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A COMPUTER SYSTEM FOR HOUSING REPAIRS

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I once worked for a Management Services organisation where all prospective new staff had first to pass an aptitude test. This test, which must have been devised by someone in a momentary fit of sadism, related to the clerical system for administering Housing Repairs in a London Metropolitan Borough.

The candidates were given pens and paper and the details of the system were read out slowly once. They had to take notes and then write up the system and suggest improvements.

It was something of a paper chase based upon the adventures of a multi-copy work requisition. Once completed the requisition was divided into individual copies and each went forth to initiate some form of action. Some copies led unassuming lives moving directly to filing systems to rest quietly until the day of archiving came. Others were more spirited moving from hand to hand, file to file, being sorted; being put into workmens' pockets; being signed by householders; eventually being matched up with one of their siblings.

The effect on the candidates was unpredictable. As the pink copy was passed to the foreman with the blue, and the white was re-matched against the yellow; some stopped writing in bafflement or disbelief, others burst into uncontrolled giggles. However, the system that was being described was a reality: it had evolved over decades and resisted all attempts at simplification, and would be instantly recognised by many a current building works manager.

The problem statement

The organisational problem presented by Housing Repairs is many-faceted. Firstly there are the tenants; not always in at the time that they have stated, and capable of starting off several abortive requisition chains by making repeated enquiries about the same problem. It is a sensitive area prone to generating complaints of inefficiency to councillors and ombudsmen. There is the workforce, who have to be deployed with regard to their skills, the effective use of their time, the desired quality of their work, and the intricacies of their bonus and time-recording systems. There are the

Janice Brown – repairs clerk is pictured making an enquiry on a property record for Harry Pearman – data processing manager

contractors, competing to some extent with the council workforce, for whom impartiality and cost effectiveness must be demonstrated. Finally there is the work itself, to be described, targeted, inspected and prioritised.

In any 'shopping list' of prospective computer systems it is easy to see why Housing Repairs will be found close to the top and this was the case at Bexley. It is also easy to see why it is frequently by-passed in favour of more urgent or simpler computer projects.

In Bexley's case the system had been identified as a key element in an overall information structure as long ago as 1977. It was only in 1983, with the added impetus or fulfilling direct labour organisation legislation, that work got underway in earnest.

The initial questions are some of the hardest to answer. Should the system operate on the council's mainframe computer or on some form of local processor? Should the development be undertaken by the data processing department or should an externally developed 'package' be sought?

There was a requirement to print Priority 1 requisitions immediately they were set up at the point of origin. There was also a need to access the computer system at times outside the normal span of the operation of the mainframe teleprocessing service. Finally a need was identified for a very fast machine response so that the format of the requisition could be built up interactively on a screen while the telephone conversation with the tenant was in progress. Taken together these factors, plus the volume of records and transactions, pointed firmly towards a minicomputer-based system. The dp department was then able to align these needs against the installation dp standards.

a) The terminals attached to the minicomputer must also be capable of communicating directly with the council's mainframe, so that job costing and other relevant information could be interrogated.

b) Data had to fit mainframe protocols. (The council runs a BASF 7/71 working to IBM data conventions).

c) The minicomputer should accumulate new, amended and completed job costing records and should transmit this file at intervals via a telephone link to the mainframe, where it would become a standard input to the job costing system.

d) The supplier of the system must have a broad user base, be financially viable, and use proven hardware and software.

While these requirements were being thrashed out an outline system specification was also produced.

