Loan systems for the international market

By Alastair Taylor

There are practical examples of successful business solutions being applied internationally. However, is this experience germane to housing finance? Is there something about this business environment which requires consistent international applications for common systems to succeed? As is often the case, the answers are not all black and white.

Of course, the more a business area is recognised as consistent on an international basis the greater the likelihood of success. Wholesale banking, for example, is an area of business where some international banks insist on a common system worldwide. While the advantage of consistent reporting is ensured, there exists the burden of providing multi-lingual software and satisfying the reporting for the differing legislative bodies. Thus there are some important mechanisms to understand before deciding on whether an international housing finance system is a practical proposition.

First, no such system has existed thus far except in cases where the markets are based on the same historical foundation, for example the UK and Australia. However, in the very rigid nature of the problem lies the solution, at least for Europe. As the European Community intends to introduce mutual recognition of techniques, this is the case — and my argument depends on it — then at one stroke an international housing finance information system does become a practical proposition, since the rules by which we would build and maintain such a system are at least known to us, because they are largely our own. The remaining obstacles are then largely "at home", for example, building societies in the UK can operate in the EC only through a subsidiary by UK law.

**Design goals for the international markets**

If we are to design a system to meet the needs of the UK and/or international markets, I believe there are three fundamental design goals.

The first is that it must be a customer based system so that we can at all times view our total relationship with a customer and target the market accordingly.

The next goal — design for change — reflects the need to respond to the market with new or innovative products and also to react to legislative changes.

Tom Peters' new book suggests that as deregulation ensues in most markets the new competitive environment will bring chaos. It is the ability to thrive on that chaos which will determine success or failure as opposed to the organisation which will see it as something to be controlled or handled, not grasping change as an opportunity.

We can be sure that unpredictability will stay with us and we can be absolutely certain of experiencing rapid change. But what kind of development environment is required?

Extensive use of the concepts of modular systems and parameterisation will be required to provide greater flexibility which is essential to meet the varying requirements in the market, both legislative and competitive. For example, products must be defined in this manner to allow multiple types of mortgage product such as capital repayment, endowment, and so on, which can be defined and made specific by applying an associated policy or set of business rules, and, of course, within each primary product variations should be allowed for. The definition of a new product should be entered into the system by way of parameters via a visual display unit. It should not be necessary to change computer programs to incorporate new products.

Another example of parameterisation is in the area of securitisation whereby you will require the flexibility to describe the rules and selection criteria associated with a particular mortgage backed security.

Finally, the system should interface to existing and future branch systems, not just the counter positions but the whole area of administration, electronic mail, external facilities like Videotext for insurance quotations, ATMs and expert sys-
tems. From the outset the design must have flexibility as its key goal.

**Computer systems for international operations**

How do we provide computer systems to ensure that they will support the international or pan European marketing, production and distribution initiatives?

The currently accepted way is to seek "systems liaisons" in the countries in which you wish to do business, bureaux being the most used at the moment. However these systems provide the nationalistic (language) and legal requirements but not necessarily the customer-based marketing systems required for sustained competitive edge.

The paper now covers the options as if we were only in one country and then returns to the international implications. There is only one cost effective way forward.

The prerequisite for tomorrow's system is that it should be customer-based and that, obviously, it should be flexible enough to cope with the inevitable change we, or government(s) may require of it. We know that the vast majority of financial systems today are not customer based and are certainly inflexible.

The most graphic example of international systems I can think of is the world's airlines' reservation systems where some years ago the IATA community got together to consider how to rebuild their 20-year-old systems to meet today's requirements in a deregulated world.

The agreed that no one country or airline could do the job of some tens of thousand of man years — and hence, born out of that, we have seen international consortia building Amadeus and Galileo, two huge computer systems that will take years to build and will be possible only through shared international cost. The aim of these systems is to become more customer orientated so that you can book more easily for several legs of your journey and include hotel bookings, car hire, etc, across the world.

One of the supposed implications will be to squeeze severely the travel agents and obtain the margin currently enjoyed by those agents. Of course the distribution channel is a problem, so initially I see them focusing on the large international corporate customers for their competitive advantage in search of the "high net worth (travel) customer".

