

CIMS HELP-DESK APPLICATION

By

Steven J. Rogers

Submitted to
the faculty of the Information Engineering Technology Program
in Partial Fulfillment of the Requirement for
the Degree of Bachelor of Science
in Information Engineering Technology

University of Cincinnati
College of Applied Science

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Date

Annu Prabhakar , Faculty Advisor

Date

Lawrence Gilligan, Department Head

Date

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I would like to acknowledge the entire Information Engineering Technology department and its' professors at the University of Cincinnati, OCAS. Thank you for reawakening my passion for learning. The staff at OCAS has been truly invaluable.

Dedication

I would like to take a moment to dedicate this project to the love of my life. My love is always there giving me butterfly kisses, and endless hugs as I rush out the house for school or work. Thoughts of my love get me through the day. My love always knows what to say, or what to do, to make me forget about the bad days, and focus on the important things in life. My love is always waiting for me at night, happy that we get to share one more moment together in the light. My love is thoughtful, kind, considerate, caring, and almost always wet. The love of my life is 10 months old, and cannot walk yet.

I love you Nutman.

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Abstract

The purpose of this project is to develop an enhanced version of a helpdesk application, (CIMS), for a software development company. Electronics Data Systems, formally Structural Dynamics Research Corporation, (SDRC), felt that their support engineers could work more effectively if several key features were incorporated into a helpdesk. These features include: automatically assigning new cases to proper support team within a scheduled amount of time, allowing engineers access to past customer case information, giving support engineers access to error codes related to customer problems, giving support engineers access to step by step instructions on how to resolve issues. It was also determined that to take full advantage of a help application, several features need to be added for the customers as well. The features include, allowing customers to view their past case information, giving customers the opportunity to diagnose their own IT issues via the Internet, and lastly, by allowing customers to open new cases via the Internet.

CIMS HELP-DESK APPLICATION

1. Statement of the Problem

1.1 Definition of the Need

Spring 2001, Electronic Data Systems, formally Structural Dynamics Research Corporation, (SDRC), a CAD software development company, announced that it was in the process of being bought out. Beginning January 1st 2002, Structural Dynamics Research Corporation will be part of Electronic Data Systems, Incorporated. As part of the buy out, SDRC converted its customer service databases over to EDS' format. SDRC converted all of its databases from Oracle to Sequel Server.

One area of concern however, was SDRC's Customer Support Department. SDRC used its customer data along with CIMS, a customer service application tool, to supply support to its customers worldwide.

Electronic Data Systems determined that before SDRC's customer data was transferred over to Sequel Server, drastic modifications to the CIMS application were needed. Electronic Data Systems believed that the older CIMS application was not equipped to help provide first-rate support to its customers

2. Statement of Resolution

2.1 Description of Solution

To resolve this situation, I developed a new enhanced helpdesk application. Included in this application is the standard functionality associated with helpdesk applications. This includes a system that allows support engineers to prioritize customer issues, and a system that allows them to respond to these issues in an organized manner. This application must also allow support engineers accessibility to each other's case

information. The new enhanced version of CIMS is a robust application featuring two separate and distinct functionalities. Primarily, CIMS is a desktop application, providing EDS' support engineers with a powerful tool to resolve customer issues. Secondly, CIMS' also functions as an online application providing EDS' customers access to their case information. Above all, this helpdesk utility is a tool that aids EDS' customer support engineers in providing efficient and reliable service to their customers.

2.2 User Profile

One key point that was not overlook was the fact that with the addition of the CMS online help tool, a wider range of users with a broader skill set would be using this application. Therefore CIMS was designed to be obvious enough so that any online user will feel comfortable using it and powerful enough to resolve critical customer issues. It was developed with the knowledge that, many first-time users of varying levels of skill and education will utilize this application. Therefore not only is CIMS powerful, but also extremely user-friendly.

