to import components - disk drives, keyboards, monitors and printers - for local assembly. The project hit a major hurdle because the machines, supplied via Canada, were for 110-volt electricity supplies.

With all the company's cash tied into the imported hardware, months were lost while the power supply transformers had to be rewired, as well as the keyboards and monitors. This created a cash flow nightmare for KDS, with customers and creditors "breathing down our neck", says Tiago.

KDS eventually got the machines assembled and out to customers. But Tiago has this bad start and the hostility of other vendors to fight against in establishing KDS as a force in the Zimbabwe market.

Following the initial consignment, KDS established a reliable Hong Kong source of components with compatible voltage equipment. Tiago says he is confident that the Nehanda II is of high quality, "at the leading edge of technology".

Leading vendors are highly critical (but also no doubt envious) of this "upstart" who they view as benefitting from having the right government contacts - as well as an advantageous skin colour. There's no doubt that there are those who would like to see him go under in what has become a highly competitive market.

But Alastair Watermeyer, one of the

country's top computer professionals, has taken a different view. He says the Nehanda is a good-quality machine and feels that it would be of no benefit to anyone in the industry, and especially not to KDS creditors, for the company to go bust. Watermeyer's consultancy is now assisting KDS in installing its machines and supplying its client's software requirements. Back-up of this quality will be a major factor in establishing the machine's credibility.

Historical roots

And there is an interesting historical irony in the Tiago-Watermeyer link-up. Tiago has called his PC the Nehanda, after a Zimbabwean spirit medium who mobilised resistance against the colonialists in the 1890s. She was eventually captured and sentenced to death by Justice Watermeyer, a cousin of Alastair's great-grandfather. Tiago likes the peculiarly Zimbabwean twist of fate that has involved a Watermeyer in a rescue operation for the Nehanda.

KDS has ambitious plans to get beyond screwdriver technology, and the Zimbabwe government is backing it with further foreign currency allocations. Perhaps the fact that Tiago employs and trains ex-combatants on his projects partly explains the government's backing. (It may also explain the military-type security procedures at his office door.)

The company is setting up a custom-built factory in Bindura where it will undertake the production of boards. It has imported equipment worth US$100,000 for etching circuits on copper laminated board, to drill holes for sockets, capacitators and resistors, which they will assemble. And in addition most recently it has imported its own laminator machine, so that laminated board will no longer have to be imported. The company hasn't invested in wave soldering equipment, as it plans to contract this work out to **Communications Systems of Zimbabwe** in Harare, which has the capacity.

KDS hopes to produce boards not only for its own computer assembly work, but also for radio and television manufacturers, and

Delta takes on Oracle

COMPANY NEWS

- **Delta Systems** has been appointed Oracle's agent in Zimbabwe, also covering Zambia, Botswana, Mozambique and Malawi. Alastair Wright, who was responsible for securing the Oracle agency for Delta, says that Oracle is fast becoming the most widely used sequel based relational product, cutting across all three traditional divisions in the industry: mainframes, minis and micros.

  "Most significant is its portability. It can operate under Unix and MS-DOS. Of significance to our market place, where purchasers can't always select where they source their computers, their software needs to be compatible regardless of their next purchase. Purchasers can't predict with confidence the position of their hardware supplier in ten years' time, so portability is very important.... Issues of the productivity of fourth generation languages apply here as much as anywhere else. Available skills have to be maximised."

  Wright claims that Delta will be the country's first major software house to bid for large-scale regional software projects, independent of any specific hardware franchise. Delta Systems, headed by Mike Weedon, has eight full-time DP staff and additional high-calibre staff are being attracted by the prospect of working on leading-edge software development, says Wright.

  So far Delta has been granted import licences to provide Oracle systems to the government Central Computing Services, the Computing Centre and the UNDP-backed SADCC Food Security Programme.

  Wright admits that not much foreign currency is being made available for specific large-scale industrial operations and that initial sales of Oracle may be higher in the region than in Zimbabwe itself.

- **NCR Zimbabwe** has recently secured two banking contracts. The Reserve Bank of Zimbabwe has placed an order for three NCR Item Processing Systems, which will have additional microfilm features for the reproduction of specific documents. The Bank has also ordered three NCR Proof Encoder Systems to enable the bank to conform with the overall Zimbabwe commercial banking strategy for MICR processing of banking documents.

  Communication between these devices and the host processor will be direct batch on-line using 3780 Bisync Protocol.

  And the **Standard Chartered Bank of Zimbabwe** has ordered six NCR Item Processing Systems and two NCR PC916s to be linked in an NCR Token Ring LAN for a centralised document processing and sorting operations. Using MICR encoding technology with the 7760 Encoder Proof Systems will enhance the bank's daily processing and balancing operations.

  The PC916, acting as a file server within the network, will capture and consolidate data from the other nodes, and will validate a day's processing prior to communicating to the host mainframe system.

control systems for elevators and vehicles.

Hurdles

At this point the company is waiting for planning permission to bulid its factory. There are environmental implications because of the dangerous chemicals used in the etching process. These have to be carefully recycled and not released into the water system. The Bindura Town Council has given permission but approval is still awaited from the Ministry of Urban Development.

And the company continues to be under-capitalised. Tiago has spoken to a range of possible equity backers, including **Rennie Grinaker, Aberfoyle Holdings** and **Lonrho**. He is willing to offer up to 49% of equity to attract the real capital he needs. None have been willing to invest on these terms. All want majority control, which Tiago and his partners want to retain. He now hopes that the parastatal Industrial Development Corporation may participate in a refinancing arrangement.

