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FINAL REPORT

FOR SERVICES PROVIDED BY TELECOMPUTING PLC TO THE

UNIDO PROJECT:

"THE NATIONAL TECHNICAL CONSULTANCY AND TRAINING CENTRE (NTCTC), PRAGUE".

CONTRACT 84/119
UNIDO PROJECT DP/CZE/82/006
DATE 21/6/85

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1. INTRODUCTION

This report details the software, training and consultancy services provided by Telecomputing plc. to the "National Technical Consultancy and Training Centre (NTCTC)" in Prague, Czechoslovakia under contract 84/119 within UNDP/UNIDO Project DP/CZE/82/006.

These services have been supplied to aid NTCTC staff in the development of Interactive Transaction Processing (TP) Computer Systems for production control.

Telecomputing's TPS Software package has been successfully installed on the ICL 2953 computer at the NTCTC site in Plzen and development of TP Systems is now well underway by NTCTC staff using this software. Technical support for the software is being provided on an ongoing basis from the headquarters of Telecomputing plc. in the U.K.

NTCTC staff have also been fully trained in the use of the TPS software.

2. OBJECTIVES

The objectives of the contract were:-

2.1 To supply and instal the TPS Software, as detailed in Appendix A.2 on the ICL 2953 computer at the NCTC site in Plzen.

2.2 To supply technical manuals relating to the TPS software as detailed in Appendix A.3.

2.3 To build an initial TPS system appropriate to the requirements of the NTCTC project.

2.4 To train NTCTC staff fully in the use of the TPS software for the development of TP systems.

2.5 To familiarise NTCTC staff with the structure and operation of

the TPS software so that they are able to use the software simply and effectively in the future.

2.6 To provide software updates and support services on an ongoing basis for a five year period from commencement of the contract.

3. PHASED APPROACH

From an operational viewpoint, the contract was executed in 2 phases of 2 weeks each. Additionally, support services are being provided on an ongoing basis from the U.K.

Phase 1 was carried out from 12th to 25th January 1985. During this phase, the software was installed, initial systems were built and the main training of the NTCTC staff was performed so that development of the interactive TP Systems could proceed.

Phase 2 was carried out from 11th to 24th May 1985. This phase was used to review progress since phase 1, to install an updated version of the software and to consolidate the knowledge of NTCTC staff through extra training. This training covered more advanced facilities of the TPS software and other aspects highlighted by the initial developments.

Details of the work carried out are given in sections 4, 5 & 6 below.

4. INSTALLATION OF SOFTWARE

The software supplied is specified in Appendix A.2, and a list of the associated manuals provided is given in Appendix A.3.

The software was supplied on Magnetic Tape and copied to disc on the ICL 2953 computer at the NTCTC site at Plzen. Security copies of the software were retained on tape.

The software was rationalised on disc and in filestore to provide a suitable operational environment and the Interactive System Build utility program TP3S was initialised to reflect the communications network existing on the machine.

Installation of the software was successfully completed early during Phase 1 of the contract.

During Phase 2 of the contract a new version of the software was delivered and installed. This version includes all current patches.

5. INITIAL SYSTEM BUILD

Two TPS Systems were built for use during initial development by NTCTC staff. The first system was set up for use with conventional files only, whilst the second system includes the TPS interface to the ICL IDMS Database. The first of these systems was successfully operational prior to the completion of Phase 1 of the contract. The second system was made operational shortly afterwards following communications between NTCTC staff and Telecomputing headquarters in the U.K.

Since Phase 1 of the contract, both systems have been used substantially and successfully by NTCTC staff who have been able to modify the system build as required.

The initial system build involved the following stages:-

5.1 System Definition

Parameters were provided through batch and interactive mechanisms to tailor the system to the NTCTC computer and terminal configuration. All the standard features of the TPS software were incorporated including the following:-

a) Full file and system recovery capability.

b) The Personal Password System for controlling user access to sensitive applications.

c) TPS COMPASS Runtime Software enabling the TPS COMPASS Application Generator to be used to the full.

d) A "multithreading" capability.

e) Standard statistics and diagnostics facilities.

f) The "GDR" Link facility enabling computer operators and background jobs to communicate with the TPS System.

g) The Print System providing the ability to drive hard copy printers directly from the TPS System.

5.2 Example Application Definition

Some simple example transactions were established jointly with NTCTC staff. This task was carried out in conjunction with the formal training as a practical exercise. The setting up of these transactions involved the use of the TPS Interactive Application Definition facility and also the writing and compiling of some COBOL application foutines.