2.3 Design Protocol

The design of this project can thought of as one part complimenting another. In one since you have the desktop application that begins with the traditional login screen that opens into the main display form. From there the user has the option to open a new case, or work on an existing case. If the new case option was chosen, the form displays and the user fills in the required information. Once this occurs, the case is then transferred into the list of current cases. The user then must select the case within the list of current cases. From there the user has several options. Either to work on the case using

the, phone call form, or to look up solution on the solutions form, or to simply close out the form in the close case form. See figure 1.

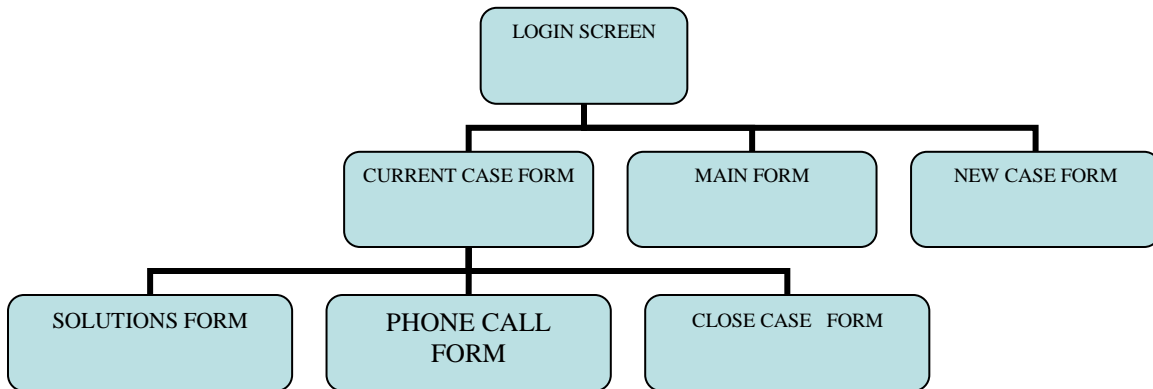


Figure 1. CIMS Desktop Layout.

Much like its desktop counterpart, CIMS Online can be thought of as step down project. Each form that is chosen leads to a deeper layer. Unlike its desktop counterpart, the initial display screen that users come in contact with is not password protected and is open to everyone. The user then has the choice of, searching through known issues, current cases, or opening a new case. To search through known issues, all the user has to do is click on that link. There is no password protection for this section of CIMS Online. However, to utilize, the current case section and the new case section, the user must type in a password. See figure 2.