Tiago has long since given up the banks as a possible source of backing. "I went through hell to get a Z$5,000 overdraft facility. They want you to kiss their feet. These bankers all play golf with each other every Wedensday. At one stage we had several accounts with different banks closed one after another," says Tiago, claiming collusion between the banks. "No country can develop without banking. Bankers here are very conservative. In fact they border on the verge of economic sabotage."

Back-stabbing

Tiago has an equally negative view of Zimbabwe's computer establishment. "Computer companies engage in back-stabbing and have not learned to work together, to negotiate together with government." He knows that there has been strong resistance to his operation. He feels that judgements continue to be made on the basis of race. "We are supposed to stay as hewers of wood and drawers of water. If a white boy produced the same board, it would not be subject to the same close scrutiny as mine."

He wants to be judged by his product. Of the 120 PCs assembled by KDS very few have been back for repair under their six-month warrantee. Tiago says that all the money the company has made has been channelled into buying the components and equipment it needs to get real PC manufacturing off the ground. "We had to decide do we want to buy our Mecedes Benz now or wait for another five years." What car does he drive now? He doesn't. He still catches lifts from friends or walks. ❑

The Computer Society waits for recognition

The Computer society has played a leading role in establishing standards in Zimbabwe and has promoted industry-wide co-operation. It could well serve as.a model for the rest of the continent.

The first computer in Zimbabwe, an ICL 1202, was installed in 1960 at the Government Treasury Department, and four years later there were sufficient users in the region to warrant holding a central African computer users' conference. But it was not until August 1974 that the Computer Society of Zimbabwe (then Rhodesia) came into being.

A measure of the stature the society has accumulated since then is that it is one of the very few such organisations in Africa to achieve full membership of the International Federation for Information Processing (IFIP), based in Geneva.

IFIP, the largest multilateral federation of its kind, is dedicated to improving worldwide communication and increased understanding among practitioners in all nations about the role of information processing in all walks of life.

Admitted to membership in 1987, the Zimbabwe society was represented at the annual IFIP congress last year, in New Delhi, and in August this year its president, Jean Whiley of Bulawayo, will attend the world congress in San Francisco.

Jean Whiley: Recognition needed for the profession.

Whiley sees "extremely difficult" times ahead for Zimbabwean users of equipment now eight to ten years old, unless foreign currency is made available for replacement.

But overall, despite the all-pervasive dampening effect of the shortage of foreign exchange, she sees the information processing industry as remarkably vibrant and resourceful.

Profiteering

But she is concerned about "the number of stories of excessive profits being made on computer sales, and buyers with very high expectations which are not being met", a problem that affects the reputation of the whole industry.

She also believes the industry in Zimbabwe should be marketing its "considerable skills" in other countries in the region. "This is already happening to some extent and should be vigorously promoted. Perhaps an agency could be established to market and co-ordinate the export of skills, to earn foreign exchange for Zimbabwe and to benefit neighbouring and other countries."

Imperative

Fifteen years after its formation, the Computer Society of Zimbabwe's search for professional status for its members and legal status for itself has become more imperative because the industry it represents has grown in size, complexity and significance.

Information processing practitioners in Zimbabwe are not recognised as professionals in the same way as doctors, lawyers and accountants, despite their formal qualifications. Similarly, despite the Society's maturity, its activities and its considerable achievements, it does not enjoy the legal standing and authority of its counterpart organisations, representing the "recognised" professions.

Until both the society and its members receive this official promotion, as it were, it and they will continue to operate in an industry that grows rapidly in national importance but remains just outside the perceived parameters of true professionalism.

It is an unsatisfactory situation all round. The Society needs the legal clout to enforce high standards of conduct and service

among its members, and to discipline them meaningfully if necessary. The members need public recognition of their worth as professionals, and above all, the public needs the protection and assurance afforded by dealing with a truly professional industry.

The Society has covered a lot of ground in its move toward its goal of attaining legal incorporation. It has a good track record, with much achieved.

As well as a full calendar of meetings, seminars, workshops, summer schools and special events, it has initiated its own register of accredited computer training organisations, and is implementing a similar scheme for consultants.

The key elements of professionalism are seen as:

- A defined body of knowledge, recognised and accepted by all members of the profession.
- A code of professional practice defining high standards of conduct and performance.
- Public recognition.

Legal incorporation is the Society's long-term objective, but in the meantime its strategy is to do everything possible to gain more professional standing before seeking legislation to achieve incorporation. ❑

Thanks
The publisher acknowledges the co-operation of *Zimbabwe Computer & Telecom News.*

Lining up for the big ones

Two tenders, both for very large national parastatal organisations, presently dominate the computer scene in Zimbabwe, and local companies are pulling out all the stops in their bids for the contracts.

The Zimbabwe Electricity Supply Authority, responsible for power generation and distribution, is a newcomer to computerisation and is looking for an entire national network embracing six area offices and five power stations spanning the country. The project, funded by the World Bank, stretches in several stages to final planned completion at the end of 1992.

The National Railways of Zimbabwe is embarking on a comprehensive computer re-equipment exercise also financed by the World Bank. New hardware and software will replace the over-stretched central elements of the existing system, and the tender also calls for extensive ancillary equipment and support services.

