

M. J. ALDRICH

PRESS CUTTINGS

JUNE 1988

Extract from  
Crawley & District Observer, Sussex

# ROCC plan for 90's

452  
THE COMPUTER game is heading for the mid-field, says ROCC Computers chairman Michael Aldrich. Minicomputers are the new growth sector for the 1990s.

Announcing the strategic direction that will take his Crawley-based information, office and communication systems company into the next decade, Aldrich unveiled plans to market three minicomputer product ranges.

"Minicomputers offer better price/performance than mainframes and better utilisation than micros," he said.

"We plan to be the best of breed in our class."

## Cash rich

ROCC's business plan calls for a major expansion of the company from its present 450-person, £16m sales level to an 800-person £50m sales level in the 1990s, funded from internal sources.

"ROCC's financial strength as a cash-rich, employee-owned private company with large assets, no debt and healthy profits provides the base for planning the future with confidence," Aldrich said.

"Our business is supplying specialities to blue-chip customers. With these three ranges ROCC will continue as a

major niche player in data capture, videotext, local authority, sales/marketing and financial applications.

"Product sales growth will be matched by growth in services to continue ROCC's proven 50:50 balanced revenues strategy."

The new services will include third party maintenance, bespoke software and mail-order tailored to the needs of larger organisations.

The three minicomputer ranges will be oriented round Open Systems Interconnections. The basic TRIPOS workstation management system (WMS) uses RISC techniques to support up to 96 workstations.

A videotext variant supports up to 1,000 videotext terminals and a Unix-

based version of WMS uses Motorola 68000 and RISC technologies, an open bus architecture and open software.

All ranges have extensive networking capabilities.

## Consortium

ROCC, based in Kelvin Way, near Gatwick Airport, is a veteran manufacturer of minicomputers. Originally named Redifon and later Redifusion Computers Ltd., it was bought by a consortium of management and City interests in 1984.

The company has a reputation in the computer industry as a pioneer in innovative uses of information technology.

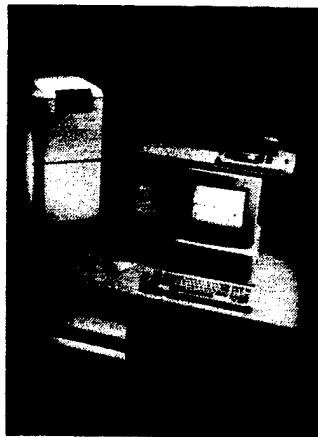
INTERNATIONAL PRESS-CUTTING BUREAU  
224-236 Walworth Road,  
London SE17 1JE

Extract from  
Office Magazine, London

-- JUN 1988

## Major expansion for ROCC

Setting its sights on major expansion in the 1990s, ROCC Computers is confident that minicomputers are the new growth sector. Three new product ranges oriented around Open Systems Interconnection will be launched this month and ROCC hopes to grow from its present 450-person, £16-million sales level to an 800-person, £50 million sales level in the 1990s funded from internal sources. New services will also include third party maintenance, bespoke



software and mail-order tailored to the needs of

larger organisations.

The three minicomputer ranges are called the Tripos Workstation Management Systems (WMS). The basic system can support up to 96 users of disparate workstation terminals. The Unix-based version of Workstation Management uses Motorola 68000 and RISC technologies, an open bus architecture and open software. All ranges have extensive networking capabilities.

ROCC Computers

INTERNATIONAL PRESS-CUTTING BUREAU  
224-236 Walworth Road,  
London SE17 1JE

Extract from  
Crawley & District Observer, Sussex

- 8 JUN 1988

# ROCC Computer coups pulled off

ROCC Computers has installed a ROCC 2840 multiuser system at the Liverpool headquarters of The Littlewoods Organisation PLC.

The computer system was ordered to cope with a substantial increase in the group's business activities. Major applications running on the ROCC 2840 and its sister machines two ROCC 2830s include bulk data entry for the 112 Littlewoods retail stores and its home shopping companies, Littlewoods, Brian Mills, Burlington, Janet Frazer, John Moores and Peter Craig.

Also handled by the ROCC computers is data capture from the retail stores charge card transactions by Credit and Data Marketing Services (CDMS), the financial services and data marketing division of The Littlewoods Organisation.

CDMS also operates town cards for Wilmslow, Tunbridge Wells and Chester and runs credit cards for a number of other retailers including Iceland Frozen Foods, Augustus Barnett, Majestic Wine Warehouses and Wickes DIY.

Remote workstations are installed at the Crosby headquarters of CDMS which also input data for Charities Trust, the national payroll giving agency administered by the company.

The work is undertaken for companies who have agreed to submit employees' contributions to their nominated charities, but who do not have their own inhouse computer systems.

