

wireless world

MARCH 1977 35p

Rhythm unit

TV test generator

Australia \$A 20
Canada \$ 20
Denmark Kr 100
Finland Fmk 100
Germany Dm 4
Greece Dr 45.00
Holland Dfl 4.50
Italy L 900
Malaysia M\$ 125
New Zealand \$NS 1.40
Norway Kr 10.00 incl. moms
Portugal Esc 40.00
South Africa R 4.10
Spain Ptas 80.00
Sweden Kr 6.90 incl. moms
U.S.A. \$1.50

wireless world

Electronics, Television, Radio, Audio

MARCH 1977 Vol 83 No 1495

Contents

- 31 **The consciousness industry**
- 32 **Electronic rhythm unit** by A. Battaiotto and G. Ronzi
- 37 **News of the month**
 - UK to consult on frequency allocations
 - Miniature television set
 - Government support for electronics industry
- 41 **Circuit ideas**
 - Octal display for microprocessors
 - Semiconductor tester
 - Linear voltage controlled amplifier**
- 43 **H.F. predictions**
- 44 **Interference from amateur stations** by I. Jackson
- 48 **EEC data-processing cash**
- 49 **Television pattern generator** by R. A. Owen and D. Brenkley
- 52 **Viewdata — 2** by S. Fedida
- 55 **Logic design — 3** by B. Holdsworth and L. Zissos
- 59 **Letters to the editor**
 - Advanced pre-amplifier design
 - Circular insert generator
 - Industry to study Citizens' Band
- 62 **Can oscillators be "common"?** by "Cathode Ray"
- 64 **Identifying European television — 2** by G. Smith and K. Hamer
- 67 **Weather satellite facsimile machine — 4** by G. R. Kennedy
- 69 **Special-purpose amplifiers — Circards 33** by J. Carruthers, J. H. Evans, J. Kinsler and P. Williams
- 73 **Mobile radio communication — 3** by D. A. S. Drybrough
- 77 **Wireless World index, binding and p.c. boards**
- 78 **World of amateur radio**
- 79 **New products**
- 122 **APPOINTMENTS VACANT**
- 136 **INDEX TO ADVERTISERS**

Current issue price 35p, back issues (if available) 50p, at Retail and Trade Counter, Paris Garden, London SE1. By post, current issue 55p, back issues (if available) 50p, order and payment to Room 11, Dorset House, London SE1 9LU.

Editorial & Advertising offices: Dorset House, Stamford Street, London SE1 9LU.

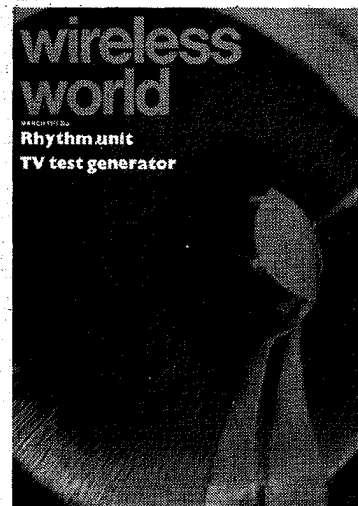
Telephones: Editorial 01-261 8620; Advertising 01-261 8339.

Telegrams/Telex. Wiworld Bsnsprss 25137 London. Cables. "Ethaworld, London SE1."

Subscription rates: 1 year: £7.00 UK and overseas (\$18.20 USA and Canada). Student rate: 1 year: £3.50 UK and overseas (\$9.10 USA and Canada).

Distribution: 40 Bowling Green Lane, London EC1R 0NE. Telephone 01-837 3636.

Subscriptions: Oakfield House, Perrymount Rd, Haywards Heath, Sussex RH16 3DH. Telephone



Front cover shows the interior of a Mullard scanning coil assembly for a colour television tube.
Photographer Paul Brierley

IN OUR NEXT ISSUE

Sensitive metal detector constructional design using beat frequency oscillator principle but with beat oscillator frequency mixed with 5th harmonic of search oscillator frequency.

Power semiconductor survey on construction and characteristics of transistors, thyristors, power Darlingtons and f.e.t.s and related devices with applications and circuits.

Stereo coder. Instrument providing a signal for testing stereo receivers and tuners or distributing programmes in showrooms, etc. The design uses no inductors, thus simplifying construction.

ibpa
International Business
Press Association

ABC
British Association
of Commercial
Advertisers

Viewdata

2 — Applications of the system

by S. Fedida, B.Sc.(Eng.), M.Sc., F.I.E.E., A.C.G.I.
Post Office Research Centre

Before dealing with the possible applications of Viewdata I will conclude the discussion started last month (February issue) on the problem of ensuring adequate communication between the user and the computer — what I have called the computer dialogue.