Both projects present major hardware and software and support challenges, and there is a keen sense of anticipation in the industry as the tender countdown proceeds.

The ZESA project is particularly significant. Although such a large organisation with so critical a function, the central power authority in its present form is also young - having been created from the old Electricity Supply Commission with the amalgamation of all the electricity undertakings after an Act of Parliament in 1985.

It is presented with the unique opportunity to acquire, from scratch, an entire integrated information system using the latest distributed hardware and software technology throughout the 11-site countrywide network.

"A marvellous opportunity indeed," comments Canadian consultant Tony Fenton who is on a three-year secondment from Ontario Hydro as part of the World Bank involvement in the project. "This has all the makings of a model system, and one of central significance to ZESA and to Zimbabwe. It is personally very satisfying to be part of it."

Zesa has also been charged with the task of setting up a computer-based regional system to monitor power-sharing with neighbouring countries (see Continent Scan).

Taking up the strain at UZ

British aid has enabled the University of Zimbabwe to install a sophisticated ICL system.

Few universities anywhere in the world can be growing as fast as the University of Zimbabwe. In 1980, when the former British colony of Southern Rhodesia became the independent Republic of Zimbabwe, students on the Harare campus totalled less than 2,000. This year's total is just over 8,000, and there are plans to create a second campus.

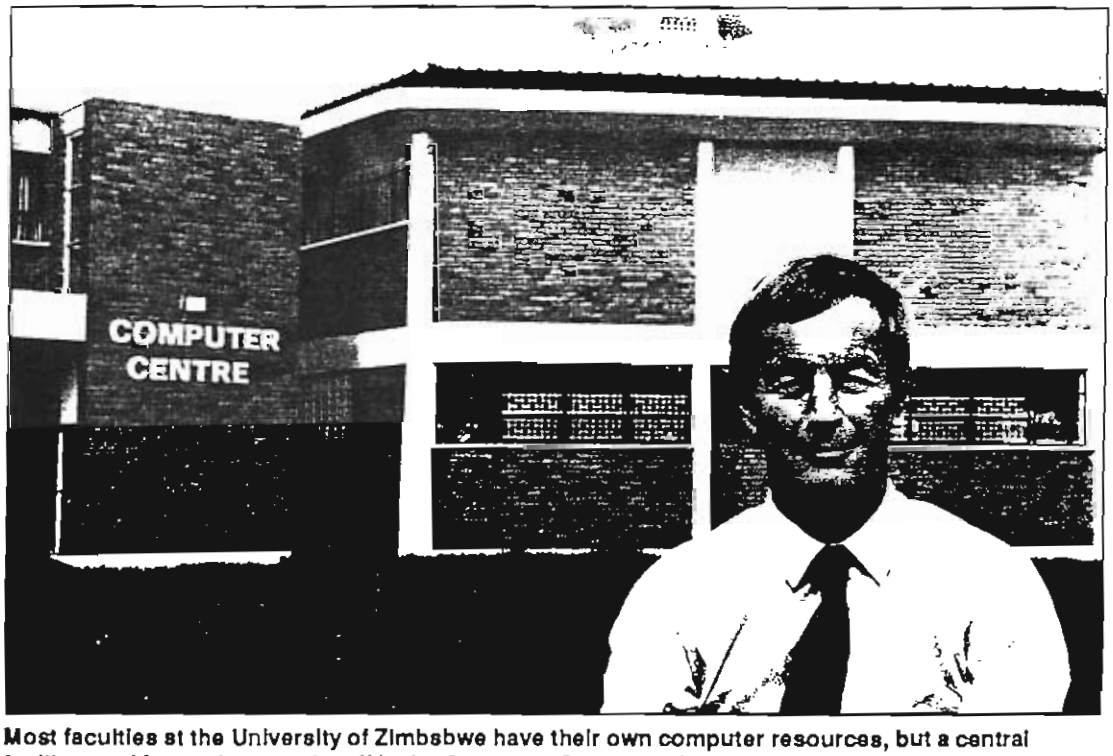
This phenomenal growth reflects only the tip of an education "iceberg" which has been built up vigorously as Zimbabwe pursues its commitment to give every child a place at school. The government sees it as both a moral responsibility and a sound investment in the future.

But the university's rapid growth has placed severe strain on every aspect of its operations, not least the computerised administration system. Late last year it became clear that the ICL ME29-based administration system would be hopelessly over-stretched, and the university put out an urgent call for funds and a replacement.

Within four months the British government had responded and ICL Zimbabwe had installed a new Series 39 Level 35DWP (dual processor) mainframe to underpin a greatly enhanced administration system incorporating a campus-wide on-line network.

Making the presentation, British High Commissioner Ramsay Melhuish said that as probably the foremost learning institution in the SADCC region, the University of Zimbabwe would rely increasingly, as its student enrolment soared, on the efficiency of its administration for the successful implementation of its academic programmes and the sound management of its finances.

The network will link all ten faculties to the mainframe, as well as give them their own processing capability. Network hardware comprises eight DRS300



Most faculties at the University of Zimbabwe have their own computer resources, but a central facility used by students and staff is the Computer Centre, under the directorship of Professor John Sheppard (above). Opened in late 1986, it has a Data General MV/20000 as its main processor. The centre is responsible for providing computer facilities for teaching and research for the whole campus and is heavily used. It is distinct from the Department of Computing Science which teaches undergraduates and graduates.

microcomputers/cluster controllers, 51 DRS300 terminals and 30 Professional Work Stations (MS-DOS micros). The mainframe link will take place through the existing telephone extension lines, using a new data-over-voice product called Datex-100 which allows telephone cabling to be used simultaneously as a telephone and as a data transmission line. So a computer terminal can be located at any telphone extension, greatly facilitating and reducing the cost of networking between buildings.