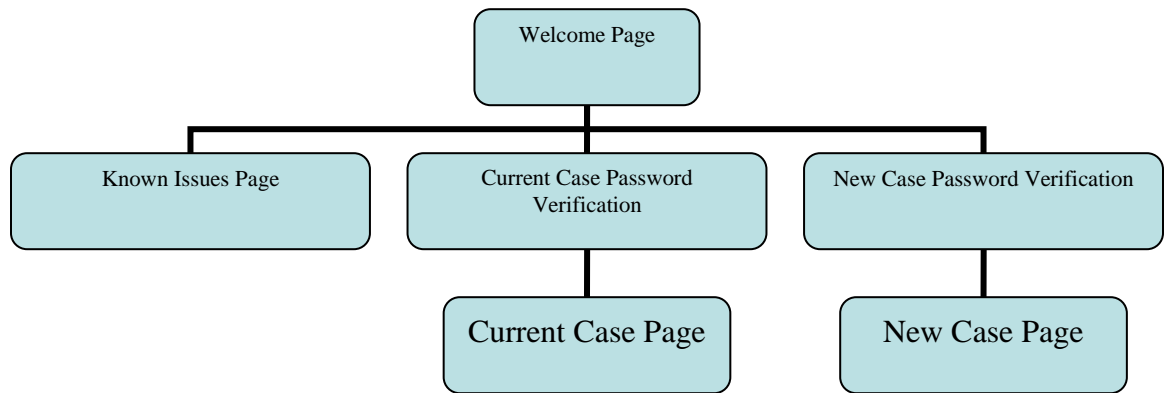


Figure 2. CIMS Online

The structure of the databases used in this project, are similar to any relational database. I have six tables in all to store my data. The tables are product, solutions, error-codes, dispatchers-selection, customers, and employee-team. The dispatcher-selection table holds all the options that the dispatcher can select when opening a new case. The online users when opening new cases also use this table. The error-code table works in conjunction with the solutions table. The known errors are stored here and are linked to the known solutions table with a one to many relationship. The customers and the employee table house the personal information about the customers and employees respectively. Finally, the product table is a combination of all the tables. Once a new case is open data from each of the previous five tables is stored in this table. See figure 3.

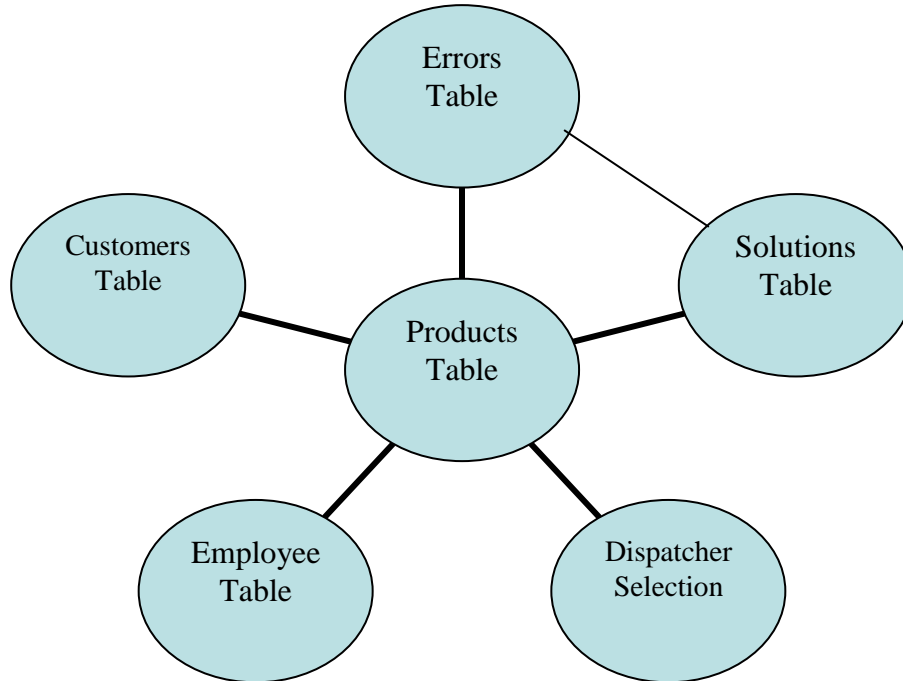


Figure 3. Database Layout

3. Deliverables

To meet Electronic Data Systems requests, I've focused on several key areas. These areas provide EDS' customer support engineers with an enhanced tool and its customers with a new avenue of accessibility. These enhancements are as follows:

1. Allowing customers to open a case through CIMS by way of the Internet.
2. Allowing customer access to their past case information through CIMS by way of the Internet.
3. Allowing Support Engineers quick access to customers past case information.

4. Automatically assigning customer case to proper Support Engineer if engineer has not responded to case in 20 minutes.
5. Giving Support Engineers access to error codes related to customers service problems.
6. Giving Support Engineers quick access to detailed information needed to resolve customer issue
7. Give support Engineers steps to help customer prevent problems from reoccurring.