While the index principle is clearly adequate for the information service as such, a fuller dialogue is needed to cater for the very wide range of services provided by Viewdata, in particular a message facility, calculation and games facilities and a range of interactive services such as requests for advertising literature or other documentation and bookings of holidays and hotels.

The design of the computer dialogue is very important. Information put out by the computer to guide the user must be simple to understand, it must not be ambiguous and must not appear to demand more than one reply at a time. Furthermore the action to be taken by the user following the display of a frame of information must be clearly indicated, i.e. the prompt must always be inserted to ensure that the user does not lack guidance regarding the next step.

An example of part of a dialogue in the message service is shown in Fig. 1. It gives the flavour of the requirement and indicates some of the pitfalls.

A third aspect of the communications arrangements between user and computer concerns the general purpose set of non-indexed or dialogue instructions which may be needed by the user in the course of a session. The object of these instructions, which are only five in number, is to assist the user to recover from errors real or imagined and thus enable him to maintain control of the situation whatever happens.

The set of instructions selected for Viewdata for recovery from errors and more generally for coping with unforeseen problems is as follows:

1. To return to the top of the selection tree: *Z

This instruction is mainly used at the completion of one enquiry, when it is desired



Office version of a Viewdata terminal, known as Viewdataphone. Note the integral keypad and telephone handset.

cannot interpret the dialogue, he uses this to make a fresh start. In other words, it provides a fall back option for all unexpected situations.

2. To recall the previous page: *01

The purpose of this instruction is to enable the user to check the contents of the previous page, in case of miskeying errors, real or imaginary.

3. To recall the current page: *00

The purpose of this instruction is to cause the computer to retransmit the current page, in case some of the information has been corrupted. Interestingly enough, little evidence has been seen so far of serious data corruption during transmission.

4. To jump to a known page (number N): *Nz

The purpose of this instruction is to enable the user to jump straight to the required page, if he knows its number, thus by-passing the step by step approach.

5. To correct a miskeying error: **

If an entry is in error it may be erased by keying ** and a fresh start made.

These instructions are normally engraved on the keypad associated with Viewdata, thus providing a constant

Applications of Viewdata

The range of applications of Viewdata is theoretically unlimited. In practice it will be determined primarily by the market — what users want and what they are prepared to pay for. There are six distinct service areas, each with its own specific requirements and each using the interactive capability of the system to some degree:

- general information services
- message communications
- education
- calculation
- personal services
- in-house and private systems.

Information. The largest area capable of immediate development is the information service area. It has a number of subdivisions, with differing characteristics and treatments, e.g.: topical information; reference information, divided into general and professional; classified advertisements; and shopping aids.

The range of topical information itself covers a number of different items, such as news, sports results and weather information, each item in turn comprising a very wide spectrum such as

to the domestic viewer, to the business viewer, etc. This section of the information data base is the one most closely related to that of teletext. The major difference is that whereas in teletext the information is more likely to be in abbreviated or headline form because of the obvious limitation of the restricted total amount of information available, in Viewdata the information is in much more detailed form and of course has a considerably greater scope and variety.

Reference information is a large field which could cover items such as train and bus time tables, and perhaps air time tables, telephone directories and "Yellow pages" of local and national interest. It could also cover information on leisure activities such as games, hobbies and sports, do-it-yourself and gardening information, recipes and holiday and tourist information. Other topics of interest could be money matters and savings, tax information, jobs and careers information, and a wealth of specialist reference information for the businessman and professional user.

Classified advertisements are potentially a very important sector of the

information spectrum, since, given adequate coverage, classified advertisements may be available in everybody's home at the touch of a button when required, with an immediacy unrivalled by any other medium. By the same token items no longer available may be removed instantly from the data base, thus avoiding unnecessary enquiries and potential frustration. A major benefit of the classified advertisement is that it could provide a useful revenue which, as in the case of newspapers, could be used to counterbalance a proportion of the expenses.

The interactive capability of Viewdata adds an important dimension to the scope of the information services. It could be used, for example, to request further details about a product advertised or discussed, and in certain cases to actually place a purchase order. Potentially it is possible to do this without the need to place an additional telephone call.

Message communication. Viewdata is clearly not only an information medium, but also a message communication medium, indeed a "store and

forward" system, for use by the general public. The message, once entered in the computer, would be transmitted as soon as communication to the intended recipient can be established.