5.3 TPS IDMS Environment

In order to build the IDMS version of the TPS System, the following tasks were carried out:-

a) A TPS IDMS Protocol was set up for use by the IDMS pre-processor.

b) Two special Application routines were written and included within the TPS Start-up procedure to establish the appropriate connections between TPS and the IDMS Schema in use by NTCTC.

5.4 System Implementation

A series of George 3 macros were developped to implement operational versions of the systems already defined. Macros were also produced to run the on-line programs and to assist with related "housekeeping" operations.

6. TRAINING

Both formal and informal training was provided to NTCTC staff during the contract.

6.1 Formal Training

The formal training consisted of lecture based courses with demonstrations and practical work included where possible. An interpreter was present throughout the courses to translate the lectures directly from English to Czech.

The courses given were:-

6.1.1 TPS System Design

The aims of this course were to explain the main principles of TP System design and familiarise the delegates with the facilities of the TPS Software concentrating on those aspects which affect system design. The course was given during the first week of Phase 1 of the contract and the delegates were mainly systems analysts.

The course covered the following topics:-

a) An Introduction to Interactive Transaction Processing.
b) Concepts and Terminology of TPS.
c) The structure of TPS.
d) Principles of the TPS Application Programming Interface.
e) Message Handling - including Conversation and Screen Format Design.
f) Logical Terminal Interface - the TPS facilities for automatic validation and reformatting of input and formatting of output.
g) Control Procedures within TPS - including the Authority Control facilities designed to prevent unauthorised access to parts of the system.
h) TPS-COMPASS - the concepts and capabilities of this feature of the TPS software.
i) The Print System - an appreciation of the direct printing facilities of TPS.
j) File Handling - the operation and special features of

the TPS file handling software.

k) Resilience and Recovery - the TPS procedures for configuring the software and defining the application. As these procedures are mainly interactive, a demonstration and practical work were included.

6.1.2 TPS Application Programming

The aims of this course were to explain the main principles of TP Systems with particular reference to the facilities of the TPS Software and to explain the TPS Application Programming Interface in sufficient detail to enable delegates to write and test TPS Application code. The course was given during the second week of Phase 1 of the contract and the delegates were mainly programmers although a number of delegates attended both system design and application programming courses.

The course covered the following topics:-

a) An Introduction to Interactive Transaction Processing.
b) Concepts and Terminology of TPS.
c) The Structure of TPS.
d) Principles of the TPS Application Programming Interface.
e) Programming for the Input Message - including detailed coverage of the validation, reformatting and error reporting facilities of the Logical Terminal Interface of TPS.
f) Programming for the Output Message - using the formatting capabilities of the Logical Terminal Interface of TPS.
g) Programming for File Handling - including an understanding of the important special features of the TPS file handling software.

Consolidation of topics e,f & g was provided by a

demonstration of the associated interactive Application Definition procedures and by a practical programming exercise.

h) Extending the Worksheet - a TPS mechanism to allow more flexible use of store.
i) AR Trains - the TPS facility for dividing the processing of a message between a number of separately compiled routines.
j) Logic Errors - the TPS machanism for dealing with unexpected error conditions.
k) Diagnostics and Testing - an appreciation of the facilities provided by the TPS software.

6.1.3 Further Information

During the first week of Phase 2 of the contract, a further training course was given to the NTCTC staff. This provided a deeper coverage of some topics included in Phase 1 and also some new items. The subject matter was deteremined in the light of experience with the early development since Phase 1.

The topics included were :-

a) TPS-COMPASS - a detailed study of the operation of the various aspects of TPS-COMPASS concentrating on the programming interface for transaction's using Conversation Control alone.
b) The TPS Print System - detailed coverage of the printing facilities including the application programming interface.
c) Testing and Diagnostics - Recommendations for testing strategies and a more detailed coverage of the diagnostic facilities of TPS and their usage in solving errors.
d) System Performance and Testing - an appreciation of the

aspects of a TPS System which affect performance and the ways in which problems such as "Deadly Embrace" can be avoided.

6.2 Informal Training

At all stages during the installation of the software and the building of the initial systems, NTCTC staff were involved to the fullest extent and special care was taken to ensure that they understood each action taken. This task was simplified by the high level of motivation of the staff concerned, their experience and understanding of the DME/GEORGE 3 environment and their command of the English Language.
During Phase 2 of the contract, a significant amount of time was spent assisting the NTCTC staff with their development and ensuring that the personnel concerned understood the reason for any errors found.