ROCC Computers is a long-established computer manufacturer and is totally British-owned. Its sales operation is run from branches in Crawley, Leighton Buzzard, Bristol, Manchester and Edinburgh. Service Centres are situated in the same premises as the sales branches in the major cities with additional centres at Aldershot, Hitchin, Tamworth and Surbiton.

The company's headquarters, manufacturing, development and training centres are located in Crawley, West Sussex.

Clydeport Data Management Ltd, a wholly-owned subsidiary of the Clyde Port Authority, has recently installed a ROCC 2825 multiuser system in its Glasgow headquarters.

The company offers a full bureau service to its clients namely: government bodies, commercial and financial institutions and charitable organisations.

A user of ROCC computers since 1976, the new ROCC 2825 with 16 workstations is handling the bureau's high volume of data capture business.

ROCC Computers is a long-established computer manufacturer.

Its sales operation is run from branches in Crawley, Leighton Buzzard, Bristol, Manchester and Edinburgh.

INTERNATIONAL PRESS  
CUTTING BUREAU

Extract from:  
COMPUTING TECHNIQUES  
- London -

- MAY 1988

## Rising from the ashes

Crawley-based ROCC Computers, the company that came into being four years ago following the re-structuring of the Rediffusion group, turned in almost £2 million in profits in the last financial year and looks all set to continue its phenomenal growth into the 1990s. At a formal presentation earlier this month Mike Aldrich, who led the buy-out of Rediffusion Computers at the end of 1984, announced that this privately owned company will market three minicomputer product ranges oriented around Open Systems Interconnection, continue to serve its big blue-chip customer base as a niche application product supplier, and expand its services activities.

"ROCC's financial strength as a cash-rich, employee-owned private company with large assets, no debt and healthy profits provides the base for planning the future with confidence," says chairman Michael Aldrich. ROCC's business plan calls for a major expansion of the company from its present 450-person, £16-million sales level to a 800-person, £50-million sales level in the Nineties, funded from internal sources.

"Product sales growth will be matched by growth in services to continue ROCC's proven 50:50 balanced revenue strategy," says Aldrich. "New services include third party maintenance, bespoke software and mail-order software tailored to the needs of larger organisations."

"Minicomputers are the new growth sector for the Nineties," says Aldrich. "They offer better price/performance than mainframes and better utilisation than micros. The computer game is heading for the mid-field," Aldrich added.

ROCC's three minicomputer product ranges are to be marketed as TRIPOS Workstation Management Systems. The basic system uses RISC techniques to support up 96 workstations, while a videotex variant can support up to 1000 videotex terminals in typical usage. There is also a Unix-based version which features Motorola 68000 and RISC technologies to provide an open bus architecture and to extend the range of application software available to end users.

INTERNATIONAL PRESS-CUTTING BUREAU  
224-236 Walworth Road,  
London SE17 1JE

Extract from  
Communications, London  
- JUN 1988

Freemans has awarded a contract worth over £555 000 to ROCC Computers for five multi-user computer systems.

INTERNATIONAL PRESS-CUTTING BUREAU  
224-236 Walworth Road,  
London SE17 1JE

Extract from  
Mini Micro News, London

... 1111 1000



● The Workstation Management System from ROCC: supporting up to 96 users.

## ROCC expansion

Low-profile British computer manufacturer ROCC Computers has come into the open with plans for a major expansion.

Sussex-based ROCC was the result of a management buyout of Rediffusion Computers (previously Redifon) back in 1984, and now employs some 450 people manufacturing systems in specialist markets such as data capture and videotex.

Last year, the company had sales of £16 million and pre-tax profits of £1.8 million.

Aiming to grow to a £50 million, 800-person company in the 1990s, ROCC says it will concentrate on an open systems interconnection focus for its Tripos Workstation Management Systems, which include three ranges:

the 28X5, a multi-micro system which uses Risc techniques and ROCC's WMS proprietary operating system to support up to 96 users; the 28X6, using similar techniques but supporting up to 1,000 videotex terminals; and the Motorola 68020-based 38X8 range using the VME Bus and running Unix. ROCC says these systems will shortly be updated to include Risc processors.

ROCC chairman, Michael Aldrich, says: "Minicomputers are the growth sector for the nineties — the computer game is heading for the mid-field."

ROCC has had much success in the local authorities, so OSI systems conform to the UK Government's GOSIP intercept approach.

■ **Fast Facts 465**

INTERNATIONAL PRESS-CUTTING BUREAU  
224-236 Walworth Road,  
London SE17 1JE

Extract from  
Communicate, High Wycombe, Bucks.

Extract from  
Sales & Marketing Management,  
Harpenden, Herts.

