

## Use of Expert Systems in Non-Life Insurance

Any Actuary in non-life insurance must realise the potential and limitations in the use of computer power. Indeed in the insurance world an Actuary is in a unique position to appreciate an overall view and should be heavily involved in the planning of computer systems.

The progress of computing in our area over the years has been as follows:-

- (i) storing data with basic rigid systems of retrieval,
- (ii) information systems and more flexible retrieval using so called '4th generation' languages,
- (iii) database rather than separate system record method of storage (ie policy, claims, accounting files),
- (iv) a new concept of Expert Systems.

These Expert Systems attempt to reproduce human thought processes; to mimic the reasoning behaviour of a human expert in solving given problems in a limited field of knowledge. They do this by making use of the development of 'artificial intelligence'.

Fundamentally an Expert System can do the following:-

- (i) it can answer questions put to it,
- (ii) it can make diagnoses about, and control, situations,
- (iii) it can display its own line of thought and reasoning,
- (iv) it can justify its conclusions and actions in a most friendly form,
- (v) It can store and subsequently retrieve its newly acquired knowledge as a result of its own experience.

An Expert System is accessed as follows:-

- (i) the user (Underwriter, Actuaries, ...) accesses a user friendly processor program,
- (ii) this program interacts with others with the system.
- (iii) the knowledge base is accessed by these programs,
- (iv) this knowledge base is fed information by the expert initially and, if required, at irregular intervals thereafter. Routine information also comes from the non-expert user.

Given that very little practical experience will have been gained by Actuaries (or anyone else) in this field, what can we hope to get out of a discussion? Perhaps the following answers:-

- (i) a clearer idea of what an Expert System is,
- (ii) should Actuaries be involved in this field or leave it all to Data Processing staff,
- (iii) is there a use for Expert Systems in non-life insurance,
- (iv) what areas in non-life insurance are best suited to Expert Systems,
- (v) in these areas can Expert Systems be cost justified.