The simple message facility so far experimented with provides a number of options. In the simplest option the user may select one or more out of a number of standard messages, mainly greetings messages, but clearly many others are possible. After message selection the user needs to supply the Viewdata number of the intended addresses. Thereafter the action of the system is entirely automatic.

The message is now automatically routed to the local Viewdata computer which places a telephone call to the addressee. If the telephone number is engaged the computer tries again; the number of tries may be specified by the sender. If the number is not engaged but no reply is obtained to the call, after a short ringing interval, a red light fitted to the Viewdata receiver is switched on to indicate that "somebody has called." Indeed arrangements may be made for the local computer to attempt a call several times, and for the visual indica-



Fig. 1. Example of part of a dialogue in the message services provided by Viewdata.

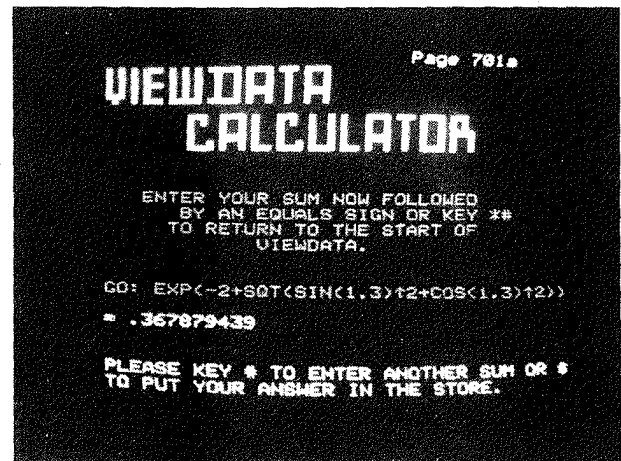
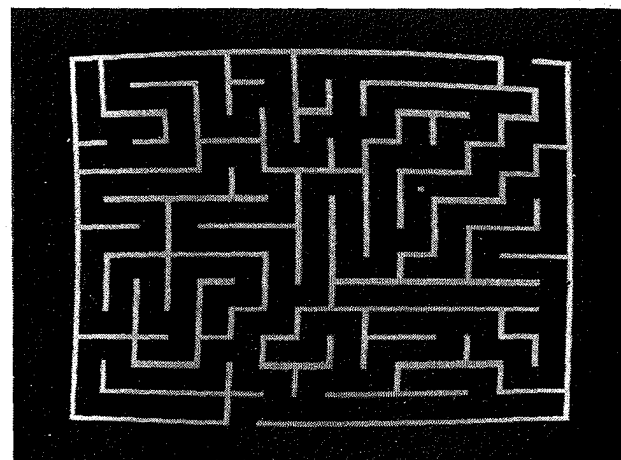
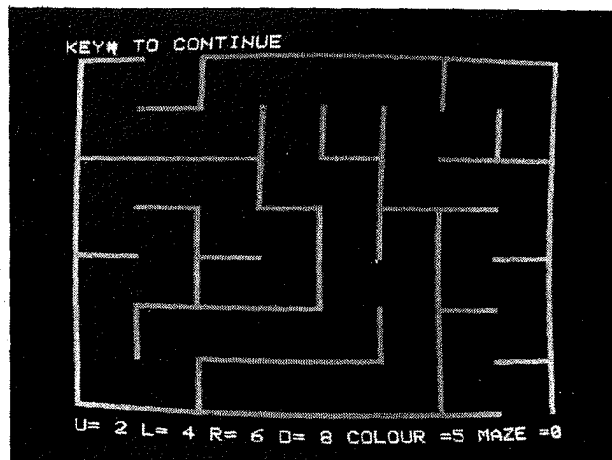


Fig. 3. Example of facilities offered by the calculator service.



tor on the Viewdata set to give a count of the unanswered calls.

When the call is answered, the computer places a high pitched tone on the line (1300 Hz), which indicates to the user that the Viewdata computer is calling. Pushing the data button on the telephone set causes the computer to send the message frame preceded by introductory frames to ascertain user number, etc.

A similar procedure applies when the addressee, on returning to his Viewdata set, finds the "somebody has called" light on. On dialling Viewdata and after entering his user number the message is delivered.

Another message option provides the user with the facility of inserting in the standard text one or more words, numeric or alphanumeric, e.g. times of arrival in a "I shall be arriving on the . . . train" message.

Finally, users who have the alphabetic keypad may be able to compose their own messages.

All these message options use the same method of delivery illustrated above and all provide the facility for sending one or more messages to one or more addressees, in a single transaction, thus saving the user a very considerable amount of time, particularly when the same message has to be sent to several people.