MAY 1988

### South and South West

A. P. Ballard, AInstSMM, Product Manager  
R. H. Blackmore, FInstSMM, Sales/Managing Director

M. J. Cowley, AInstSMM, Sales Co-ordinator  
S. Delevants, AInstSMM, Area Manager  
C. P. Flowers, AInstSMM, Territory Salesman  
A. J. Jones, AInstSMM, Senior Sales Co-ordinator  
A. Lawrence, MInstSMM, Plant Manager  
B. W. Lynch, MInstSMM, Divisional Director  
K. P. Nobes, AInstSMM, Plant Manager/Representative  
S. L. Pell, FInstSMM, Area Premix Manager  
R. C. Reeves, FInstSMM, Senior National Account Manager  
G. D. Short, FInstSMM, Sales Representative

Britec Ltd

United Centrifugal Pumps Ltd  
A.R.C. (Southern) Ltd  
Technical Indexes  
Pollards Confections  
A.R.C. (Southern) Ltd  
A.R.C. (Southern) Ltd  
Rocc Computers Ltd  
A.R.C. (Southern) Ltd  
A.R.C. Ltd  
Rentokil Ltd  
Smiths Concrete Ltd

Freemans has awarded a contract worth over £555,000 to ROCC Computers for five ROCC 2840 multiuser computer systems, two for installation at Freemans' Sheffield offices and three to be installed at its London headquarters. The ROCC 2840s will be used for the transcription of mail order documentation and to evaluate data entry, emulation of IBM 3270 devices, fast file loading and online IBM 3270 enquiry and validation.

# CHECKPOINT EXHIBITOR INFORMATION

<i>Client</i>	<i>Stand</i>	<i>Hardware</i>	<i>Location</i>	<i>Industry</i>	<i>See Advertisement</i>
AMERSHAM INTERNATIONAL	16	H.P.	Amersham/ Aylesbury	Chemicals Health Care	Page No. 14
BRITISH AEROSPACE	15	IBM/AMDAHL	Stevenage	Manufacturing	Page No. 5
BOC LTD.	3	IBM, DEC	Guildford Woking Morden	Gases	Page No. 18
COMMERCIAL UNION	12	IBM	Nr. Croydon Surrey	Financial Services	Page No. 19
COURAGE	2	IBM	W. London Staines Reading	Brewing	Page no. 6
DATA TRAINING LTD.	11	Multi M/F	London UK/ Client Site	Consultancy Support Training	Page Nos. 12, 13
<u>INFOLINK</u>	6	<u>ROCC</u>	Croydon	<u>Business Information</u>	Page No. 10
LANSING LTD.	4	ICL, IBM D/6	Basingstoke	Engineering	Page No. 22
NATIONAL WESTMINSTER BANK	14	IBM	London	Banking	Page No. 15
P & O CONTAINERS	13	AMDAHL/IBM	City	Transport	Page No. 11
SHERWOOD COMPUTER SVS	8	ICL, IBM, PRIME	Romford	Software House	Page No. 20
SIEMENS	5	SIEMENS	Reading	Software House	Page No. 21
SYSTEMS DESIGNERS PLC	9	DEC	UK Europe USA	Consultancy	
TANDEM COMPUTERS FASTSTART	10	IBM,DEC/ TANDEM	UK & Europe	Various	Page No. 23
TERADATA	1	IBM, VAX	UK Wide	Computer Manufacturer	Page No. 7

SIGNATURES AND SECURITY

Verifying the identity of someone who initiates or authorizes a financial transaction continues to be an area where improvements are needed.

A recently developed technology shows some promise of taking the most common method of verifying identity -- the signature -- and making it more effective. The technology, developed by ROCC Computer, Ltd., a British firm, and marketed by Cheque Alert, Inc., New York City, and called Digiscan, digitizes the characteristics of a signature from already existing samples and compares the signature on a check or credit card slip with the digitized pattern.

Working with the signature has plenty of advantages compared to other methods of assuring identity. For one thing, customers already accept the signature as a useful way of establishing identity. There is no stigma to being asked to give a signature, which distinguishes signatures from fingerprints, for example. And people don't often forget how to sign their names, which distinguishes signatures from Personal Identification Numbers.

