

**MULTIMEDIA COMPUTER AIDED  
INSTRUCTION SOFTWARE FOR  
COMMUNICATION NETWORKS  
( MCACN )**

**Project Report submitted by  
Panayiota Michaelidou**

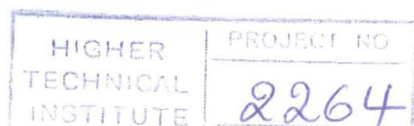
This project is submitted to the  
HIGHER TECHNICAL INSTITUTE  
NICOSIA, CYPRUS  
in partial fulfillment of the award of the  
DIPLOMA in COMPUTER STUDIES

Project Supervisor : Mrs. Eliza Angelidou  
B.Sc.MA in Computer Studies  
Lecturer at H.T.I  
Computer Studies Department  
Higher Technical Institute

External Accessor : Mr. Viatcheslav S. Rahmatoulin  
M.MSc in Nuclear Physics  
General Manager  
CyNet Computer Systems Ltd

Technical Support : MISnTED LTD  
Nicosia, Cyprus

*June 1994*



# Multimedia Computer Aided Instruction Software for Communication Networks

Prepared by Panayiota Michaelidou, 3Cs, 1994

## Summary

After serious thoughts with my supervisor, Mrs. Eliza Angelidou, it has been decided to develop the project called " Multimedia Computer Aided Instruction Software for Communication Networks " ( MCACN ), issued by the General Studies department of Higher Technical Institute for the partial fulfillment of the award of the Diploma in Computer Studies.

This project can be considered as a multimedia educational unit, primarily developed for training purposes. It is made up of three main parts : *Training*, *Testing* and *Reporting*.

The Training mode will aim at introducing users to Encyclopedia and to Dictionary. The Encyclopedia contains the Communication Networks material to be taught accompanied by pictures and sound, and the Dictionary contains the explanations of Communication Networks terms.

The Testing mode will aim at testing user' s knowledge on the material presented on the previous mode. The tests will be in a multiple choice form and each question will be graded with one mark. The correct answers given by the user will be added and the sum will be expressed as percentage value.

The Reporting mode will aim at recording the student' s personal information and at representing graphically the user's testing results.

This report compromises the main supporting documentation of its corresponding Computer Information System ( CIS ) developed with the aid of Apple Computers in fulfillment of the Diploma Project requirements.

Finally, a User Manual has been developed in a separate binding, to assist the users while operating the system.

# TABLE OF CONTENTS

## ACKNOWLEDGEMENTS

SUMMARY 1

INTRODUCTION 2

### 1. INVESTIGATION PHASE

1.1 Introduction 3

1.2 Initial Investigation Activity

1.2.1 Activity Description 3

1.2.2 Project Request Evaluation 3

1.2.3 Objectives of the new system 4

1.2.4 Information of the existing system 5

1.2.4.1 Existing system procedures 5

1.2.4.2 Problems of the ongoing procedures 6

1.2.5 Rough, preliminary estimation of Cost and of  
projected Benefits 6

1.2.6 Recommended Solution 7

1.3 Feasibility Study

1.3.1 Activity Description 8

1.3.2 Feasibility Study Considerations

1.3.2.1 Financial Feasibility 8

1.3.2.2. Operational Feasibility 9

1.3.2.3 Technical Feasibility 9

1.3.2.4 Schedule Feasibility 10

1.3.2.5 Human Factors Feasibility 10

1.3.3 Conclusion 11

## **2. ANALYSIS AND GENERAL DESIGN PHASE**

2.1 Introduction	12
2.2 Existing System Review	
2.2.1 Introduction	12
2.2.2 Organization	12
2.2.3 Ongoing Procedures	13
2.2.4 Existing Data and Printed Material	13
2.2.5 Current System Inputs	14
2.2.6 Current System Outputs	15
2.3 New System Requirements	
2.3.1 Introduction	16
2.3.2 User Specification Document	
2.3.2.1.Overview Narrative	16
2.3.2.2 System Function	17
2.3.2.3 Processing	17
2.3.2.4 Data Dictionary	17
2.3.2.5 Inputs	18
2.3.2.6 Outputs	19
2.3.2.7 User Interface with the system	20
2.3.3 Conclusion	20
2.4 New System Design	
2.4.1 Introduction	21
2.4.2 New System Design Specification	
2.4.2.1 Overview Narrative	21
2.4.2.2 Inputs to the system	22
2.4.2.3 Outputs to the user	22
2.4.2.4 Data Files	22
2.4.2.5 Performance Criteria (Respose Times)	23
2.4.2.6 Security and Control Measures	23
2.5 Implementation and Installation Planning	
2.5.1 Introduction	25
2.5.2. Preliminary Implementation and Test Plan	25
2.5.3 Preliminary System Test Plan	25
2.5.4 Training of the users	26

2.5.5 Preliminary Installation Plan	26
2.5.6 Conclusion	26

### **3. DETAILED DESIGN AND IMPLEMENTATION PHASE**

3.1 Introduction	27
3.2 Technical Design	
3.2.1 Introduction	27
3.2.2 Detailed Design Specification Document	
3.2.2.1 Human-Machine Interface Design	27
3.2.2.2 Application Software Design	28
3.2.2.3 Backup requirements and Recovery procedures	29
3.2.2.4 Logging Requirements	29
3.3 Test Specification and Planning	
3.3.1 Introduction	30
3.3.2 Levels of testing	
3.3.2.1 Unit Testing	30
3.3.2.2 Integration Testing	30
3.3.2.3 Function Testing	31
3.3.2.4 System Testing	31
3.3.2.5 Acceptance Testing	31
3.4 Programming and Testing	32
3.5 User Training	32
3.6 System Test	33

### **4. INSTALLATION PHASE**

4.1 Introduction	34
4.2 File Conversion	34
4.3 System Installation	34

### **CONCLUSIONS**

## **APPENDICES**

APPENDIX A - Syllabus

APPENDIX B - HTI's Organizational Chart

APPENDIX C - HyperCard's Object Hierarchy

APPENDIX D - Gantt Chart

APPENDIX E - Data Flow Diagrams

APPENDIX F - Data Dictionary

APPENDIX F1 - Data Elements

APPENDIX F2 - Data Structures

APPENDIX F3 - Data Stores

APPENDIX G - Processes

APPENDIX H - Inputs / Outputs

APPENDIX I - Glossary

APPENDIX J - References