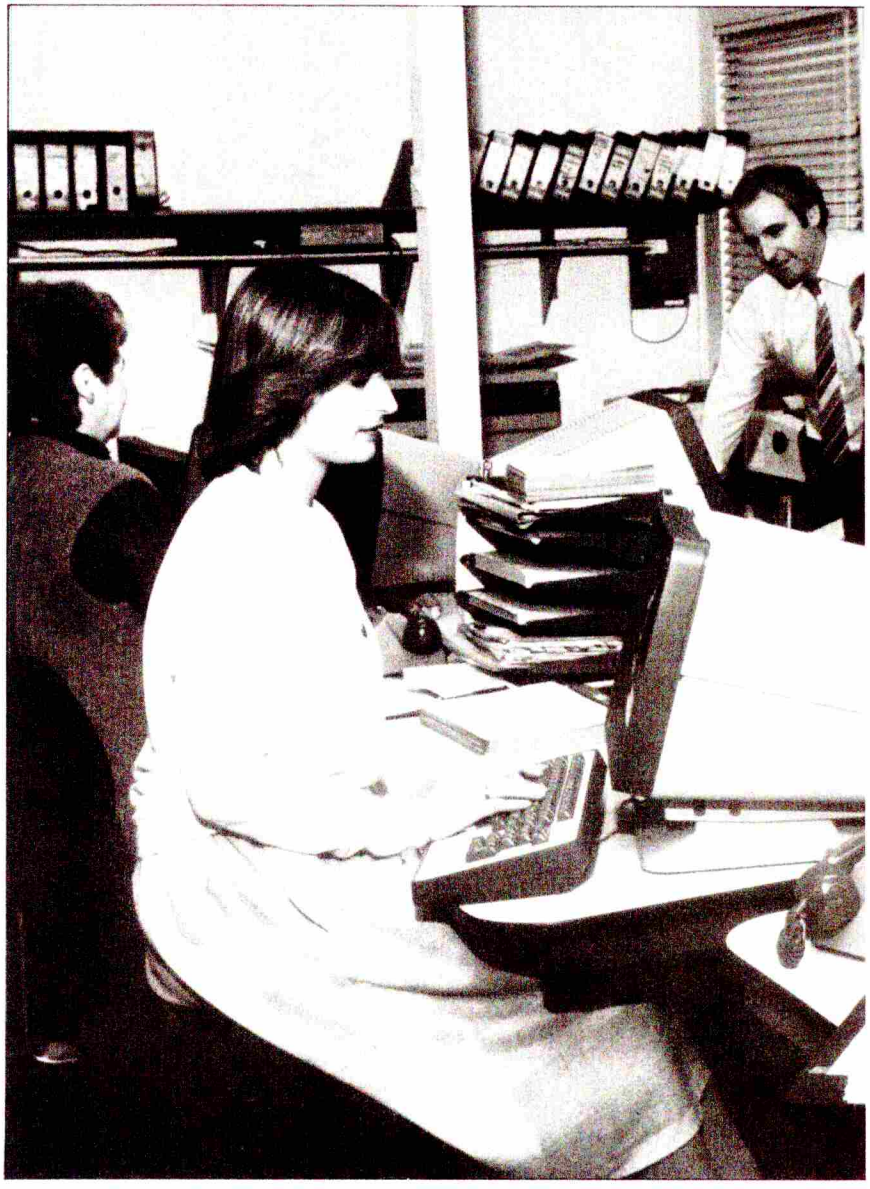
We now at least knew what we were looking for and, after somewhat protracted searching and complex contractual negotiations, a supplier was found who both met the hardware specifications and also had a package which could be used as the basis of the application software.

Fortunately this also happened to be the supplier of our data entry installation so that some degree of back-up is possible. Theoretically, if either installation falls over, the other can stand in temporarily. Alternatively, if the daily telephone link between the minicomputer and mainframe cannot be established for any reason, then i is a simple matter to take the tape fil off one machine and transport to the other one.

The New System

So what are the features of the final system?

When a tenant phones in with new work they speak to a terminal operator who first keys in a reference based upon a simple contraction of the address, eg 10ABBEH = 10 Abbey House. This causes the property details to be displayed on the screen together with information on the most recent jobs. If the enqui relates to new work, the operator takes an option to create a new requisition. First of all a set of four level menus helps the rapid build up of a job description from a library of standard phraseology.



The computerised Building Maintenance Section of Bexley London Borough's works department

For example:-

PLUMBING	–	Level 1
BATH	–	Level 2
WASTE PIPE	–	Level 3
UNBLOCK	–	Level 4

During the phone call the operator finds out and enters details of access availability. It is then possible to compare the DLO estimate with other contractor estimates and allocate the job to an appropriate workforce based upon price and resource availability. Priority 1 job orders can be printed directly; others are printed in bulk later in the day for both DLO and contractual work.