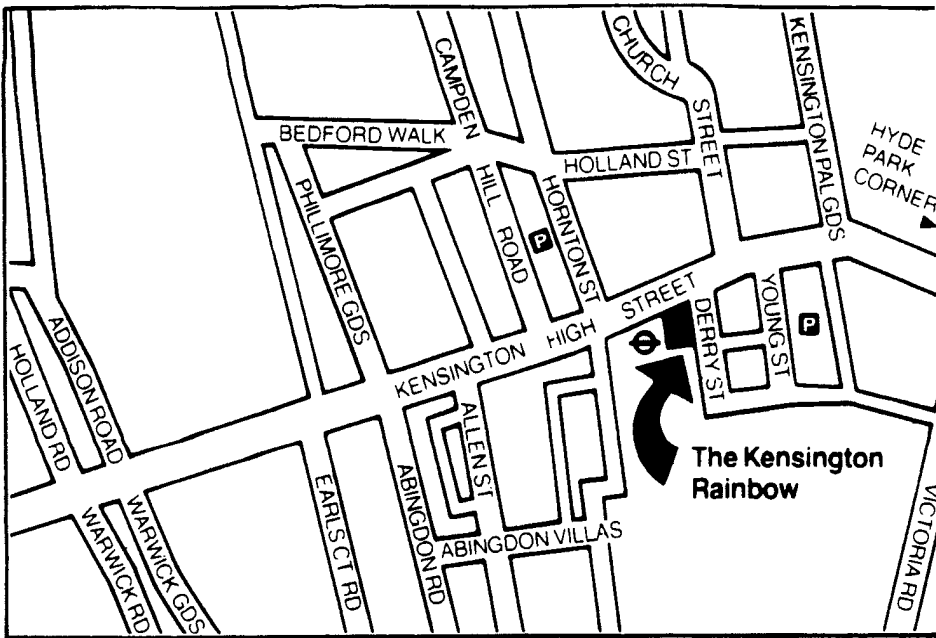
Signatures do have some defects; a skillful forger can fool most people who compare the signature on a check or credit slip with the original. Also, the sheer volume of instruments passing through the check collection system means it is impossible to verify signatures on the overwhelming majority of checks. Indeed, many people have had the experience of having a check which they had sent to pay a bill debited from their account even though they had forgotten to sign it.

The technology developed by ROCC Computer shows promise of increasing the number of checks which can be scanned, though at this point it is very much a technology in search of a market. Digiscan's terminal reads the signatures on documents such as checks. The customer does not have to sign a special document, nor does he or she have to sign while the terminal reads the signature being entered. The terminal simply looks at past samples of the signature and turns what it measures into a code.

Once six or seven samples of the customer's signature are entered, the terminal comes up with a number which represents the characteristics of the signature. That number could be printed on the customer's checks, stored on the magnetic stripe of the card, or, conceivably, entered into the file of some computer.

Since people's signatures change over time, a new set of samples must be taken periodically, and a new number generated. For credit cards, this could be at reissue time, for checks, every two years or so.

When the customer signs a new check or credit card, that slip of paper is entered into the terminal/reader, which compares the signature with the number which represents previous samples of the signature. The terminal either accepts or rejects the instrument, or it can instruct the clerk to get more identification.



**11am to 8pm Friday**

**24th June**

**10am to 6pm Saturday**

**25th June**

**FREE parking on Saturday**

*(By validated ticket only)*

**KENSINGTON RAINBOW  
EXHIBITION CENTRE**

**Derry Street Entrance**

**99 Kensington High Street**

**LONDON W8**

**01 200 0200**

**CHECKPOINT  
NOW IT'S UP TO YOU**

*Rocc customer.*

**INFOLINK**

Infolink is one of the largest online credit data organisations in the UK, providing instant information to the financial sector on more than two million commercial enterprises and in excess of 46 million individuals.

For management to make profitable decisions and minimise the risk of bad debts, immediate and up-to-date information is essential. Infolink's data helps provide invaluable input to management for any business transaction.

7

Cheque Alert held a press conference late in April to demonstrate the technology. Michael J. Aldrich, chairman of ROCC Computer told those present that independent tests of the technology, done by Dr. J.T. Boardman and the Information Technology Research Institute at Brighton Polytechnic, had shown that, given six samples of someone's signature, the reader would accept 93.6% of subsequent genuine signatures, while rejecting 85.3% of all "carefully practiced forgeries." More than 99% of forgeries made without seeing the genuine signature were rejected.

The rejection rate of genuine signatures can be lowered to 4.9% by digitizing seven examples instead of six. The specifications of the terminal can be altered to accept a greater deviation from the standard set by the code number. That will result in rejection of fewer genuine signatures, but also in accepting more forgeries.

The demonstration given at the press conference made it apparent that the terminal is much better at detecting forgeries than the untrained observer. There were no experts in forgery present.

According to W. Terry Krueger, president of Cheque Alert, the terminal should cost about \$500 when mass marketed. A reader, which would not develop coded numbers but merely verify signatures, would cost less.

Where could Digiscan be used? With the present terminal, individual checks are fed into the terminal and checked one at a time, taking several seconds a check. It would be impossible to use it in bank operations unless it were linked to a reader-sorter and

Page 7

Funds Transfer Report  
May 10, 1988

greatly speeded up, or unless its use were confined to a small percentage of the checks being cleared. Even in that use, the 5% rejection rate of genuine signatures might be a problem.

Using Digiscan at the point of sale for credit cards would require a common method of coding the signatures so that all terminals could read them. There would be the advantage that the cards would no longer have to have signatures on them. Also, checking for forged signatures could be done without any telephone costs by entering the coded number on the magnetic stripe. But getting the necessary widespread agreement, plus getting merchants to install the readers, are formidable obstacles. Also, merchants probably will not accept a 5% rejection rate of genuine signatures.