But closer to home we are not yet faced with such daunting propositions for international housing finance. Instead of trying to introduce a special mortgage finance directive for 1992 the Commission is likely to link its legislation on housing finance to its recently completed Second Banking Co-ordination Directive. This will not try to harmonise national mortgage systems but will introduce mutual recognition of techniques, so that operators may work outside their home base in the European Community as if they were working at home.

It is my contention that since harmonisation has proved to be impossibly complex in the case of the mortgage market, it is this ruling that really makes international systems a cost effective proposition. Thus a customer based system that is flexible and allows us to work "as if we were at home" is a good starting point. At first sight the answer may seem simple — buy a package. It does what we want and is specially designed for our problem.
INTERNATIONAL LOAN SYSTEMS

But is it? Is it not just someone else’s version of your “old” system with all the attendant problems of inflexibility and high maintenance costs? Are not the same costs and delays involved in tailoring it to suit your needs as packaged systems generally provide only a 65% fit, and can force significant compromise to fit in with its constraints?

Fourth generation languages

There may be an alternative — fourth generation languages. These are designed to accelerate development of new applications and this they do very effectively. The term “fourth generation languages”, or 4GL, is one of the most misused or misunderstood descriptions in the industry. It is used as an all encompassing title for many different types of language. There exist basically two different types of fourth generation language.

In developing any new system there are three basic elements which make up the complete system: the communications and message control system, the application programs, and the database management system. Someone has to define and develop codes to handle all these elements. The first type of 4GL handles only the application programs. In other words it is only a programmer productivity aid. The complex business of communications and database still have to be handled by very experienced and expensive people and therefore the entire development, while faster, is still limited.

The second type is the total systems generator that does the entire job, also avoiding those expensive personnel who are increasingly difficult to find. It takes business specifications and automatically translates them into entire applications systems.

The claims made here for such systems are, for example, a three year development being reduced to anything from four months to one year. These results were achieved with system generators and there are many other examples including a major UK bank, which dropped its package approach after three difficult years in favour of this systems generator approach last year.

It may be worth covering why these benefits exist:

(a) The 4GL picture. With the growth of computing needs there was no way that conventional programming techniques were going to keep up with the advancing demand for solid yet flexible information systems. The arrival of systems generators was timely — but it is important to note that it was born out of frustration, the frustration that arises out of following the unnatural processes of translating user requirements into computerese, following a rigid sequential process to an evolutionary problem, and from both of these producing the all too common unrecognisable result, two or three years after the problem was articulated. By then the world had moved on; business requirements had changed. Of course this is no one’s fault, it just reflects the traditional business of program development under so-called 3GL languages.

(b) Productivity. The speed of construction and the easy maintenance possible with 4GLs creates huge productivity gains and so application backlogs can be substantially reduced.

(c) Evolution. The evolutionary nature allows a cohesive whole to be maintained despite change through time, providing a new foundation for systems. This changed forever the linear view of development previously popular. Systems generator products recognise that users’ views of requirements may “clarify” over time and will change as the system is “used”. This is an interactive development process. Life is therefore not regarded as static. It changes over time.

(d) Information systems foundation. Much has been written about the need for management to pay greater regard to the information resources within their organisation. Systems generators provide a means by which information systems rather than data processing systems can be successfully constructed within a company.

Resistance to change

The DP executive should no longer feel squeezed by demand for new applications on the one hand and maintenance of existing applications on the other. Despite the fact that 4GLs or systems generators have been in existence for years, and major organisations are reaping significant benefits, there are still many that have not moved to this arena yet, although the take-up is fast accelerating. There are several reasons but ultimately there is only one reason — the fear of change or resistance to change.

The commonly heard reasons include:

(1) we cannot change now, we still have two years to go on re-writing investments;
(2) that solution will not run on our hardware;
(3) converting our old systems will take hundreds of man years;
(4) 4GLs are good but 3GLs are just around the corner — perhaps we should wait;
(5) the programmers and analysts will not like it and many may depart and leave us exposed;
(6) we are locked into one supplier; and
(7) 4GLs are slow.

Acceptance of these is to misunderstand fundamentally the technology. For example, locked into one supplier — it is a fallacy to suggest that if you use COBOL you have total independence of supplier. That is an argument which had its place when everyone was developing batch systems.

The sophistication of systems today requires complex communications and database management facilities. It is that software which “locks” you in. COBOL is only a small part of the 3GL environment.