4. Design and Development

4.1 Budget

For this project a budget not to exceed fifty thousand dollars, was stated. This included software needed to develop this project as well as the man-hours required to accomplish this task. What was not included in this budget was the following; an online service provider, needed to post the CIMS online web application, or the personal workstations needed to run the CIMS desktop application. EDS in an effort to control its own resources has decided to host all web-based application internally. Therefore, the cost of an online service provider has been taken on by the organization, in particular the Internet Services Department. EDS is also a chief believer in keeping current with the latest technology available. Each workstation within its Customer Service Department is leased and scheduled for replacement every six to ten months. Therefore each Customer Service Engineer has the latest workstations available. A complete breakdown of the cost accrued during this project can be seen in appendix C.

4.2 Timeline

The project as a whole took nine months to complete. This includes a working module of the help desk application and the online utility. Some notable milestones are as follows: completion of the case module within the second month, the presentation of the desk top application in the eighth week, and the presentation of the project in its entirety in the last week. For a complete breakdown of the timeline of this project, see appendix D.

4.3 Hardware

As previously stated the hardware used in this project is the latest technology possible. Each more workstation is more than capable of handling the necessary strain produced by the CIMS application. The in-house IIS Servers used to host the online portion of CIMS are more than suitable for the task. However some minimal requirements to make note of are as follows; 16 MB of RAM, an operating system of no later than Windows 95, and a 486DX, 66 MHZ processor. For a complete listing of all the minimum hardware requirements, see appendix B.

4.4 Software

The CIMS helpdesk application was designed to be functional and user-friendly. CIMS was created using primarily Microsoft products. These products include, Visual Basic 6.0, Microsoft Access, Notepad, and Visual InterDev. The Active Server Pages are a bold mixture of JavaScript with a touch of Visual Basic Script to enhance functionality. Testing for the web-based application was performed in Microsoft Internet explorer 4.0 or higher. These products were chosen for their ease of use and robust nature. For a complete listing of all software used for this project, see appendix A.

5. Proof of Design

The enhanced CIMS desktop application is in many ways like its predecessor. It utilizes the same security features that are present in many desktop applications. See figure 4.

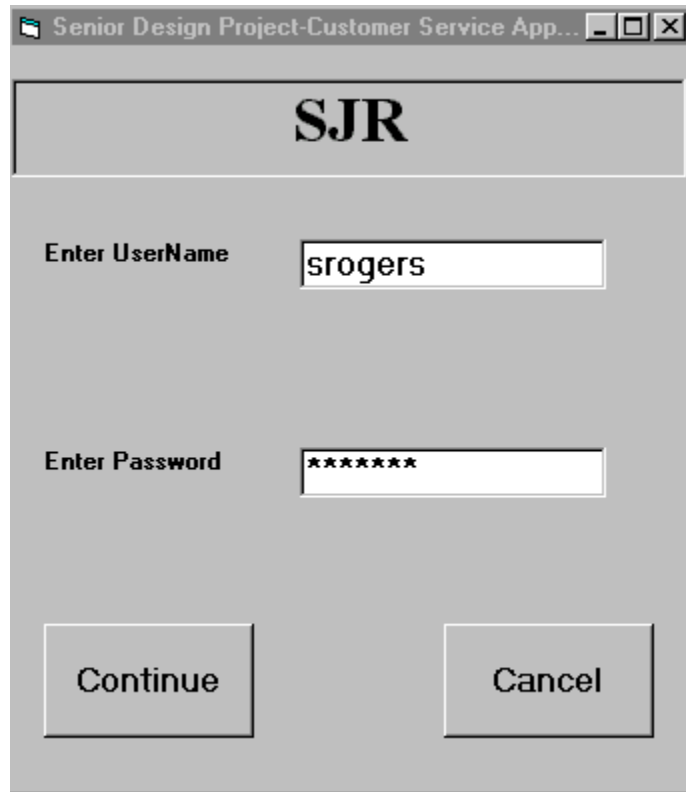


Figure 4. Login Screen

Once the correct login information is given, the power of CIMS is displayed. With this application, ED's customer service staff has a robust a fully functioning support tool available. The layout of this form is designed to be extremely helpful, without crowding the user with unnecessary, buttons, pull down boxes, and options that appear useful but often hinder performance. In perform tasks; support engineers have the option of using the buttons in the upper and lower right hand side or to use his/her right mouse button to utilize the pop-up menu function. See figure 5.