Another obstacle is that no one seems to know the dimensions of the problem. Fraud clearly is committed to the tune of billions of dollars a year. But how much of that fraud involves forged signatures? We are not aware of any published figures, nor were the officers of ROCC Computer or Cheque Alert.

Still, firms with a significant problem with forged signatures will find this technology of interest. If you are interested, call or write Wm. Terry Krueger, Pres., Cheque Alert, Inc., 30 Rockefeller Plaza, Suite 4250, New York, NY 10112; Tel: 212/397-0717.

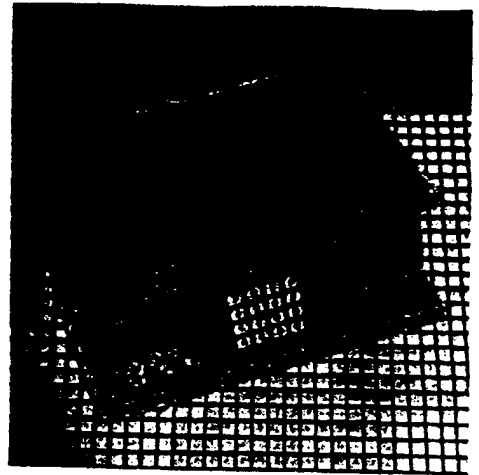
## System Verifies Signatures

NEW YORK—Cheque Alert, Inc. has announced it will market a low-cost signature verification system based on what it called a major technological breakthrough in pattern recognition developed by ROCC Pattern Recognition Ltd. of the UK. Pattern recognition is the term for the process which identifies individuals, documents, signatures, etc.

ROCC's signature verification technology, implemented in a system that Cheque Alert will market under the product name DigiScan, is about 95 percent accurate in general use and more than 99 percent accurate when dealing with forgeries attempted by forgers who have not seen the true signature.

Independent tests of DigiScan carried out by internationally recognized institutions indicate that the product's stable and consistent performance establishes new world standards in authentication and identification techniques. Using the unique DigiScan equipment, Cheque Alert officials believe that it will now be possible to completely eliminate the need for signatures on the back of all credit cards, thereby rendering the lost or stolen card useless.

DigiScan technology works by deriving a numerical code from a minimum of six sample signatures. The numerical code is then printed alongside the signature box on a check or encoded in the magnetic stripe on a plastic credit or identification card. A comparison between the written signature and the numerical code indicates whether the



The DigiScan Signature Verification System.

signature is acceptable or not. Making the comparison requires just two seconds.

The basic DigiScan unit is both tamper-proof and self-contained. It does not have to be connected to any other electronic device or network, and its numerical values can't be used to create signatures. Patents are pending.

Cheque Alert will market and/or sublicense the DigiScan technology to equipment manufacturers for use in their own products, such as point-of-sale terminals, check/item processing systems, encoders, etc. The basic, stand-alone verifier will sell for about \$550 per unit once it is in mass production.

For more information, contact Wm. Terry Krueger, President, Cheque Alert, 30 Rockefeller Plaza, Suite 4250, New York, N.Y. 10112, (212) 597-0717.

## Enhanced Static System Uses Less Computer Power

By JEFFREY KUTLER

NEW YORK

**T**here is an advanced way to verify signatures other than the highly touted dynamic approach. It is called static signature verification, and it has a champion in Cheque Alert Inc.

The New York-based company began in April to actively promote DigiScan, a system that matches virtually every claim of the dynamic signature verification vendors, at a lower quoted price.

Given slow pace of development in dynamic signature verification, DigiScan is certain to get a fair hearing from bankers and others looking for a reliable identification method that does not inconvenience customers and employees.

Technically speaking, the difference between dynamic and static is a matter of computer power and hardware. Static needs less, hence the price difference.

Unlike a dynamic system, which validates "live" signatures as they are written, DigiScan takes its measurements from signatures already on paper. There is no need for electronic pens or magnetic writing surfaces.

One of DigiScan's selling points is that a consumer does not have to do anything special to have his or her signature registered in the system. The benchmark readings can be taken off any checks or documents that may already be in a bank's files.

"We set out to offer a low-cost product that has open architecture, meaning it can be integrated with other types of terminals and systems, that is flexible as to location, and in which data storage is easily accomplished," said W. Terry Krueger, president of Cheque Alert.

"The system uses mathematics, not artifacts," said Michael J. Aldrich, chairman of ROCC Computers Ltd., a British firm that designed DigiScan and is serving as Cheque Alert's backer and marketing partner.

DigiScan terminals will cost as little as \$550 each in mass production, its makers claim, which is at least \$50 to \$100 less than the best prices quoted by dynamic-system producers.