Because the time taken to develop systems using a 4GL approach is dramatically reduced, the replacement costs are significantly smaller and the time period required is
shorter. The “locked in” scenario has to be significantly less than when using 3GL techniques.

4GLs are too slow and cannot be as efficient and are therefore only suited to small systems — of the total systems generators there are two basic types, those which are interpretive and those which produce source code like COBOL for compilation. The former do have an overhead and as long as you are prepared to spend additional investment in horsepower, this can be justified in most cases, in terms of balancing the total cost of the computing equation. Make sure however, that the range of hardware you choose has the capacity to increase significantly within the same compatible environment.

The latter, which produces source code, eg COBOL, is a code that the computer would normally execute if using a 3GL development environment and hence executes the codes as efficiently. In fact evidence suggests that the code produced is superior to the COBOL programmer. Therefore, in answer to the question “Are 4GLs slow?”, if you choose the type which produce source code they operate as efficiently, if not better.

It is true that change will be required — but surely it is our responsibility to manage change and encourage it where it supports an overall improvement in our ability to compete.

Aspects of change

I would like now to comment on some of the aspects of change that are required.

(a) Existing applications. Often the most difficult adaptation required to newcomers to 4GL is to swallow the bitter pill that the value of existing applications has been dramatically devalued overnight. If we can now provide productivity gains of up to 20 to 1 then a portfolio of applications that costs £100,000 (in salary costs) to build can be replaced by an expenditure of just £6,000.

Many companies today rightly feel they have so much invested in their existing systems that they cannot contemplate replacement. It needs a clear objective assessment to be able to discard past involvements and face the reality of today and the next five or 10 years. Judgment is required to be based on replacement, not historic cost. Organisationally, this can be a culture shock. Frequently those closest to the applications in DP are the slowest to change. In this respect all the old values associated with the resistance to change questions listed earlier have to be unlearned.

(b) Productivity. Culturally it takes time to adjust to the acceptance of production gains in the order of 10 or 20 fold.

For instance, does this not imply smaller DP staff numbers? The answer, of course, is yes. However,
some DP managers, especially those who value the empire over which they preside, do not volunteer to move to systems generator solutions — unless perhaps they are enlightened or selfless enough to look beyond their immediate surrounds to see the new path as possibly creating opportunities.

DP lives have for years been tied up with technologies that they have known were difficult to hold together. Suddenly life is becoming easier. Attention can be diverted to the ends not the means. Another culture shock has arrived.

(c) **Closing the user DP gap.** Another aspect of the 4GL environment is that communication channels are shortened. Users and DP staff work more closely together than ever before.

Enormous benefits flow by directly putting user knowledge into systems construction without having to pass through such arduous analysis techniques as were required under 3GL. Time taken from specification to systems production is dramatically compressed as earlier examples have shown. So user supplied systems information is rapidly validated by construction and testing. Incorrect initial definitions can be equally rapidly rebuilt into the correct systems shape. Action and reaction follow closer, the reaction coming whilst the subject is still fresh in mind.

The whole process becomes more enjoyable and productive as users can at last see systems created (almost) before their eyes. There are plusses here for improved relations and the capturing of enthusiasm. From enthusiasm flows determination. From determination flows a new responsibility for the whole subject of information systems. This is exactly what results in those departments which have made the change.

(d) **Evolutionary systems design.** With 4GL the development allows for evolutionary design of systems from the input of business plan. Whilst 3GL systems get progressively more unmanageable under change, 4GLs respond unphased by extensive change. Also, unlike the bolt on approach of the 3GL systems, 4GLs produce a single cohesive "whole" system, an enterprise model.

(e) **No information power broking.** We have all seen those bureaucrats who retain power by keeping information to themselves? The advent of 4GLs and their database has the power to provide immediate access to information by all who need it — directly. No longer the separate storage of information by each user for his or her own use. Under 4GL systems generators a single consistent source of data provides the organisation with solid, clear data signals. Intermediary processing of data is eliminated. The original data entry is the only update to the system: no overnight updates except by choice. As a result a more open organisation is provided where the traditional walls between departments disappear. But this is not an unbridled advance. Of course, there is the need to have strong access control and systems security. The focus is on the culture of the organisation when we talk about more openness.