A simple extension of the message facility is the interconnection with telex¹. Viewdata benefits in the enhancement of its communication facilities by its interconnection with an extensive telex network with an international coverage. Telex benefits in three ways: it acquires a powerful store and forward capability; it acquires an additional number of customers, not normally on the telex network; and it could relieve congestion in the telex room at peak hours by repeating a telex message direct to an executive's Viewdataphone on his desk.

A further potential extension of the Viewdata message service is in the case of business mail. This could provide a useful load to the Viewdata computer network, during the night, for example, when its facilities are mostly unused.

Finally because Viewdata displays messages visually on the domestic tv receiver, it could provide a cheap and convenient way for deaf people to communicate at a distance, among themselves and with other people.

Education. Viewdata may be applied to the education field in three areas. The first is the conventional information services providing details of educational facilities, e.g. what courses are available and where, details of qualifications required, and who to apply to. This service could be structured under a number of different headings, such as subject titles and local facilities, and the usual method of access would be applied.

possibilities of using Viewdata to assist in the learning process. Many attempts have been made recently, particularly in the United States, to introduce this system of learning (computer assisted learning), which has many obvious advantages. It could relieve very considerably the day to day pressure on teachers and lecturers, who would then be able to devote more of their time to the individual requirements and difficulties of their pupils. The potential of this education medium for home-learning is also of great importance.

Unlike conventional methods of learning, Viewdata, by taking advantage of interactive working, can provide the student with assistance when required and a method of self-monitoring and self-testing which could greatly increase the speed of learning and provide the necessary intellectual stimulus to the student.

Viewdata in education could also be invaluable to parents in enabling them to follow the educational progress of their children and thus possibly enable them to help and encourage them more effectively.

A related aspect of education is the games facility where again the interactive capability of the computer is called for. The field for educational games is vast and so far two programmes have been experimented with. One is MOO, which is an exercise in logical thinking, wherein the user has to guess a four digit number selected at random by the computer. The guessing or deduction is made as a result of clues given by the computer in response to a "guess". The other is a maze game, increasing in complexity from the very simple to the more complex, which is a good example of pattern recognition (see Fig. 2).

Calculations. The primary purpose of Viewdata is not to provide a calculations service, but as illustrated earlier an information and message service. Nevertheless the availability of a number of distributed computers a local call distance away suggests that for very little extra cost a useful calculation service could be provided to students, small businesses and indeed all who might need its fairly limited but potentially very useful facilities.

Little would be gained if the calculation facilities were limited to those provided by the small mass-produced calculators. Such a service would be hopelessly uncompetitive. Neither would a great deal be gained by providing the sophisticated facilities of the now well established computer bureaux. The professional user of extensive computational facilities is already well catered for.

Rather it is intended to fill the gap between the two, some of which is at present covered by the more expensive hand or desk calculator. Unlike these more complex and powerful machines,

eschew all manuals and complicated instructions and so to organise the dialogue that users may, without any specialised training whatever, carry out the calculations they desire. Instructions for entering requirements are given by the system as and when they are needed and the dialogue is so arranged that errors may be caught quite simply as they occur (Fig. 3).

An additional feature of the calculation programme is a curve or histogram plotting facility related to the computations carried out.

Personal services. We have seen that Viewdata users are able to enter information into the system for example for message purposes. This clearly could be extended by arranging that this information is only accessible to the user or to one or more other persons nominated by him.

We now enter a fairly sensitive area of security (or privacy) of information. Much study will need to be done to ensure that information thus entered is indeed reasonably well protected. Initially, however, the studies are concentrated on information which, in the individual's opinion is not too sensitive. A user may enter perhaps reminders to himself of meetings, dates, telephone numbers, data for his own private use and the like. A typical one may be a reminder to send flowers to the wife on her birthday! Even in such fairly innocuous cases, passwords are provided to ensure that accidental disclosure of private information does not occur.

In house and private data banks. An extension of the personal information service is the use of the Viewdata network to store and provide access to information of interest to closed user groups on certain specific topics, e.g. employees of a business house. Also a minimum degree of privacy will need to be provided, although absolute privacy is not an objective of the system, at least in the initial stages.

In the case of closed user groups, information and data might be collected for the benefit of groups having similar interests. For example the source of supply of certain commodities used in certain categories of business, e.g. building supplies with current prices, availability etc.

Clearly the range of potential services of this nature is open ended. Development will no doubt take place in this area as the capability of this new medium becomes apparent through usage and experimentation.

The next article will deal with the operation of the Viewdata system in detail

Reference

1. S. Fedida — Development of Computer-based Information Media for the General Public. Paper presented at 2nd International Symposium on Subscriber Loops and Services, 2-7 May, 1976. The Institution of