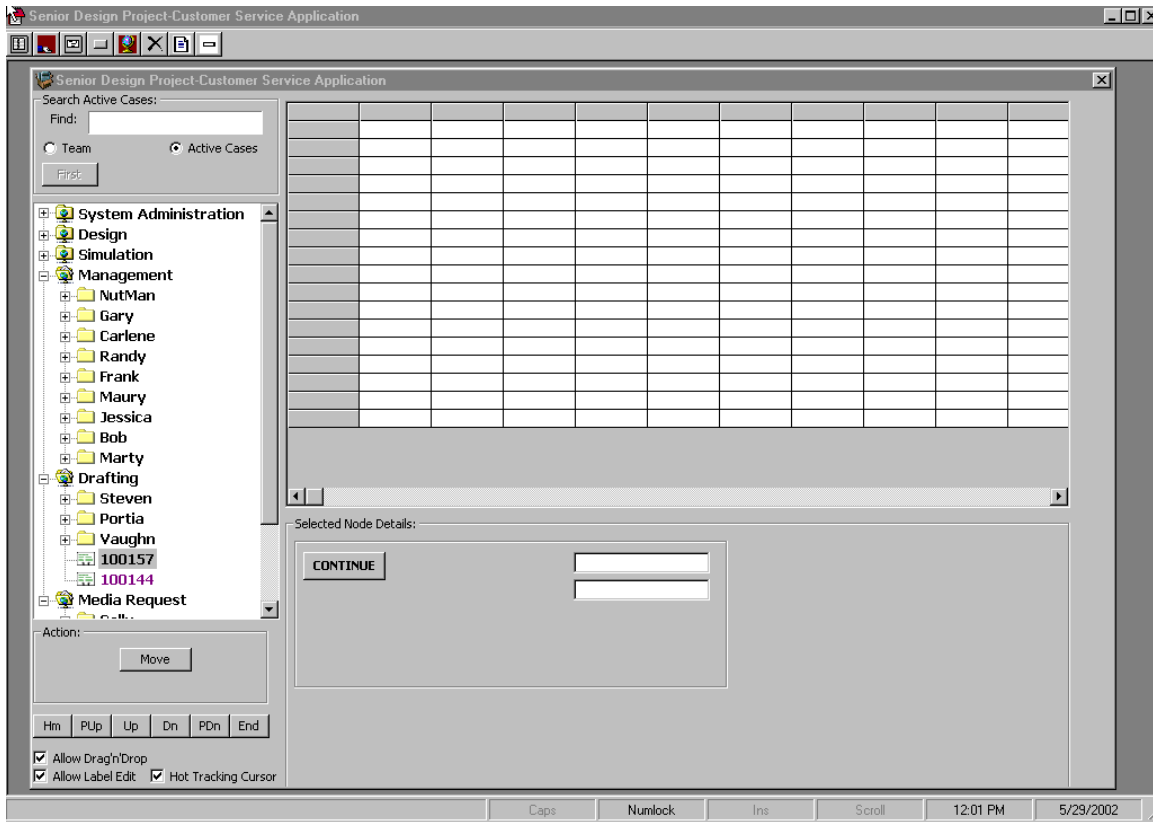


Figure 5. CIMS Main Display

These functions include paging up and down through the list of cases, the ability to move cases from team to team, and the ability to search through the list of cases.

There are several key features that can be accessed from this main form. Each tool is separate and self-containing.

First and foremost is the New Case Module. With this module, the support staff can open new cases for customer with greater ease. With this enhanced form EDS support staff can take advantage of its unique functions. These functions include: the customer fields “auto fill” section, the application driven team selection, and the error code verification. See figure 6.