(f) **DP taken into the organisation.** So many organisations these days have developed DP departments behind closed doors that the outside world, the user organisation, rarely sees the occupants. By corollary, nor do users greatly encourage contact with DP. Under these conditions, it is not surprising that murmurs grow quickly to grievances and then to outright intolerance when communications remain closed. By their very nature the arrival of 4GLs closes the distance between users and DP.

**4GL packages**

There are now packages on the market which are written with 4GLs. The qualities of flexibility and malleability can be exploited using such a package, even if you have to tailor it a little to fulfil your precise needs. This is just not practical under 3GL packages without creating an “orphan”. 4GL packages have been developed in a number of the more common application areas, including housing finance, and there could well be advantage in examining whether

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part or all of your needs for the future may not be more easily satisfied with such solutions.

As a side benefit, many of the standards required by legislation are incorporated in such software, so it will be possible for you to adopt these in organisations rather than invent your own or go into the business of adopting orphans.

National issues

Obviously if, as I have suggested, it is practical to build systems that serve organisations in achieving their goals, and legislation allows us to work "as if we were at home," then presenting these systems either in a distributed or networked environment in different countries is generally limited by the language barrier.

Here, a common problem has a common solution. Our own international experience over the years led us to conclude that international systems could be created from common logic platforms, i.e. while processing of the data was provided for by a given application, within the computer, it was only the presentation that needed to be customised, and so our own systems generator or 4GL does allow for an application to handle multiple copies of the same screen format.

In this way we can "connect" multiple users to the same system where the screen format is in the local language of any one user. And indeed, countries where more than one language is standard, like Belgium and South Africa, now have a method of operating the same system in the language most applicable to the user. I believe that this now removes the final barrier from developing international systems for housing finance.

Artificial intelligence

What are expert systems and where might they be used? There are many definitions, but in simple terms: expert systems summarise an expert's knowledge and the reasoning procedures used to arrive at certain conclusions.

Thus, the view is that by understanding the rules by which the most accomplished advisors conclude on, say, product advice — that same "expertise" may be available to the less accomplished staff members. We only need to look at our own organisations in finance to realise that in front of our most valuable asset, the customer, we tend to put our least experienced, lowest earning, youngest people! What potential could be realised if these people possessed the "expertise" of our more able staff.

However, while the need is clear, the practice is so far disappointing. In a survey conducted by Ovum Ltd earlier this year across Europe, entitled Expert Systems in Banking and Securities, only 15% of UK institutions were active in this area. The most active country was Switzerland, but still with a disappointing 33% of institutions. More disappointing still, those active institutions had very few operational systems; most were confined to the "laboratory". Among the reasons given for the figures:

- immaturity of expert systems technology;
- conservatism of some users;
- exaggerated claims; and
- secrecy on what was being done.

The biggest problem was seen as the lack of operational systems.

Well, if the results to date are disappointing, should we give up? I suggest not. While there is still much we need to do as technologists to help managers, the potential benefits provide a compelling argument to proceed. Tapping the knowledge of our best people so that all can perform closer to those heights must have direct beneficial impact for organisations in areas like:

- product advice — mortgages, investments, loans;
- cross-selling of products;
- personal financial planning;
- loan risk assessment;
- credit assessment;
- business plan evaluation;

letters of credit;
- share price monitoring; and
- foreign exchange advice.

Finally, on this subject we started with some disappointing statistics from the Ovum survey in Europe. However, that same survey showed a growth rate of 30% for AI, which is at twice the rate of more conventional computing systems.

However, you should not wait for expert systems to mature further before harnessing the competitive power that is available in today's branch systems. Outside of expert systems today there is a wealth of capability provided to aid the counselling sessions and integrate the needs of the customer from one screen to gather information, conduct interviews, perform product simulations and what-if calculations, gather external quotations for, say, insurance on Prestel or Infoview, and produce quality output of mortgage certificates or application forms.

We have certainly experienced a wealth of activity in this arena in the past two years, in fact, enough to keep you busy until expert systems mature to develop to their full potential.

A final point is that branch systems, including expert systems, should obviously be capable of interfacing to the 4GL systems talked of earlier and, indeed, that is a practical proposition today, from at least one supplier!

Systems for international housing finance is a practical proposition. The tools in the form of 4GLs or 4GL packages are in existence which include addressing the language issues. The growing momentum for expert systems will ensure their success in an integrated environment to provide international competitive edge.

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