Also during Phase 2 informal training was given to some of the NTCTC staff covering some lesser used features of TPS and some special requirements of the NTCTC project. The main areas covered here were:-

- facilities for obtaining TPS statistics
- initiation of background jobs from TPS
- further detail of the resilience and recovery facilities of TPS.

7. SUPPORT

Access to support services at the headquarters of Telecomputing plc. at Oxford, U.K. is available on an ongoing basis. Use of this facility has been made successfully on a number of occasions during both phases of the contract and during the intervening period. The normal means of communication has been by telex.

8. SUMMARY

It is believed that the objectives of the contract have been met completely and to a high standard.

The latest version of the TPS software is successfully installed in Plzen where it is receiving substantial use.

The NTCTC staff were found to be enthusiastic towards the project and they have been fully trained in the development of interactive TP Systems using TPS. They have used the knowledge gained to make good progress in their development. From the review of progress made during Phase 2 of the contract it was clear that the staff had an excellent grasp of the concepts and the detailed requirements of the TPS Software.

Links between NTCTC staff and the Telecomputing support services have been made successfully.

In the light of the above points, it is confidently believed that the NTCTC staff can maintain their TPS environment and use it effectively and efficiently to produce good interactive TP Systems.

9. RECOMMENDATION FOR FURTHER WORK

In order to maximise the effectiveness of this contract throughout the life of the systems under development, it is strongly recommended that two further activities be undertaken.

9.1 Technical System Review

At a suitable future time, following further development of the project, a technical review of the systems should be undertaken

to ensure their operational viability during their projected life. This should be carried out by Telecomputing plc as experts in TP systems on ICL Mainframe computers and as suppliers of the TPS software. The importance of this review cannot be overemphasised bearing in mind that the systems will be directly concerned with production so that users are likely to place a heavy reliance upon the systems.

A period of one week should be allocated to this task. It should be noted that the cost of this review to the project will be reduced by the fact that sufficient funds in Czech currency remain from the current contract to cover the expenses of the consultant in Czechoslovakia during the review. Costs would therefore be limited to travel and Consultancy fees.

9.2 Training of a Technical Specialist

Bearing in mind the critical nature of TP systems, good support for them is of vital importance. This is assured through the link to Telecomputing headquarters in the UK and assisted by the training given under the present contract. However, it is suggested in the strongest possible terms that a suitable member of the NTCTC staff should be trained as a technical specialist in TP systems and in TPS in particular. Such a specialist would be able to provide an improved level of support directly without the need to contact the UK. This will have particular benefits bearing in mind the geographical and language constraints. Such a person would also be in an excellent position to advise other staff on various aspects of TP system design and development.

The major benefit to be derived from such a specialist comes from the aim of the NTCTC to develop and disseminate "know-how" and experience in the field of production and maintenance of computerised control systems. A technical TP specialist would clearly be central to such an aim.

The training of such a specialist could be achieved by his attendance at the headquarters of Telecomputing plc for a period of 4 weeks.

APPENDIX A - RESOURCES SUPPLIED

A.1 Professional Services

The contract was carried out by Mr. P. Kenrick, Training Manager of Telecomputing plc.

1.	Briefing by NTCTC staff at offices of Telecomputing plc, Oxford, UK	1 day
2.	Phase 1 - at Plzen Installation of Software, and building of initial systems	2 weeks
3.	Phase 2 - at Plzen Review of progress, follow-up training and consultancy services including 1 day debriefing at INORGA - Prague	2 weeks
4.	Report writing at Telecomputing plc, Oxford, UK	3 days

A.2 Software

The following software was delivered and installed on the ICL 2953 at the NTCTC site in Plzen:-

TPS/DM release 3.09 including the follwoing options:-

- TPS-Compass
- Advanced Terminal Facilities (incorporating the Print System)
- TPS interface to IDMS Database

A.3 Manuals

The following technical manuals were supplied to NTCTC:-

Code	Title	Serial No.
CCI	Common Cobol Interface	192 & 280
F&F	Features and Facilities	194 & 231
OP	Operating	211
OV	Overlay Optimiser	14
PR	Programming	236
SBP	System Building Procedures	300
SD	Systems Design	196
SG	System Generation	166
SGF	System Generation Forms	184
CMP	TPS-Compass	62
DT	Diagnostics and Testing	356
PH	Print Handling	130