Lacking a mass market — generating orders of thousands if not tens of thousands of units — all such prices remain theoretical. Cheque Alert and ROCC say their static system has the greater chance of making the signature verification market come to life.

The static system is based on pattern recognition technology that originated at the British government's National Physical Laboratory in London. Ironically, that same laboratory spawned many of the competing dynamic signature innovations.

Dynamic systems require considerable data processing resources to measure how a signature is written — the strokes, angles, liftings of the pen, and the time it takes to write one's name. These characteristics are translated into numerical quantities that can be stored as digits in computer memory, be it in a mainframe computer, mini- or microcomputer, or a chip within a plastic card.

Later, when a bank or store customer conducts a transaction and signs on the dotted line, the signature is measured again — dynamically, or as it is written — and compared against the previously encoded benchmark. If the reading is within a normal range of tolerance, then the system validates the signature and permits the transaction to take place.

In the static DigiScan system, a benchmark signature is calculated

from a sample of six signatures. This reference value requires only 21 digit-of storage space.

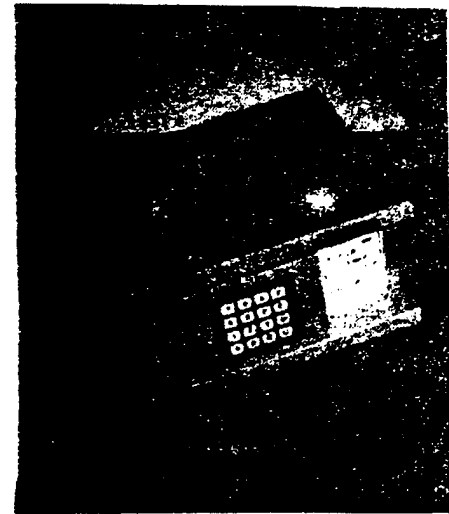
Those numbers can fit easily in a credit or debit card's magnetic stripe, which does not have the capacity to hold the data of a dynamic signature. Thus, with DigiScan a cardholder's identity could be verified at any bank or store equipped with a DigiScan terminal, and the terminal does not have to be on-line to a central data base. It only has to read the signature and compare it with what is encoded in the magnetic stripe.

Magnetic stripe cards are more easily

counterfeited and compromised than a smart card, which could handle a dynamic signature. But Cheque Alert says the 21-digit code could even be left in the open, printed on a bank card for all to see, because it does a criminal no good to know that number. The forger would have to write a signature that, when run through the shoe-box-sized DigiScan scanner, produces a value close to the 21-digit benchmark. Easier said than done, according to Mr. Krueger and Mr. Aldrich.

"The 21-digit number is not secret and is meaningless to those who know

Static System: Page 8



**SMALL PACKAGE:** With the DigiScan system one shoe-box-size terminal is all that is needed to validate signatures.

Continued from Page 6  
it," Mr. Krueger said.

They anticipated that questions would arise about DigiScan's reliability, precisely because it is not a dynamic system and therefore seems more easily compromised. In scientific evaluations of DigiScan — which Mr. Krueger and Mr. Aldrich are more than happy to hand out — the system has properly rejected 97% of invalid signatures and accepted more than 90% of authentic signatures.

The performance is in line with that of dynamic signature verification systems.

"Now banks have a practical, sensible, affordable, and reliable way out of the fraud problem," said Mr. Aldrich, a 26-year computer industry veteran who is a former member of a technology advisory board to Prime Minister Margaret Thatcher.

*Overleaf*

# Static System Verifies Signatures Using Less Computer Power

In the static DigiScan system, a benchmark signature is calculated from a sample of six signatures.

ROCC's pattern recognition system, which has patents pending in the United States and Europe, will also be applied to preventing the counterfeiting of documents, Mr. Aldrich added. The system can create its code based on the structure of a piece of paper, which could then be verified for authenticity in a DigiScan reader.

Mr. Aldrich contended that this approach would be simpler and less expensive than the Light Signature, a technology being introduced in the U.S. securities industry by Telecredit Inc., Los Angeles. The Light Signature is built around a document's array of fibers, while the ROCC approach would rely on the more visible watermark. ■

Extract continued  
American Banker  
May 25 1988

# TECHNOLOGY TODAY

AN AMERICAN BANKER WEEKLY FEATURE

## This Week's Quote

*The system uses mathematics, not artifacts.*

— Michael J. Aldrich, chairman of ROCC Computers Ltd., about the DigiScan static signature verification system.

## An American Banker Special Report

# A Comeback for the Signature?

## Technology Vendors Renewing Efforts on Electronic Verification

By JEFFREY KUTLER

NEW YORK

**T**HE written signature is making a bid for a comeback as the most desirable method of ascertaining a person's identity.