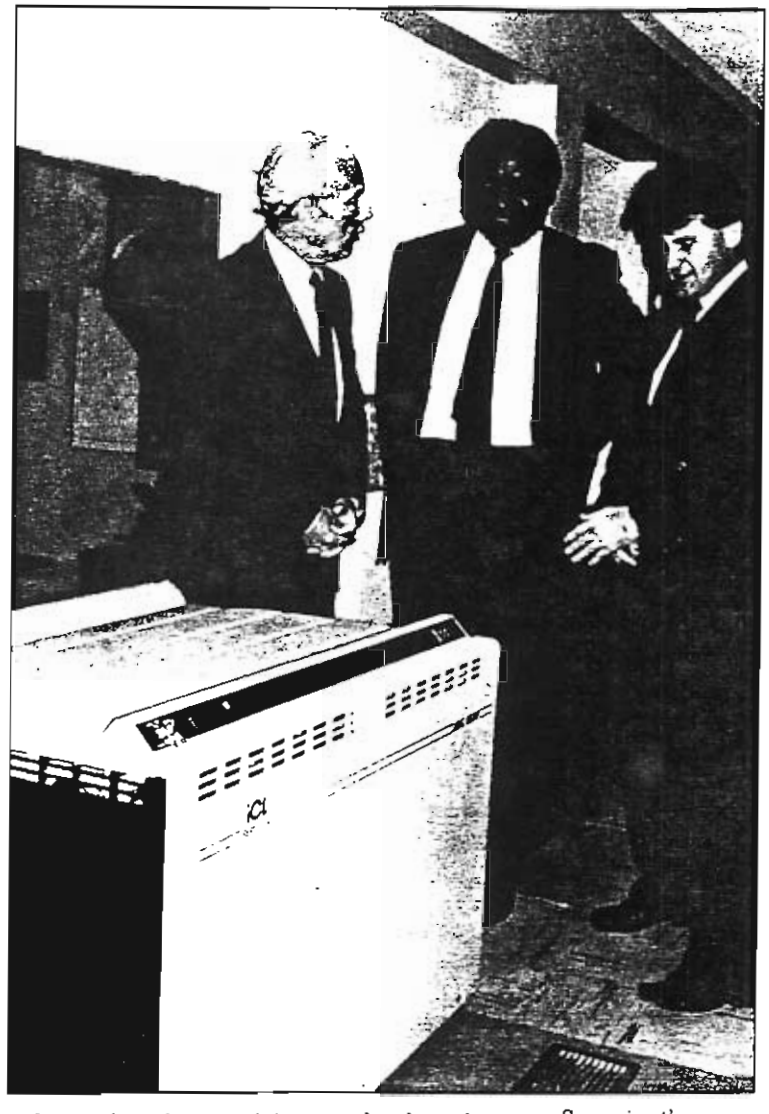
The new system will bring back on stream a number of software development projects which had to be shelved because the ME29 was at full capacity, to meet the total information needs of the university management and administration.

The entire project is due for completion early next year and will take the university well into the future, with a capacity to handle the administration workload for 16,000 students, and even more with enhancements.

The university installation is one of five Series 39 distributed mainframes in the country, and ICL Zimbabwe managing director Tony Cashel is well pleased with the inroads the British manufacturer's flagship systems are making in the competitive Zimbabwe market.

International user statistics since the initial Series 39 launch in 1986 show that for the smaller models a problem requiring the reloading of software occurs less than once every 18 months. On the larger multi-node machines there has not been an instance recorded of this ever having happened.

"This means over three years between software breaks requiring a reload, and two years between hardware breaks, which indicates an extremely reliable processor and a resilient operating system," says Cashel. ❑



Surveying the new ICL Series 39 at the Univerity are (from the left) outgoing British High Commissioner Ramsay Melhuish, principal and vice-chancellor Professor Walter Kamba and ICL MD Tony Cashel.

First NCR user conference

Zimbabwe's active NCR User Group is convening an inaugural conference in August for a proposed continent-wide NCR User Group.

The NCR Users of Africa Conference (NUAC) will to be held at Victoria Falls over 2-5 August 1989.

The theme of the conference is "Into the 1990s - NCR and its African Users".

One of the topics to be discussed by delegates will be the formation of an African user group, complementary to and associated with the world user group, FNUG, based in the US. "Several members of NUGZ attended th world conference in the US this year," said NUGZ chairman Charles Chinyanga, "And there we met users from several other African countries." we all felt that an African user group would be of great benefit to us, as it appeared that problems we have in Zimbabwe are very similar to those experienced in other African countries, and differ from those in other parts of the world.

"By getting together and discussing our problems, we should be able to find solutions between ourselves - someone might have the same problem as us and together we can sort it out. Someone might have solved the same problem, or might even have found a quicker way of doing what we are trying to do.

"Our problems in Africa are particular to Africa, and might need a different solution to elsewhere in the world."

NCR African user groups are established in Zimbabwe, Ghana and Nigeria. Kenya recently held its inaugural user group meeting.