Work Scheduling

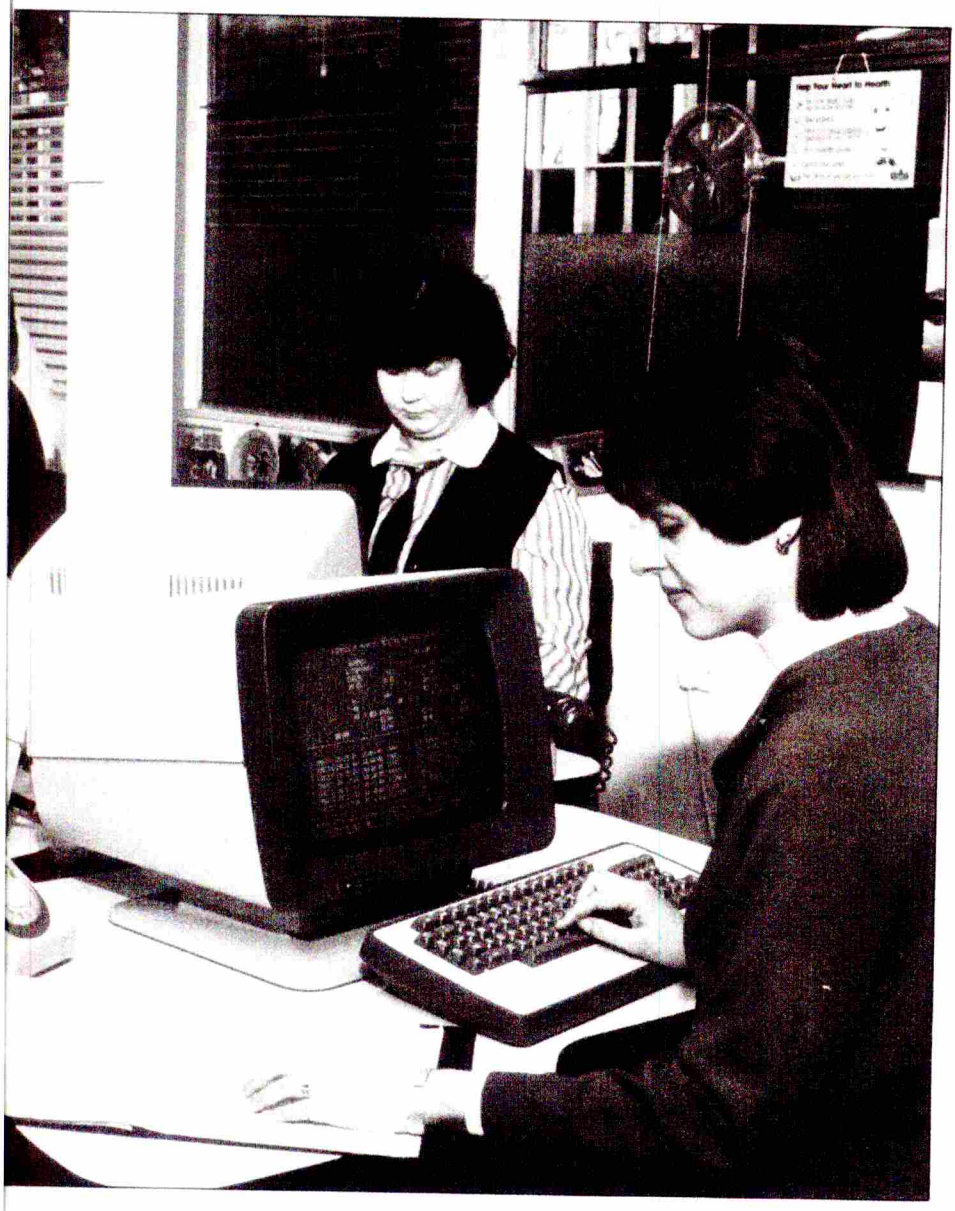
Each week each DLO supervisor receives a printout showing totals of work held against expected resources for the next six weeks, together with a list of all outstanding jobs allocated to his workforce.

Daily lists of jobs scheduled for action are also printed in priority order for each trade supervisor and each contractor.

Management Reports

There are eight standard reports including: a table showing the time taken to complete jobs analysed by number of days and priority; an analysis of jobs completed showing how many were pre- and post-inspected.

Finally there is a simple system for generating new reports based upon the selection of fields and tests prompted by messages from the screen.



The Benefits

Plainly this is a somewhat truncated view of a sophisticated system but the following are some of the benefits anticipated once implementation is complete.

i) The clerical effort of handwriting 30,000 job orders a year and of batching these and punching them into the job costing system is eliminated.

ii) The DLO job order is reduced from 4 to 2 parts and is only printed when it is to be actioned.

iii) Complete standardisation of job descriptions and associated bonus targets, estimates and priorities.

iv) Reduction of abortive calls by workmen.

v) Improved monitoring and accounting.

The system became operational in November 1984 but the changeover from the manual system took some months in order to let the earlier jobs finish, test the standard job phraseology in practice, and to build up the rates schedule. Nevertheless the initial results are promising, though it does leave one outstanding problem. What can now be used as an aptitude test for Management Services recruits?

Technical Data

The application uses a ROCC 2830 minicomputer with disk storage of 33 million characters and a magnetic tape output. There are six VDUs and two printers with a print speed of 165 characters per second. Upgrades are possible to give a disk storage capacity of 264 million characters and to support up to 32 VDUs which can operate remotely. Keyboard commands enable the terminal to operate to IBM 3270 protocols. There is also a 3278 (file transfer) link to the mainframe. Programs are written in the 'Editor' programming language.

Standard phraseology was provided by Wrightson Associates of Bath. Project control, user liaison, specification and testing were conducted by Bexley's Data Processing. Programming was carried out by Middlesex Software.

A copy of a Management Overview of the system may be obtained by sending a 13" x 9" self-addressed envelope with 18p in stamps to the DP Manager, Bexley London Borough, 9 Brampton Road, Bexleyheath, Kent DA7 4EZ.