

HIGHER TECHNICAL INSTITUTE

COURSE IN COMPUTER STUDIES

DIPLOMA PROJECT

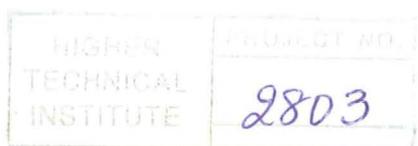
**A MEDICAL INTERACTIVE
MULTIMEDIA SYSTEM**

CS/209

BY

**STEVEN NICOLAOU
MARIA ANDREOU**

17 JUNE 1998



THE GUIDE TO RADIOLOGY

PROJECT SUMMARY

A Medical Interactive Multimedia System

Steven Nicolaou & Maria Andreou

The Guide to Radiology is an interactive multimedia CD-ROM that allows the user to explore and learn about the field of medical science called Radiology. The Guide is centred around Hope Hospital in Salford, but the information covers the topics in general.

The Guide was designed for and is targeted at three types of users.

- Hospital Patients
- High School Students
- The General Public

The Radiology department at Hope Hospital houses six imaging modalities, which are featured in the Guide. These are:

- General X-Ray
- Nuclear Medicine
- Magnetic Resonance (MR)
- Computed Tomography (CT)
- Ultrasound
- Angiography

An additional program, the Questionnaire Administration Tool, is an adjunct to the Guide to Radiology. Its purpose is to help the administrator evaluate the answers in the quizzes and questionnaires within the Guide and draw conclusions which can be helpful for future improvement.

The main reasons for the development of the Guide were:

- Patient fears about the risks involved in radiographic examinations
- Misconceptions and fallacies about Radiology
- Educational supplement for pupils and students

The Guide to Radiology was a collaboration between the Higher Technical Institute, University College Salford and Hope Hospital of Salford Royal Hospitals.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	6
PROJECT SUMMARY	8
DOCUMENT CONVENTIONS.....	9
PREFACE.....	10
How it started	10
1. INTRODUCTION	11
1.1 What is Radiology?.....	11
1.2 The 6 Imaging Modalities at Hope Hospital	12
1.2.1 General X-Ray.....	12
1.2.2 Nuclear Medicine	12
1.2.3 Magnetic Resonance Imaging	13
1.2.4 Computed Tomography	13
1.2.5 Ultrasound.....	13
1.2.6 Angiography.....	14
1.3 What is the Guide to Radiology?.....	14
1.4 Base Prototype and Planned Improvements	15
1.5 Goals and Objectives	16
1.5.1 Project Goal.....	16
1.5.2 Objectives	16
1.6 Intended Audience.....	17
1.6.1 Hospital Patients.....	17
1.6.2 High School Students.....	17
1.6.3 General Public	17
1.7 System Requirements	18
2. DESIGN	19
2.1 Interface.....	19
2.1.1 User Friendliness	19
2.1.2 Help.....	19
2.1.3 Real Life Metaphors	19
2.1.4 Interactivity	20

2.1.5 Simple Navigation	20
2.1.6 Consistency	21
2.1.7 No keyboard input	22
2.1.8 Use of plain English	22
2.1.9 Heavy use of media and minimal use of text.....	23
2.2 Features and Educational Value	24
2.2.1 User Friendly Environment.....	24
2.2.2 Pictures, Sounds, Videos.....	24
2.2.3 Interactive Background Activation.....	24
2.2.4 Basic Help	25
2.2.5 Interactive Quizzes	25
2.2.6 Demographic Information Questionnaire	26
2.2.7 Glossary of Medical Terms	26
2.2.8 Administration Tool	26
2.2.9 Network Support.....	27
3. DEVELOPMENT	28
3.1 The Dynamic Systems Development Methodology (DSDM).....	28
3.1.1 Overview of DSDM	28
3.1.2 Focus on the Interface.....	29
3.1.3 Prototyping.....	30
3.1.4 User Feedback	30
3.1.5 Refinement	31
3.2 Distribution of responsibilities	32
3.2.1 Multimedia	32
3.2.2 Programming.....	32
3.2.3 Content.....	32
3.3 Project Management	33
3.3.1 Project Planning	33
3.3.2 Time Management Planning - Milestones.....	33
3.3.3 Local and Overseas co-ordination	34
3.3.4 Disadvantages of overseas work.....	35
3.4 Development Resources	36
3.4.1 Computer Specifications	36
3.4.2 Digital Camera	36
3.4.3 Video Camera.....	37
3.4.4 Local Area Network.....	37
3.4.5 Internet Resources	38
3.4.6 Scanner	38
3.4.7 CD Writer.....	39
3.4.8 Other multimedia CD-ROMs	39
3.4.9 Material from the UK	39
3.5 Software Tools	40
3.6 Problems and Comments.....	40
3.6.1 Funding	40
3.6.2 Access to medical equipment	41
3.6.3 Toolbook Weaknesses, Annoyances, Bugs and Inconsistencies.....	41

4. TESTING	43
4.1 Unit Testing	43
4.2 Integration Testing	43
4.3 Quality Assurance	44
5. DEPLOYMENT	45
5.1 Distribution Plans.....	45
5.1.1 Schools	45
5.1.2 Hospitals.....	45
5.1.3 Libraries	45
5.1.4 University of Salford.....	46
6. CLOSING	47
6.1 Assessment	47
APPENDIX A	48
Context Diagram	48
APPENDIX B	49
Data Flow Diagrams.....	49
APPENDIX C	52
Navigation Tree	52
APPENDIX D	53
Content Tree.....	53
APPENDIX E	54
Project Plan	54
APPENDIX F	55
Glossary of Computer Terms.....	55
APPENDIX G	58
References.....	58

APPENDIX H	59
Glossary of Medical Terms	59