Further information can be obtained from John Ncube on Harare 736010.

Education scrambles to catch up

MARTIN RUSHMERE surveys the country's computer training facilities.

Although Zimbabwe has made great strides in the development of general education for the mass of Zimbabweans, very little progress has been made in terms of introducing computer education for school children.

Sam Gumbo, training and research officer at CPG, was in the Education Ministry dealing with this very issue before joining the business world. "The government wants to see training being done all the way through schools and realises that computers are an essential modern tool. But of course there is the problem of getting the teachers and the equipment - the government just does not have the money to equip every school in the country."

Some of the computer vendors have tried to close the gap by donating equipment and even paying the salaries of the extra teachers needed for computer education.

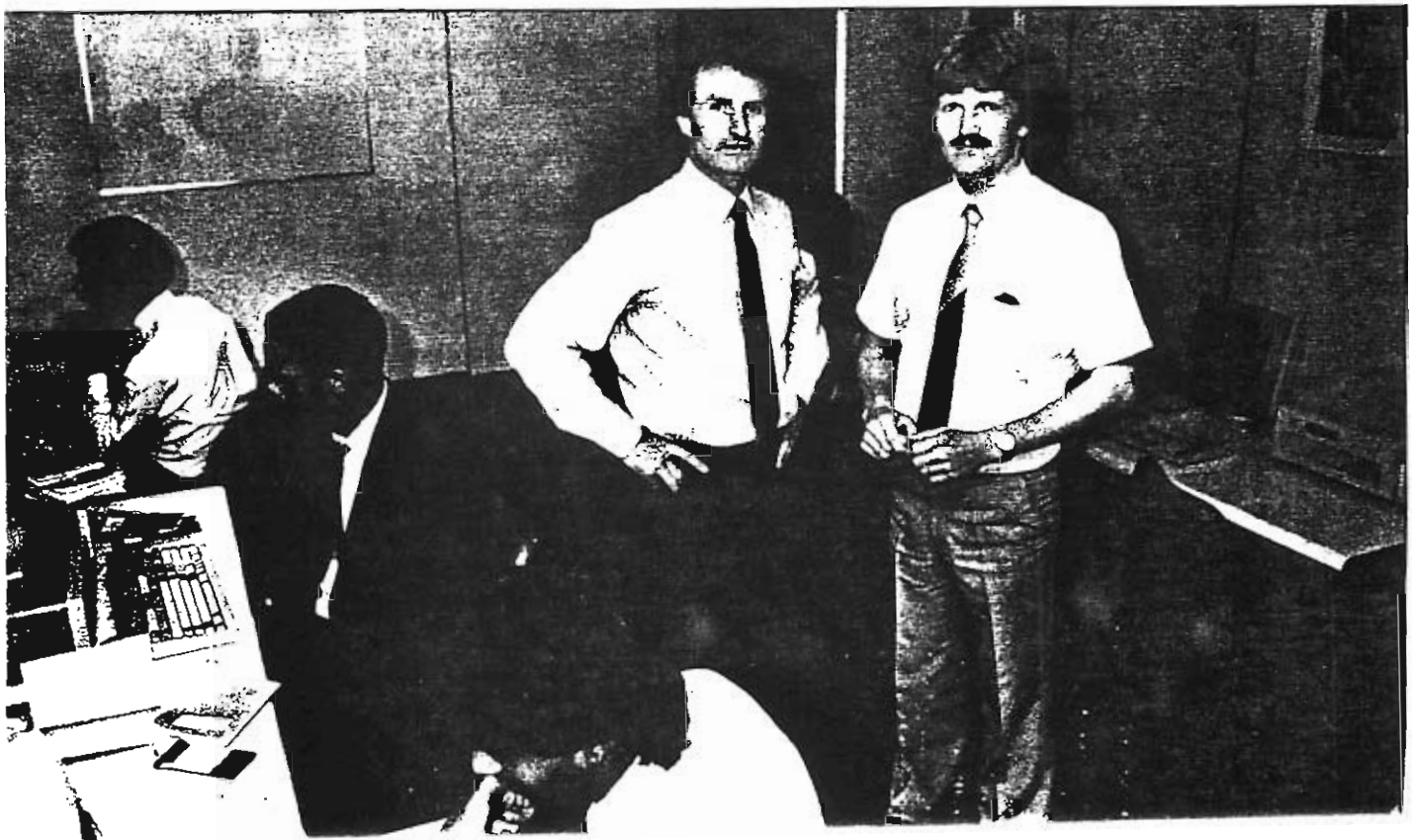
This is not pure philanthropy. Getting a school to use your equipment and methods ensures that its pupils in later life are more likely to come to you than to anyone else for their own computer requirements.

Educational software

Could Zimbabwe develop its own educational software to reduce the costs of introducing computer education in schools. There are difficulties, as Sam Gumbo explains: "Software development being a lengthy process, when it is finally ready it might be very easily outdated because curriculums change so fast. The two worlds are also very different in attitude, with the private sector being very competitive and secretive and education being very much more co-operative and encouraging open discussion.

"The proliferation of different types of hardware is something of a headache, caused by schools having to take what they can get. The government has said that

Tessa Colvin



Plenty of customers: Jeremy Miller, managing director, and Anthony Clasquin (right), manager of TransAfrica's TCS Computer School, in the training room.

schools should buy equipment compatible with BBC and Apple II."