Case Untitled

Installaton ID /Company Name/ 5 Microsoft

Contact Name Bill Gates

Phone (Main/Alt): (797) 712-2545

Case Alt Phone: (545) 846-5444 100159

Product Version I-DEAS 8m1 Customer Severity Immediate

Application System Administr Initial Response 30 Minutes

Task Hardware Proble Contact Method Email

Platform SUN/Solaris

Type in Error Code: geomod.exe

Phone Notes

Customer is having serious trouble, with his video card. He believes that the errors he is receiving are related to the way he card and or driver was configured. Customer is offsite and can be reached via email at spcrogers@msn.com.

Done

Cancel

Figure 6. New Case Module

With the customer “auto fill” function support staff can simply type in the customer’s installation number and the rest of the customer’s personal information is automatically displayed. This eliminates misspelling and cuts down on wasted time.

By making this module “application dependant” the decision of which team receives which case is now a mute point. The CIMS application itself makes the final decision based on the criteria entered by the support staff.

By including an error verification field, the support staff and the engineers have the ability to verify whether an error given by the customer is a known issue or for that matter a legitimate error.

The next module worth noting is the Notifier. This module informs the support engineers about new cases the moment they occur. See figure 7.

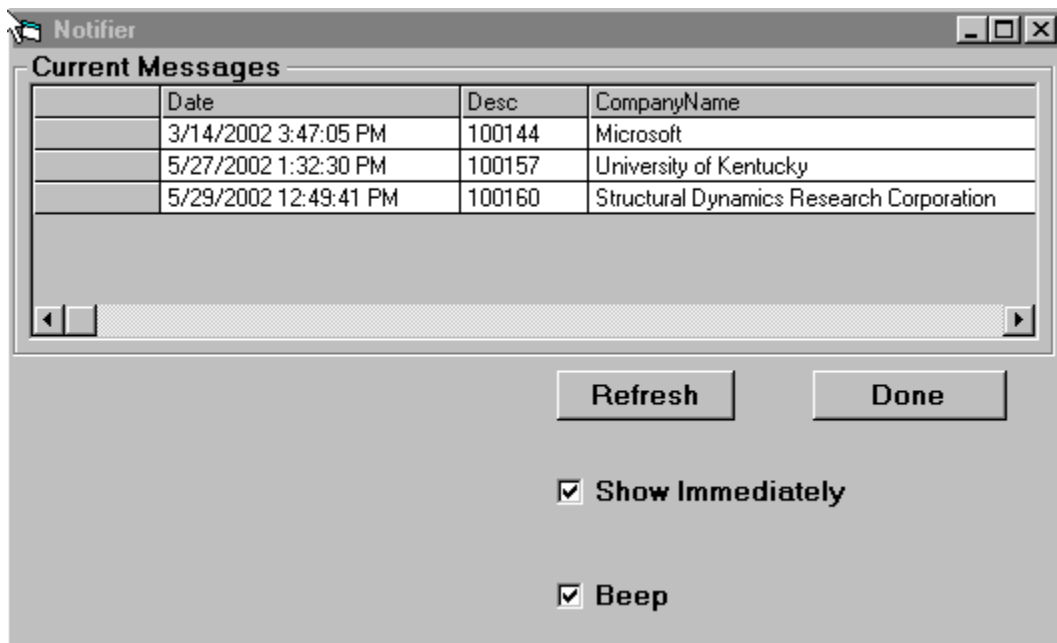


Figure 7. Notifier Module

Incorporated in the functionality of the Notifier are two key features, the Show Immediately and the Beep options. With these two features the support engineer has the option to display the new cases immediately, to simply be beeped when new cases occur, or to display new cases immediately and beep.

The next module of importance is the Current Case Form. This is by far the most powerful and part of the CIMS application. Quite a great deal of the support engineer's time will be spent utilizing the functionality of the Current Case Form. See figure 8.

