

PERSONAL COMPUTING - SAS OR THE MICRO

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This paper reflects a personal view of the decision process with regard to software choice for personal computing at our installation.

Historically personal computing at Legal & General was restricted to APL and its related products ADRS and ADI and a report writing utility CULPRIT. This situation existed for about 3 years prior to the introduction of SAS.

Growth in the use of SAS was phenomenal - from 3 users in machine statistics 2 years ago to 100 plus users currently. SAS is now even used by our professional programmers as an easy to use, quick to develop software tool.

In this space of time SAS had become the personal computing user tool and had established a reputation for its ease of use and range of available facilities. APL retained only a few particularly numerate users.

Recently we have started to embark on a major expansion into the use of Micro-computers - the majority being IBM PCs - currently we have in the region of 150 already installed with plans for a major growth this year. Micros, by being a more familiar piece of hardware, have rapidly achieved an acceptability which more traditional software packages have found hard to match.

Micros also have an edge over traditional software packages in a number of other areas. The software is cheap by any standards and much thought has been given to making certain features very "user friendly". Therefore features like graphics were viewed as being superior to those currently available under the basic SAS products and certainly vastly superior to the basic APL graphics.

A further consideration was that cheap software gave one the ability to have additional functions not at that time available on the mainframe. The prime example of this was a number of very good spreadsheet packages - a number with graphics and data management thrown in as well. SAS came along with a spreadsheet package but not at the time of greatest interest at our installation. There were also a number of excellent word processing packages with which SAS in particular could not compete.

At this installation mainframe packages were put at a further disadvantage because of a system of internal charges which meant that SAS or APL were more expensive to use than equivalents on the Micro.

Now our users had a choice to make as regards software for any given system - and many chose the Micro.

What this meant to us as an Information Centre was that a decision process had to be established to aid end users in their choice of software.

Our first attempt was very basic - if one had a lot of data one used the mainframe - if one had small amounts of data then the micro would be promoted as the best solution. This had certain 'basic' flaws which became obvious immediately. At that time the transfer of data between mainframe and micro was not possible - even now the basic ASCII/EBCDIC translation is not possible. Therefore if data was held on mainframe files it had to be manually rekeyed - with all the attendant problems that creates. Also small amounts of data can and often will require large amounts of processing. An example would be the code to plot the 'cowboy hat' three dimensional chart. In SAS this takes a few seconds - the response time for a micro was much higher and therefore much less acceptable. A worse situation exists where the micro is physically not capable of performing the required calculations because of constraints of memory. These problems were unknown on the mainframe.

So the modified version of our criteria were as follows. If one had a lot of data OR one had a requirement for complex or lengthy processing OR one's data already existed on a mainframe file and the rekeying posed a problem then the mainframe was the best way to choose. The micro was thought ideal for the converse of the previous selection criteria, i.e. that the system being developed was small, standalone, had little requirement for complex or lengthy processing and no problems communicating back to the mainframe.

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The decision process looked good on the surface but was proved wanting in practice. A particular application came up which fulfilled the criteria for micro development exactly and by the way was one which met an urgent business requirement. The application required that a small amount of data was entered from which a quotation was produced. No data was held and the only output from the system was the quotation itself. The quotations were to be printed on a pre-printed cut form. The application was developed and the production run was started.

Problems surfaced from the first day. At first these were niggling more than catastrophic. The micro could not add up two figures correctly (this was a problem with early released micros which has now been resolved) and a micro printer had to be dedicated to the production of quotations. Two copies of the quotation were required so data had to be entered twice.

As volumes increased so did the problems. No easy translation of say postcodes to our own branch was possible so the micro did not 'know' where the quotations were to be sent. A further micro had to be dedicated to the translation task. The printers available were slow and not robust and required an attendant full time. Further there was no ability to queue more than 10 requests at a time (5 cases with 2 copies). If the printer stopped for any reason then so very quickly did the ability to quote at all. A backlog built up which was not addressed by by supplying further micros. The personal computer was not cut out for volume work.

We now had a very urgent business requirement which was not being catered for. The decision was made to go for SAS. It is worthwhile determining how SAS could help where the micro had failed.

Firstly printing and data entry were separate and independent functions (except for 30 seconds a DAY). More quotations could be entered at a time and generation of a second copy was automatic. Automatic translation of Postcodes was catered for. The system was quicker to use and had a greater degree of user acceptability. Also as a salutary lesson it was quicker to develop.

We had to change the decision process radically in view of the lessons learned. Now to our previous list we had to add 'OR if one has a requirement for substantial amounts of peripheral resources OR a requirement to use additional software facilities (like the postcode translation) then the mainframe is the best resource'.

However the wrong decision making was not a one-way street. Certain functions originally developed in SAS (usually as a result of the criterion of data being held on the mainframe) should have been developed on the micro. Prime examples were where small amounts of data held on the mainframe were required as input to graphics or spreadsheet functions. While these exist in SAS the main requirements before using either SAS/GRAPH or to a lesser extent PROC FSCALC is for the end user to understand basic SAS. Certain users were unwilling to take on this learning overhead and the product in SAS was certainly less 'user friendly' than the excellent products existing on the micro. The effort on translation from mainframe to the micro was often thought reasonable to achieve a particular result. In other words micros were seen to have better facilities available (for 'better' here read 'more user acceptable').

So we have come to our current decision criteria which can be summarised as follows.

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SAS	MICRO
ADVANTAGES	
More Power More Access to Resources Wider Range of Pre-written Functions Quicker	Cheaper More User Acceptability More Discrete Functions Wider Availability

and our decision making criteria as follows:-

	1	2	3	4	5	6	7	8	9	10	11	12
Large Amounts of Data	Y	N	N	N	N	N	N					
Requirement for Mainframe Resources	-	Y	N	N	N	N	N					
Requirement for Pre-written In-house Routines	-	-	Y	N	N	N	N					
Complex Processing	-	-	-	Y	N	N	N					
Requirement for Mainframe Data	-	-	-	-	Y	Y	N					
Acceptability of Conversion	-	-	-	-	N	Y	-					
Program in SAS	X	X	X	X	X							
Program via Micro							X	X				

The future is going to change this decision table dramatically. Micros are getting more powerful. IBM have announced the PC/XT370 which gives all the power of a mainframe computer a few years ago, and places it on your desk. There is now the ability if not the will to write very powerful micro programs. There is increasingly an ability to swap data between micro and mainframe. It is likely that we shall see the micro becoming more and more prevalent in the field of personal computing.

However recent announcements of a 32 bit micro from Sinclair may mean that in the near future we shall be able to see a MICRO-SAS. I foresee not SAS vs the micro but SAS in relation to the micro as being the future topic of conversation.