Such drawbacks should not affect the development of a national curriculum. The government is trying to set one up but so far progress has been slow. Some commercial companies have offered to help and these proposals are being studied.

Regional co-operation

On a wider scale, the possibility of SADCC co-operation in the development of educational software exists. this is obviously something that would take a long time to set up. But Sam Gumbo says that in principle it is possible: "SADCC co-operation is needed. There are probably common features in some subjects, such as mathematics, among all the member countries. The thing is to examine co-operation on the basis of the concepts rather than the content and have software that is content free. In other words the programs could have the same basic approaches and each country could adapt them to its own circumstances..."

Adult education

Post-school training has become vital to provide the immediate skills base that the country needs. And the Computer Society of Zimbabwe has established a register of approved training institutions. Nine have so far been approved and three more applications are being processed.

For the most part the training offered by approved organisations is for beginners and first-time users. What worries the Society and the industry generally is that there is no local qualification available for a professional to aim at. Apart from the university and the polytechnic, the only option is to study for a foreign certificate.

"Chips" D'Oliveira, MD of **Silke**, is the chairman of the Society's Education Committee. He feels the government needs to provide an incentive by allowing levy rebates to computer companies for computer training.

All private companies in the country in all fields pay 1% of their annual salary bill as a training levy. In other sectors they are given a rebate for their own training costs.

"I know of no other case where a country has such a training levy and gives no rebate for computer training," says D'Oliveira. "In the SADCC region Mauritius has such a scheme but gives tremendous support to its computer industry."

Despite its limitations, Zimbabwe has

COMMENT

A lack of skills and policy

Francis Hernandez Lapuerta

Zimbabwe's computer skills situation in 1989 is potentially both the best and the worst. The country's DP community has proven over the years that it is extremely resilient and able to implement innovative ideas.

At independence, nine years ago, the industry was controlled by a few old hands, extremely competent white Zimbabweans, who were efficiently running the most sophisticated systems in the region (apart from South Africa) under a long-term embargo environment.

The technology was sound and old, a number of black Zimbabweans had developed skills either abroad or in Zimbabwe under Ian Smith's government at the University of Zimbabwe.

The exiles came home and this environment was significantly changed. Developments over the last nine years have been naturally influenced by overall developments in Zimbabwe and in the Southern African region.

In 1989 engaging a computer professional in Zimbabwe, other than a cobol programmer, is a difficult task. A number of young Turks have risen quickly to management positions, but the old guard hold on to their positions. This situation results in a lack of ready, reliable implementors of systems.

In general there is a lack of direction for the industry and it is uncertain of its function. Is it to operate in a purely competitive fashion, hoping to develop into an export force in the region and ultimately compete with overseas and South African solutions, or is it to implement computer policies derived from a politically determined planning process?

Major aid projects requiring information technology are typically staffed by specialised expatriates on short-term contracts and with no knowledge of the Zimbabwean environment.

The Computer Society of Zimbabwe provides an anchor point for professionals through its numerous activities, including regular international forums, its membership of international bodies and recently with the registration of educational institutions and consultants.

A basic problem for the industry is the reward scenario: the simplest job to get after formal training is in the government. Its salaries, controlled by the Public Services Commission, are between a half and one-third of what the private sector offers. Consequently the best staff leave government employment within a short time of joining. Should a person succeed in the private sector he or she will often have the option of working in another country on competitive terms for again between one-and-a-half times and double his or her earnings, probably in easily convertible currency.

A number of badly needed white and black professionals keep contemplating greener pastures. This situation is created as much by the lack of a national/regional strategy which would ensure continuity and commitment as it is by the lack of material incentives provided in a practical and structured manner.

Computer vendors in Zimbabwe are certainly not 'dumping kit' deliberately, although some are accused of a cartel-type attitude, especially with respect to issues such as slowness to introduce Unix and new database technology. This situation is however being changed quite drastically by external market trends and by and large everyone is aware that the next few years are going to involve a modernisation of their technology base, hardware and software wise. A serious reaction to this challenge by the major players would require of necessity some sort of partnership with the government or alternatively serious economic changes towards liberalisation.

There is growing involvement in Unix, relational databases and generally state-of-the-art and standard platforms. This is reflected in the amount of relevant training now being offered and the direction that long-established computer facilities are taking for the future.

Zimbabwe's computer industry is probably the most over-subscribed in the country and in terms of its existing infrastructure and market, one with the highest growth potential in the region.

The development of a national IT policy is essential, not only for the continuing survival of existing systems but, more importantly, for the purpose of becoming a regional centre for the supply of computer services on a self-sufficient and competitive basis.

The changing regional environment and the resulting proliferation of international bodies in Zimbabwe dictate a policy of technology intersection, in that there is very little point in learning skills that although current in the country now, are going to be of no avail for new projects. There is no serious training input in Zimbabwe today to meet this issue, other than by a few private institutions and the University of Zimbabwe.

The future development of computer skills in Zimbabwe is currently in the hands of individual operators and will remain so unless the government addresses the issue in a co-operative and formal manner.

User social background, software and hardware suppliers' goals and the performance of new, local and international market players do not constitute an effective approach to developing a competitive state-of-the-art environment.

The above views are subjective, but they are shared by a number of professionals.

The commitment required for the implementation of quality systems is undefined and unsupported, either materialistically or idealistically.

