

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

Application of Internet technologies to Customer Support Services

N J Ramsay 1997 – 1999

11. Errata

Page 30: Replace "Define a simple constructor that this class in the RMI Registry" with "Define a simple constructor that initialises this class in the RMI Registry."

Page 37: Delete paragraph two of section 5.3.4

Table of contents

1. INTRODUCTION.....	5
2. BACKGROUND.....	6
2.1 IBM NEW ZEALAND	6
2.2 INTEGRATED CUSTOMER MANAGEMENT SYSTEM	6
2.3 INTERNET TECHNOLOGIES	7
3. NON-FUNCTIONAL REQUIREMENTS.....	8
3.1 PERFORMANCE	8
3.1.1 Client Performance	8
3.1.2 Average time to display.....	8
3.2 EASE OF USE.....	13
3.2.1 As simple as possible.....	13
3.2.2 Other advantages of a simple design include	13
3.3 CONFIGURABILITY.....	13
4. ARCHITECTURAL ALTERNATIVES.....	15
4.1 HYPERTEXT BASED SOLUTIONS.....	15
4.1.1 Client Architecture	15
5.1.1 Server Architecture	21
5.1.2 Examples.....	25
5.2 JAVA BASED FRONTEND	26
5.2.1 Two-tier model	27
5.2.2 Three-tier model.....	28
5.2.3 Communication.....	30
6. TOLL ESTIMATOR.....	33
6.1 BACKGROUND	33
6.2 INTENDED USE	33
6.3 SYSTEM ARCHITECTURE	34
6.3.1 Options.....	34
6.3.2 Minimising the startup time	34
6.3.3 Java security restrictions	36
6.3.4 Architecture model.....	37
6.4 CLIENT ARCHITECTURE	37
6.4.1 Startup component	37
6.4.2 User Interface component.....	38
6.4.3 Messaging component.....	39
6.4.4 Communication between components.....	40
6.5 MESSAGE PASSING.....	41
6.6 MIDDLE TIER ARCHITECTURE.....	42
6.7 SERVER ARCHITECTURE.....	42
6.8 FUTURE EXTENSIONS.....	43
6.8.1 Data source	43
6.8.2 Create Java Beans.....	43
7. FIND CUSTOMER USE CASE.....	45
7.1 OPTIONS FOR THE COMMUNICATIONS ARCHITECTURE	45
7.1.1 Requirements.....	45
7.1.2 Three options.....	45
7.1.3 Sockets	46
7.1.4 Java RMI and Java JNI based middleware	46
7.1.5 CORBA based middleware.....	47
7.2 BUILDING THE COMMUNICATIONS ARCHITECTURE.....	48
7.2.1 Supplier.....	48
7.2.2 Defining the interface.....	48

7.2.3	<i>Compiling an IDL file</i>	53
7.2.4	<i>Issues that were addressed</i>	53
7.3	JAVA CLIENT	54
7.3.1	<i>Requirements</i>	54
7.3.2	<i>Implementation</i>	54
7.3.3	<i>Client Usage</i>	58
7.4	C++ SERVER	59
7.4.1	<i>CORBA Integration</i>	60
7.5	PERFORMANCE	60
7.5.1	<i>CORBA</i>	60
7.5.2	<i>Java</i>	60
7.6	FUTURE ENHANCEMENTS	61
7.6.1	<i>Split reassessment</i>	61
7.6.2	<i>Middle tier</i>	61
7.6.3	<i>Data structures</i>	61
7.6.4	<i>CORBA services</i>	62
7.7	CONCLUSIONS	62
8.	CONCLUSIONS	63
8.1	USING A CURRENT DATA SET	63
8.2	USING A CURRENT APPLICATION	63
8.3	THE USE OF INTERNET BASED TECHNOLOGIES	63
9.	APPENDIX A – TOLL ESTIMATOR DOCUMENTATION	65
9.1	PACKAGE COM.IBM.VOYAGER	65
9.1.1	<i>Interface COM.ibm.voyager.Callable</i>	65
9.1.2	<i>Interface COM.ibm.voyager.Database</i>	67
9.1.3	<i>Class COM.ibm.voyager.CallCost</i>	69
9.1.4	<i>Class COM.ibm.voyager.CallInfo</i>	72
9.1.5	<i>Class COM.ibm.voyager.Message</i>	78
9.1.6	<i>Class COM.ibm.voyager.Messenger</i>	81
9.1.7	<i>Class COM.ibm.voyager.TollEstimator</i>	85
9.1.8	<i>Class COM.ibm.voyager.TollFrame</i>	89
10.	APPENDIX B – FIND CUSTOMER DOCUMENTATION OVERVIEW	93
10.1	PACKAGE GUI12	93
10.1.1	<i>Interfaces</i>	93
10.1.2	<i>Classes</i>	93
10.2	PACKAGE FC12	93
10.2.1	<i>Interfaces</i>	93
10.2.2	<i>Classes</i>	93
10.3	PACKAGE POC12	94
10.3.1	<i>Interfaces</i>	94
10.3.2	<i>Classes</i>	94
11.	REFERENCES	95

Table of figures

•	FIGURE 1. TWO-TIERED ARCHITECTURE.....	27
•	FIGURE 2. THREE-TIERED ARCHITECTURE	28
•	FIGURE 3. ARCHITECTURE OF THE TOLL ESTIMATOR.....	37
•	FIGURE 4. PROCEDURE FOR USE OF MESSENGER	41
•	FIGURE 5 - CORBA ARCHITECTURE.....	47
•	FIGURE 6 - FIND CUSTOMER INITIALISATION OID	49
•	FIGURE 7 - FIND CUSTOMER - CLIENT TO SERVER	50
•	FIGURE 8 - FIND CUSTOMER - SERVER TO CLIENT	51
•	FIGURE 9 - USE OF TABBED NOTEBOOKS	55
•	FIGURE 10 - VISUAL PROGRAMMING.....	56
•	FIGURE 11 - IMPLEMENTATION OF TABBED NOTEBOOK FUNCTIONALITY	57
•	FIGURE 12 - FIND CUSTOMER USAGE.....	59
•	FIGURE 13 - IDL COMPILING	60