Case *
100155 Case Title geomod.exe LOOK

Case History
This is a problem that requires immediate attention.
5/27/2002 8:23:16 PM
Recorded by
srogers

Contact Information
Name: Bill Gates
Phone: (797) 712-2545 Alt. Ph#: (545) 846-5444
CaseAlt#: Method: Email
Email:

Case Information
Owner: srogers
Ph#: (513) 979-1406
Condition: Open Status: NewCase
Customer Severity: High Initial Response: 30 Minutes

Site Information
Site ID: 5
Site Name: Microsoft

Platform: ALL Product Version: I-DEAS 8m2 Application: Drafting Task: Hardware Problems

Call Back Add Solution Close Case Save Done

Figure 8. Current Case Form

The Current Case Form is loaded with functionality. Each provides the support engineer with tools to resolve customer cases sooner and more thoroughly.

The “Look” feature is an extension of the error verification tool in the New Case module. Along with This tool not only verifies that the error code is a known issue it also gives a description of the error and displays any solutions available, see figure 9.

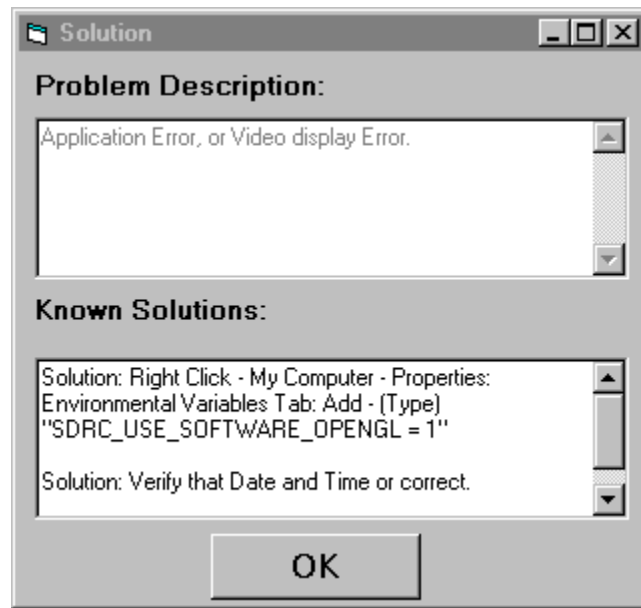


Figure 9. Solution Form

The Contact Information section gives the support engineers the customer information at a glance. There are also editable Case Alternate and Email fields. This gives the support engineer the option to input alternative customer contact information.

The Case Information section is primarily informational only. It displays the support engineers’ information that “owns” the case.

The Site Information section is again for informational purposes. It displays the customer’s site identification number and company.

The Response section allows the support engineer to manipulate the status and urgency of a case.

The Save feature alone has no functionality. However, when coupled with the Dispatchers section becomes very powerful.

The Dispatchers section allows the support engineer to manipulate the form in its entirety. The four options are Platform, Product Version, Application, and Task.

The Platform option allows the support engineer to select which operation system the customer is using.

The Product Version allows the support engineer to select which version of the software the customer is using.

The Application option allows the support engineer to forward the current case he/she is working on to another team.

The Task option determines what type of issue the customer is having with his/her installation of the software.

The Call Back feature allows the support engineer to record and update departmental information about the customer's case, see figure 10.

The screenshot shows a 'Phone Log' window with the following fields and values:

Contact Name	Bill	Case Number:	100155
	Gates	Owner:	srogers
Contact Phone:	(797) 712-2545		
Case Alt Phone:	(545) 846-5444	Start Time:	2:20:16 PM

Notes:
 Customer is having difficulty with Windows XP. he feels that product is very buggy and crashes way to often.

Status: NewCase **New Case Status:** Engineer Call Back

Buttons: Save Notes, Done

Figure 10. Phone Log Form

Once again the Customers Information section is displayed. Along with the customers information this field displays the case number, the owner of the case, the time the support engineer begins the case.

