# NEW GENERATION DATA ENTRY

Data entry has seen much development since the early key-to-disk days of the late 1960s. In the main these developments have taken the concept from simple key and verify to sophisticated pre-processing often with a data communications link moving data from KTD mini to mainframe.

In the last 15 years the KTD hardware has developed with large disk memories, powerful minicomputers with large internal memories, and ever-faster magnetic tape drives while the software has expanded to handle local file processing and even database management. The market for conventional KTD exploded in the early 70s, went flat in the late 1970s and started to decline in the early 1980s. Any economist will say that this product life reflected the natural bell-shaped distribution curve of any product. Decline in the early 1980s was the result of new techniques displacing the old KTD, particularly on-line entry methods plus the effects of economic recession which depleted computer operations staff.

Many people thought that this was the beginning of the end for data entry. Equipment vendors began to withdraw from the market or lost money. There was little product development and much old equipment began to be re-cycled. New users were few and far between. Existing users began to talk about moving into distributed computing and office automation. It was a worldwide phenomenon.

It may therefore come as a surprise to learn that a new generation of data entry systems were developed, sold and installed in England over the last three years for large-scale KTD operations albeit in the style of the 1980s rather than the style of the 1960s.

The requirement for these systems came from the British Government. Governments have enormous amounts of batch processing and will continue with batch processing for at least another ten years. Batch processing needs batch data entry. And the British Government had a particular problem to solve - finding the most economic method of data entry for one of Europe's biggest processing jobs.

In England, there is a National Health Service that provides health care for the population. It is paid for out of general taxation. Hospitalization is free. Operations are free. Ambulance services are free. House calls are free. Drugs and medication in hospital are free.

However, if a doctor prescribes drugs and medication for a patient outside of hospital, the prescription has to be taken to a pharmacist who dispenses the prescribed items. If you are a child, a senior citizen or on the welfare rolls, there is no charge for the drugs or medication. Those people account for around 70% of the total number of prescriptions. If you are not one of these people, you have to pay a standard nominal charge of about $3.

Thus the pharmacist is not paid by the consumer. The pharmacist is paid by the Government. There is the small problem of pricing the prescriptions, ensuring that the pharmacist is paid the right amount and analysing and controlling drug and medication usage throughout the country.

It sounds easy. There are 25,000 doctors in England, 330,000,000 prescriptions a year, 30,000 different drugs available in many different pack sizes and $1.6 billion a year for the pharmacists.

Every prescription is sent by every pharmacist to the payment agency. The payment agency prices the prescription (all the prices are standard country-wide), produces payment schedules for all the pharmacists and analyses drugs usage, prescribing patterns and trends for the nation in great detail - down to doctor level.

It is really just a clerical exercise. There are only 10,000 pharmacies and 50,000,000 people after all.

Unfortunately, the entire job has to be done at the lowest cost and in the shortest amount of time - pharmacists do not like waiting very long for their money.

The job had been done manually for nearly 40 years. As is well known, doctors' handwriting is always beautifully clear and legible. Pharmacists never scribble on prescriptions. Prescriptions never get folded, crumpled or stained. The reason why it had been done manually for so long was because that was the cheapest way to do it. Skilled clerks were highly efficient but producing the analyses and information depended on computerization.

In 1977, a powerful team of computer and systems people were established by the agency to try to find an efficient method of computerizatiion using any suitable technology. For three years they examined every alternative method, priced it and often tested it. Technologies came and went like pop records.

Finally, they selected a mix of OCR and KTD technology as one option and a new generation KTD technology as the second. Both systems were installed and subjected to 12 months intensive trials, usage, benchmarking and thrashing.

The new generation KTD won hands down. It was more efficient and cheaper to key it than to handle it by any other way.

The agency has a total staff of 2,000 people to handle the entire prescription processing of the United Kingdom. The new generation KTD systems provide 1,400 keystations linked to 36 data entry computers linked to five different mainframes. Each data entry system supports 40 keystations, has 133 MB of disk storage, 1 MB of memory, printers and communications facilities. The systems are duplexed for fail-safe working.

The keystations are purpose-designed with 2000 character 15" screens, tilt and rotate, special non-glare screen characteristics and extensive character attributes. The keyboards are controlled by their own microprocessors and are software driven. They are configured for the applications. Special keyboard configuration alone saved $1.5 million per annum in improved throughput compared with conventional KTD keyboards. This is indicative of the detailed analysis and planning that went into the overall system.

The application software is complex. A highly unusual feature is the very high ratio of characters generated compared with characters keyed - around 8:1. Short-cut coding techniques are used extensively. For example the most common 3,000 drugs account for 96% of all drug usage. The commonest drugs have single digit (plus check digit) codes, the slightly less common two digits and so on. The full standard code for each drug is nine characters which the system generates and outputs to data communications.

The 1400 keystations are spread over 11 geographically dispersed installations. The full installation is now being completed and the systems will run on into the mid 1990s. By that time someone may have discovered a better and cheaper solution than new generation data entry.

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