The government is conscious of its responsibilities and is attempting to meet them; and vendors, consultants and academics are also aware of the situation and willing to help. The future of the industry has important regional implications. A linking strategy needs to be formulated and actioned.

become a regional training centre. The nine accredited institutions can offer between them everything from basic introduction to micros to complete courses in programming in C. Such is the standard of training that many international companies use Zimbabwe as their African training headquarters.

In that respect, SADCC co-operation has already started. Lecturers come from other countries as well as Zimbabwe and the courses also encourage participants to discuss problems peculiar to Africa.

Selection process

Companies stress that it is important to select the right staff for training. David Young, **CF Tulley's** training manager, tells of what sometimes can happen: "A department might get word-processing equipment and decide that everyone from the manager down should go on a course. This is a waste of money because many of the people will not need to do the full course - it's only the secretaries and clerical people who will be doing the actual word processing - and some need only to have a general knowledge."

For that reason among others, many companies use aptitude tests to screen applicants for programming courses. Says Pele Sithole, manager of the education and software division of **NCR**: "We set a general test which tests logic and is nothing to do with computers. There is a minimum standard of ability that we ask for from every person on the course. But also our DP training is split into executive and staff courses, with those for staff generally being longer because they need to go into detail, while executives need more of an overview."

Besides saving valuable foreign exchange courses in Zimbabwe cost about a third of their equivalents in the UK or the US. ❑

A Nixdorf Quattro/45 minicomputer being installed at Everglo Holdings Limited, one of the largest electrical and refrigeration manufacturing companies in Zimbabwe.

COMPANY NEWS

Consultancy launched

Simon Pitt of **Micropac** and Dave Curas-Thompson (formerly of **Arthur Young Consultants**) have combined forces to form a new consultancy called **Touchstone**. They say its aim is to reduce the serious underutilisation of computers in Zimbabwe.

Touchstone will provide what it calls Computerisation Project Management - from analysis of hardware and software requirements, production of customised software if necessary to the training of staff and monitoring of progress.

Simon Pitt says that Micropac staff will continue to implement and support its Payplus payroll, developed for the Apple II, hire purchase and other Micropac packages. "We also have a number of exciting new packages under development," adds Simon.

• Micropro is currently in the middle of its busiest time of the year. During winter Zimbabwe's erratic power supplies, which have been particularly bad this eyar, cause damage to numerous PC power supply systems. Micropro specialises in the necessary repairs.

Despite the good business this brings in for his company MD Jim Redmond urges computer users to invest in UPS systems to prevent damage. A 250W UPS system costing Z$2,500 is barely sufficient. He recommends at least a 500W system which can cost up to Z$3,200.

• Dr Elliot Zwangobani, previously of NCR Zimbabwe has recently formed his own Consultancy. Omega Informatics.

• Geoff Fairall, former head of data processing at CABS, has also formed a consultancy, G R Fairall Ltd which will act as secretariat for the Computer Society of Zimbabwe.

• Systron, the Hewlett Packard distributor and support centre in Zimbabwe, has been awarded the contract to supply and commission a Raw Material Belt Weighing System for Union Carbide at its ZIMASCO KweKwe Division.

The contract, worth over Z$1.1m, will involve a complex installation procedure of Hewlett Packard computer and Honeywell equipment.

Systron's Project Manager, Neil Wicks, said installation of the system would take approximately six months to complete, including software development, and final commissioning should be completed by January 1990.

Tessa Colvin

Simon Pitt of Micropac

• **Memory Zimbabwe** has recently acquired the distribution rights for Central Africa for **Wyse** micros and hopes to be making sales in the region within the next few months.

• **Realtime**, DEC's Zimbabwe distributor, is engaged in a range of new projects. It is setting up a Zimbabwe travel database, called Africa Travelnet, which will be hosted by Autofile in the UK for access by 7,200 UK travel agents. First customer for the database is **Zimbabwe Sun Hotels.** It is hoped that with further development, travel agents will be able to book reservations via the system. Other African countries will also be included and the system will be placed on other network hosts in the US, Australasia and Europe.

Earlier this year Realtime concluded a joint venture agreement with **Silicon Computer Corp.** of Australia to market the MS-DOS and Unix versions of its Unique Business Information System (Ubis) software in Africa.

Realtime is backing the development of Computer Managed Learning in Zimbabwe. In April agreement was reached with the Canadian Association of Community Colleges for it to provide C$300,000 to fund a twinning project with a Zimbabwean institution over three years, including all hardware, software, courseware and training.

PRODUCT FOCUS

The Lynx modem sharing device

The Lynx Modem Sharing Device (MSD), designed and manufactured by **HI-Tec Industries** of Harare, is an indigenous innovation for companies operating a nationwide network with a large and scattered ownership.

The computer operations manager of **Standard Chartered Bank**, Charlie Schmidt, says he is extremely pleased with the system. "We see the MSDs as a major contribution to the computer industry."

The bank initially investigated their options and attempted to source a suitable "Analogue Bridge" locally, without success. Local suppliers were unable to provide modems and importation of the necessary equipment appeared impossible.

With these constraints, the bank approached Robert Tinning, who had already designed and manufactured multiplexors capable of use in local and wide area networks.

He designed and manufactured a prototype of the MSD that was expected to perform to certain specifications. This prototype was thoroughly tested at one of the branches and met the required specifications. Hi-Tec Industries was subsequently awarded a contract to manufacture the MSDs and to date the bank has 21 installed or on order.

