



**MSS**  
International

Teachers Assurance  
*investing for your future*

# Migration Case Study



## **Business Problem**

Teachers Assurance is an organization of nearly 200 staff based in Bournemouth in the south of England. Its business is providing Life Assurance, Pensions, General Insurance and other financial services.

Teachers had been undergoing strategic change in recent years, and had re-engineered its organization to be one of the most efficient in the industry. A part of this strategic change was a move towards server based IT operation and away from proprietary hardware and software environments.

Teachers Assurance requested MSS International to study their Unisys mainframe environment and propose a plan for its conversion to run on a Windows platform using Oracle database software and tools.

## **Business Solution**

Representatives from MSS International visited Bournemouth to initiate the study. They and others made subsequent visits to gather information about the systems and the operational characteristics of the Unisys mainframe, peripherals and network. After analysis of the findings from this visit, the previously completed questionnaire, program and data tapes and further conversations with Teachers and various other parties, a detailed report on the proposed project was prepared.

The primary goal of the project was to move the current Life & Pensions application to a new standard platform using the MSS Linc to Oracle automated migration package, migrate!LINC. This allowed Teachers Assurance to stop using the Unisys mainframe and transfer operations to a standard Tulip Server as well as having a future development path using industry-standard software tools. After the migration, the Life & Pensions system would run on the strategic operating system, Microsoft Windows , with standard Oracle database, Developer/2000 and Programmer/2000 software

The major technical issues of the migration were identified by the study and their resolutions agreed at an early stage in the migration process.



## **Business Solution Cont.**

The TACDB Linc application that was in use at Teachers is an on-line system for supporting the Life & Pensions business activities at Teachers. It was developed in the Unisys 4GL (LINC), with some initial input from Unisys and parts of it form the basis for the Unisys 'Unisure' product. However, Unisys has no claim on the Teachers software since documentation exists on the original development agreement between Teachers and Unisys.

MSS performed a pilot migration of a sub-set of the TACDB system. This allowed progress to be made on the migration in parallel with other projects, making best use of time available. The pilot also proved the migration methodology and allowed both parties to work closely together at an early stage.

The migration inventory comprised 850 ispecs (screens) and 350 reports (batch programs). This takes into account many programs that were identified as not required in the new environment. MSS migrated some of the extra programs without proving/warranting them so that they could be used as a basis for future development.

## Business Solution Continued

The database specification and database data were migrated using MSS automated software. No normalization or redesign was attempted and all DMSII constructs were created as their Oracle equivalents. The only DMSII construct not having a relational equivalent, an automatic subset (profile), was recreated functionally by generating a cursor with the appropriate selection condition and an index.

Many of the database access statements required some simple tuning, which was accomplished in the scope of the project. The amount of database tuning necessary varies with the style in which the application was written. In Teachers case, the online ispecs tended to use common database resources and interfere with one another, which required more tuning than the average project. MSS provided training and assistance with the tuning sub-project, as well as contributing a large part of the effort. The final result was that most of the programs now run faster on the Windows platform than they did on the original Unisys mainframe.

All existing Algol programs were identified as Unisys-specific and redundant in the new environment.

The job control programs (WFLs) were rewritten by Teachers Assurance operations staff as QMaster schedules and scripts. The automated approach was not taken because of their Unisys mainframe specific nature.

## Original Environment

### The Unisys Mainframe System:

The Unisys mainframe in use at the Teachers Assurance computer site was an A12F. Peripherals connected to it included a GCR tape unit and 3480 cartridge tape devices. Because neither of these are compatible with the standard tape equipment used by Teachers on Windows, a DLT tape device was obtained from a third party supplier (facilitated by MSS) for the duration. This allowed high capacity A Series to Windows data transfer at a much greater rate than would have been possible over a LAN. The operating system and database software running was MCP 41.2 with DMS 41.2 and LINC version 15.2.300.

### Networking:

The primary method for accessing the Unisys mainframe was via PCs running the 'Infoconnect' terminal emulator. A few T27 terminals were still in use. A rather slow (File Express) file transfer system was in use for moving files to and from workstations and servers on the main LAN.

### Database:

The database, TACDB, was approximately 8.8Gb of data, neglecting index and control structures, in 320 datasets. The total disk space used by the database was 11 GB. Due to the way Oracle stores data differently, this grew to 35GB in the new environment.

## The New Environment

### The Server Hardware:

The hardware supplier of choice for Teachers is Tulip. The configuration for the live server is: 2xPentium Pro processors, 1 GB memory and 160GB RAID disk. A development server is also in place. This comprises 1 Pentium processor, 500MB memory and 90 GB disk. DLT tape devices are also available on the network and directly connected to the live server. Microsoft Windows used as the operating system for servers.

### Networking:

The current LAN architecture, using TCP/IP as the standard protocol, needed no change.

### User Workstations:

A few existing Unisys T27 terminals were replaced with PCs and the T27 terminal emulation software discarded. User workstation PCs now run the Developer/2000 GUI client under Windows NT4 workstation software. The standard disk and memory configuration was quite adequate. For enhanced performance, Teachers elected to store forms files locally on the workstations rather than on a local server. This took up ~50 MB of disk space but ensured a lower level of LAN traffic. The Forms files and PC configurations are managed using the Netwizard software distribution package.

## The New Environment cont.

### Software:

The software run on the new server system is as follows:

Windows Server.

Microsoft C++ development system.

The database and Oracle development system software used is: Oracle RDBMS

Oracle Developer/2000 including Oracle Forms, SQLPlus and PL/SQL Oracle Programmer/2000 including Pro\*C.

In addition, for ease of operation and configuration management, the following software was installed:

**QMaster**, a job scheduler that allows extensive, calendar-based scheduling of batch jobs as well as tracking of exceptions.

**PVCS**, a version control tool that is able to control the versions of Forms and other Oracle objects and track them through development, testing and implementation.

**MKS**, a package that allows the use of Unix commands under Windows, was also used during the development and implementation of the migration. It is not required in the longer term although it may be used by Unix-literate developers in the future.





## Results

The migration project was completed over a 9 month time period. The initial goal was to complete the migration by the over a 6 month time period, as the Unisys licenses were due to expire in 6 months. Unisys had indicated that they would withdraw all support at this point and not renew licenses except under very unfavorable terms. When it became apparent to Unisys that the migration was inevitable, they changed their attitude and negotiated a reasonable monthly charge for continued use of the mainframe beyond the 6 month period. This allowed Teachers to complete their other projects as well as the migration without working under undue pressure.

The final result is that the system was thoroughly tested by users as well as IT staff and well accepted. The implementation has been extremely smooth and no support calls relating to post-implementation faults have so far been received by MSS.

## Migration Summary

ENVIRONMENT	SOURCE	TARGET
CPU:	A12F	Tulip 2 cpu NT Server
Database:	DMSII	ORACLE 7
Language:	LINC	PL/SQL, SQC
Data Comm:	COMS	ORACLE Forms/TCP/IP

“Besides achieving the demands of Y2K compliance we have a system operating more efficiently in an environment which we can support with maintenance cost reduced by a factor of 10 & system uptime in excess of 99%”

**Barry Long, Director of Systems and Strategy, Teachers Assurance**