After years of falling short of expectations, developers of signature verification technology are finally beginning to show that it is feasible to use electronics to measure a signature, and hence confirm the writer's identity.

The implications are vast for banks, retailers, and other businesses that fear their systems or premises are vulnerable to fraud or unauthorized entry. As these verification methods prove themselves, signatures could begin to replace secret code numbers, passwords, and other identification techniques that came in with the high-tech age.

The signature never completely went out of favor. It is still required on all checks, credit card drafts, and other transaction documents, following a custom that started when the signature represented a bond of trust. But with computers and high-speed document processing came a devaluation of the signature. Banks rarely take the time — or have the time — to compare the signatures on checks against their signature-card files.

Technology experts still regard electronic signature verification as a long-term proposition because there are numerous technicalities still to be resolved. And the costs of these systems remain too high for introduction into the mass consumer market, where they would have the most revolutionary impact.

But vendors are increasingly going public with products and implementation plans that until recently they preferred to keep under wraps.

### Four Major Developers

Warfel & Miller Inc., a Washington consulting firm that tracks biometric identification methods such as fingerprinting and voice recognition in addition to signatures, listed four "major developers" of signature



**VISUAL AID:** Geac Computers Inc., St. Louis, offers a signature verification system that displays an image on a computer screen. The system permits letters and backslashes to be used to judge the authenticity of signatures.

verification technology in the 1988 Biometric Industry Directory." The directory also included the names of numerous other inventors, system integrators, and distributors of signature verification products.

All of the major developers named by Warfel & Miller have their corporate roots outside the United States, and they are experimenting with technology that emerged from research labs such as Britain's National Physical Laboratory and the Battelle Memorial Institute. But the companies regard U.S. markets as prime opportunities for growth. These firms are:

- The British Technology Group, London, a government-funded research and development corporation that has created prototypes of two signature verification systems.

- Thomas de la Rue Inc., Herndon, Va., a subsidiary of the British payment services firm Thomas de la Rue Co., whose signature device has been tested by MasterCard International, among others.

- Signify Inc., Columbia, Md., which last year shipped several hundred units of a signature reader that controls access to secure areas such as bank safe

Vendors: Page 7 →

Continued from Page 5  
deposit rooms. Signify is a subsidiary of McCornquodale Holdings, Baltimore, which in turn is part of London-based Norton Opax, which owns check printing and publishing interests.

TTN, part of the Alcatel group of France, which is reportedly close to deploying signature-based access control devices in the wire rooms of two French banks.

All four companies are marketing, or offering to license, the technology known as dynamic signature verification — signature dynamics for short. A system is dynamic in that it measures a "living" characteristic, in this case the writing of a signature. Later specimens of someone's signature can be com-

pared against an "original" that is stored electronically in computer memory.

Warfel & Miller, in its 1988 biometric directory, calls signature dynamics "one of the hottest areas of biometric development" because of the potential for widespread use in the financial community.

George Warfel Sr., chairman of the firm and a noted bank security consultant, has long advocated that the banking industry adopt biometric technology, preferably signature dynamics because the process comes naturally to consumers and institutions alike. But because of the technology's cost and its appeal only to the most futuristic, few bankers have shared Mr. Warfel's en-

thusiasm.

One who did was John Fisher, senior vice president of Banc One Corp., Columbus, Ohio. In the early 1980s, Mr. Fisher suggested first to the American Bankers Association and then to the European Financial Management and Marketing Association that they organize a "war chest" of about \$1 billion to finance the development and deployment of dynamic signature verification. The associations could have owned the patents and collected royalties on them as the technology spread around the world, he said.

Mr. Fisher's plea was ignored by both groups, but experts in the biometric field have never quarreled with his reasoning.

# TECHNOLOGY TODAY

American Banker, May 25, 1985

Mr. Fisher argued that the personal identification number, now the standard verification method in consumer electronic banking, had inherent problems, such as the public's propensity to forget the numbers or write them down in the wrong places. He saw the PIN system as an interim step, certain to become obsolete if not eventually compromised by the criminal element. And the \$1 billion it might have cost to create a workable signature system in the early 1980s might double or triple by the turn of the century.

Not heeding Mr. Fisher's advice, the banking industry left the signature verification vendors to their own devices. Prototypes and demonstrations of the technology have become easy to come by, but actual "live" applications remain limited to small, experimental groups in which system performance can be closely monitored and analyzed.

The relevant patents are in relatively few hands, among them International Business Machines Corp., NCR Corp., and Visa International, the bank-owned credit card association.

The PIN continues to reign supreme, but its shortcomings are increasingly well recognized. Ben Miller, the other partner in Warfel & Miller, wrote in the directory.

"Most bankers will admit that a part of the usage problem with automated teller machines was caused by the unwieldiness and weakness of the PIN," he said. "As a result, forward thinkers in the electronic funds transfer field recognize that the payment system will eventually migrate back to an identification system based on something that the customer can carry around combined with a biometric characteristic."