The unit has also enabled Standard Chartered Bank to optimise the use of PTC inter-city trunk lines and obviate the need to import additional hardware to cater for increasing communications circuits.

The Lynx modem sharing device allows for a free flow of information with the minimum use of PTC lines and modems. It is an "essential nationwide expansion plan installation" for any company, according to the manufacturers. Some of the components are imported, but Hi-Tec has had the printed circuit board, cabling and some components manufactured in Zimbabwe.

Barter causes vendor headaches

In an economy strapped for foreign exchange, commodity aid programmes and externally funded projects have become a vital means of importing computer hardware. But even commodity aid programmes can spring nasty surprises, as the government decides which sectors will get the money and which companies will be the suppliers.

The recent French aid protocol demonstrated this with an unexpected directive from the Ministry of Trade and Commerce that an extra company not connected with any French supplier and indeed not having any real link with computers should have a share of the deal.

Least favoured of all the trading options is countertrade, particularly barter. The industry wants as little to do with it as possible and it is seen as a last resort. One reason for the aversion is that all deals so far have been with Eastern European countries whose PC clones are not based on state-of-the-art technology.

One of the industry's gripes is that the government takes no heed of advice from professionals on the sort of equipment needed. The result has been that unsuitable equipment has been foisted on local firms through barter deals. The terms of the deals are also somewhat harsh and do not include software or peripherals, unlike commodity import programmes.

But to be charitable, not everything about barter is unfavourable. John Dawson of **Infotech**, chairman of the Computer Suppliers Association, says. "Their one advantage is that we know we are getting computer equipment. So far all the deals have been done in exchange for tobacco. If that was sold for each there is no guarantee that we would get any of the benefit as the foreign exchange earned could be used for any purposes.

"Nonetheless, barter leaves a lot to be desired. The price of the goods is higher than it would be if we were able to import equipment directly and the equipment is not always the most modern."

In any case, barter represents only a fraction of the equipment coming in and has only been used to import PCs. As a rule of thumb the share of each equipment sector's value in overall equipment brought in is 40 - 20 - 40 for micros, minis and mainframes, respectively.

The Supplier's Association wants to advise the goverment on how to improve the situation so that the best value for money possible is achieved. "We cannot intervene on behalf of individual members but we can show the govenrnment that computers are a tool for development and can be used to create jobs. To compete in a modern world you must have computer systems," says John Dawson.

Martin Rushmere

DTP delivers newspapers to the *povo*

ADRIAN OOSTHUIZEN describes an ambitious publishing project made possible by the wonders of DTP but he also discovers that there are concerns about donors flooding the market with DTP equipment without thinking about the wider ramifications for the publishing industry.

Zimbabwe's Rural Newspaper Network seeks to get news to the country's most inaccessable rural areas using state of the art Apple Macintosh DTP equipment and tough four-wheel drive vehicles supplied by foreign aid organisations.

Acting chief executive of the Mass Media Trust Wilf Mbanga hopes to make the three rural papers more viable by embarking on a vigorous advertising campaign. The Trust is Zimbabwe's biggest user of the Apple Macintosh SN series and hopes to increase its current compliment of four systems to nine by the year end.

At present three rural outlets operate in the country: *The Chaminuka News*, based in Marondera and serving the Mashonaland East region, *The Guardian*, based in Bindura, covering Mashonaland Central and *Indonsakusa*, published in Hwange for the Matabeleland North area. All these tabloids have a print-run of 10,000 copies, sold at a price of 10c each. The former two are published fortnightly, while the latter is published monthly. "We want to make our papers as accessible as possible," says Mbanga. "We use four-wheel drive vehicles and motorbikes to reach as many rural areas as possible."

Low-cost advantages

Mbanga claims that by using the latest technology, Zimbabwe's rural newspaper network will be able to avoid mistakes made in fledgling industries in other parts of Africa. "The main problem is running out of funds," he said. "By making our operation financially viable we hope to avoid this." The Trust is in the process of ordering a new printing press to print all the rural [illegible] Midlands so that all aspects of newspaper production from newswriting through to final printing will be done in-house.

Donor funding for profit?

The use of donated DTP equipment for commercial gain has upset some of the smaller private publishers. The newly-formed Ventura Users Group (VUG) represents all those using the Ventura DTP package in Zimbabwe and has appealed to locally based aid organisations (without much success so far) to ensure that donated equipment does not threaten the viability of small DTP publishing ventures.

"We in the Ventura group feel that the role of aid in the publishing industry in Zimbabwe needs far closer examination," said Peter Roussos of **Lazerprint**, which offers DTP bureau services, as well as training. "The problems of the publishing industry are not that there are not enough printers, originators or publishers but problems lie more in upkeeping the exisiting capacity of the industry."

Roussos and others in VUG feel that aid organisations would fulfill a more useful function if they provided consumables like paper, film, ink and spares, as well as thorough training for the end-users. "Before donating equipment to a specific organisation, we would like aid organisations to examine the state of the whole industry which provides the service. If enough capacity exists in this country, then surely it would be better for all concerned if the jobs were given to the industry rather than undermining it in order to support one small organisation," said.

There is a lack of suitably trained personnel to use the donated equipment few aid packages include money for training. Organisations soon find that they are faced with large salary bills as DTP operators demand higher salaries than typists, and are then forced to take on jobbing in competition with the existing DTP bureaus to make the DTP system for itself.