"Especially when smart cards become more common in the mid-1990s," Mr. Miller said, "the most likely candidate [for a verifiable characteristic] is signature dynamics, because consumers are already accustomed to signing financial transactions."

# French Banks Prepare to Test Smart Cards That Contain Signatures as Security Measure

By LINDA K.S. MOORE

GRENOBLE, FRANCE

**W**ithin a few months, two French merchant banks will begin testing a signature verification system as a security measure in their wire transfer rooms.

The names of the banks have not been disclosed because TITN, the Paris-based computer engineering firm developing the system, has not signed final contracts. But TITN has been eager to demonstrate its technology and explain how it works.

Under development at a Grenoble research facility of TITN, the system will combine signature recognition technology with smart cards, storing signature data in the cards' computer-chip memory.

Only cardholders whose signatures can be validated electroni-

cally will be admitted into the banks' secure areas.

The technology, which TITN calls DSR (Dynamic Signature Recognition), also is being installed by French nuclear power plants to limit access to their control rooms. TITN is an acronym for Traitement de l'Information Techniques Nouvelles, or "new techniques of information processing." It is a subsidiary of Alcatel, a French technology conglomerate, and has a U.S. subsidiary, TITN Inc., in Hayward, Calif.

To create a DSR smart card, a cardholder signs his or her name in a magnetic field created by a specially designed pen applied to a magnetic tablet. The speed and movements of the pen are measured as a series of electronic im-

pulses. The impulses are converted into numerical values, or algorithms, that can be recorded in the smart card's memory.

In addition to signatures, system users have the option of storing personal identification numbers in the chip to provide another level of security.

Four signatures must be created under DSR's current system. One is deemed the most typical by the computer and becomes the benchmark or reference signature that a cardholder must match to enter a secure area. The reference signature can be stored in a centralized computer data base or inside a smart card, as will be the case at the French banks.

The advantage of the smart card  
**French Banks: Page 7** ➔

*Extract from  
American Banker  
May 25 1988*

## French Banks Try System That Verifies Signatures

➔ Continued from Page 5

approach is that it works in an off-line mode, requiring only an operating card reader to determine if a signature is valid. On-line terminals work only when a central computer system is up and running — never 100% of the time.

In a DSR test conducted last year with personnel at the French Post Office and Telecommunications Research Center, the system rejected 25% of valid cardholder signatures — an unacceptably high level. According to TITN, the problem was that the reference signatures were created on the basis of only two examples provided by each postal worker.

When the reference values are calculated from four signatures, as TITN now requires, only 10% of valid signatures are turned down, the company said. The probability of the system accepting a false or forged signature is 0.03%.

Because signatures are changeable, a verification system must tolerate minor variations. Individuals not accustomed to using the special pen also may complicate the process.

TITN officials have noted that users who hesitate and do not write their signatures immediately after taking hold of the magnetic pen are rejected automatically. Some degree of training is necessary to teach people how to use the system. ■

**Athletics**

# Brave Tullett beats injury

by Reg Hook

**MORE** than 400 runners braved the European Challenge Trail starting at Buriton, near Petersfield.

They pitted themselves against 80 miles of the South Downs Way for the longest and seemingly most popular trail race in the world.

The course, with ascents and descents of almost 9,000ft, is a tough event at any time, and with temperatures well into the seventies it was a day for the tough guys.

The magnificent scenery is just one reward for the runners as they traverse the ridge of the Downs.

Martin Daykin, from Hereford, and Brighton and Hove's Terry Tullett set the pace from the start, and they were on schedule for the record in the early stages of the race.

At Washington, after 30 miles, they were almost neck and neck as they started the stony and glaring chalk-white climb to Chanctonbury Ring.

Just before they had reached Washington, however, Tullett had twisted ligaments in a knee, and by the time they crossed the Adur at Upper Beeding Daykin was pulling clear.

At this stage, the Brighton runner was still keeping up a good pace, while the rest of the field were miles back, intent just on completing the course.

The gap continued to increase, at Ditchling Beacon it had doubled, and soon after the Beacon crossing Tullett's leg virtually seized up.

He was forced to lay in the



● **TERRY TULLETT** gets the spray treatment as he chases Martin Daykin

road for more than 20 minutes before he could continue, and from then on, for some 20 miles, Tullett hobbled on with the sole intention of holding on to second place.

Daykin reached the finish in 10hr. 3min. 48sec., just over ten minutes outside his own course record but a

remarkable time in the hot conditions.

The runners are used to the wind, which is ever-present along the road of Sussex.

Tullett clocked 10hr. 41min. 47sec. at the end of a really brave run and was less than five minutes ahead of Doug Walker, from Sheffield.

*Row's 10hr 41min 47sec*