As with the Current Case Form, the “Save Notes” option is useless without combining it with another either the Notes field or the New Case Status option.

The Notes section allows the support engineer to add notes needed to resolve the case.

Customers by way of the web application, CIMS online, can also view these notes.

The New Case Status field is primarily for internal use only. It allows the support engineer to recall at a glance the status of a case. As in the Notes section, the customers using the web can see the status of a case.

The Close Case option on the Current Case Form allows the support engineer to close out the case once it is resolved, see figure 11.

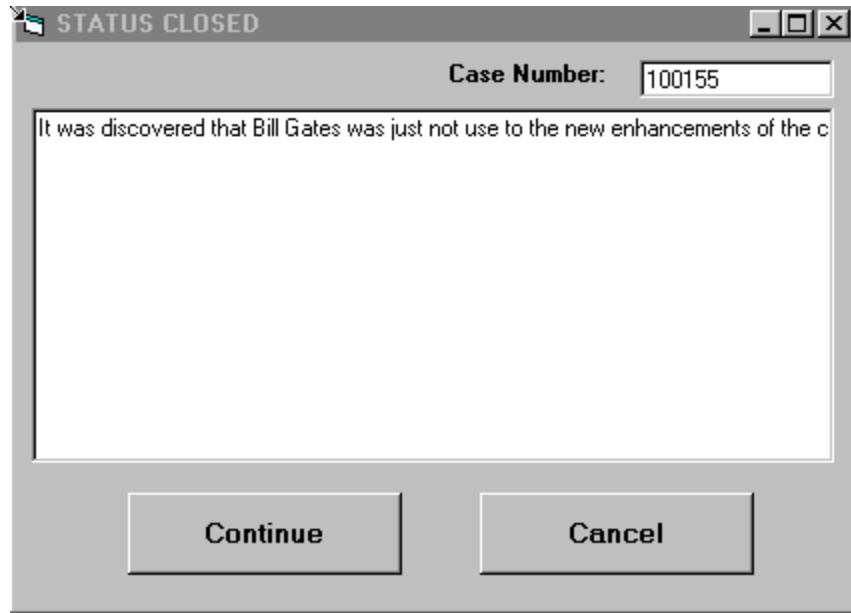


Figure 11. Close Form

CIMS Online is in many ways similar to its parent application, CIMS desktop. The design was purposely chosen to mirror that of its desktop partner. There are several key exceptions. First of all the welcome page is not password protected and is open to all online users, see figure 12.



Figure 12. Welcome Page

From this page the user has several options. Among these options are: opening a new case, review current case information and searching for known issues. The user can also find information about CIMS, freeform and about me.

The New Case Page allows the customer to open new cases using the web. It is a tool that is designed to increase productivity in several ways. It increases productivity by reducing busy signals, and by being available twenty-four hours a day. See figure 13.

Products Services Help About_SJR Home

CIMS
Freeform
Desktop
Online
Helpdesk

OPEN A NEW CASE

SJR

Note: To help ensure a prompt response please enter any known Error Codes.

Enter Error Code:

geomod.exe

Product Version: HDEAS 8m3

Application: Management

Task: Operating System

Platform: ALL

Customer Severity: Very High

Initial Response: 30 Minutes

Contact Method: Phone

Notes: I am having problem with my video display.

Figure 13. New Case Page

The New Case Page, which is extremely similar to its desktop counter part, provides the user with the same functionality that is available to the support staff. Customers have the ability to select the error code, the application, product Version, Severity, Task, Contact Method, and Platform just as the support staff would. The customers also have the option to type in comments about their cases for the support engineers.

The Current Case form is also a nice enhancement. It provides the users with up to the minute updates on all current cases. The information provided includes: case status, error codes, time entered, software version, team assigned to the case, and case notes from the support engineers, see figure 14.

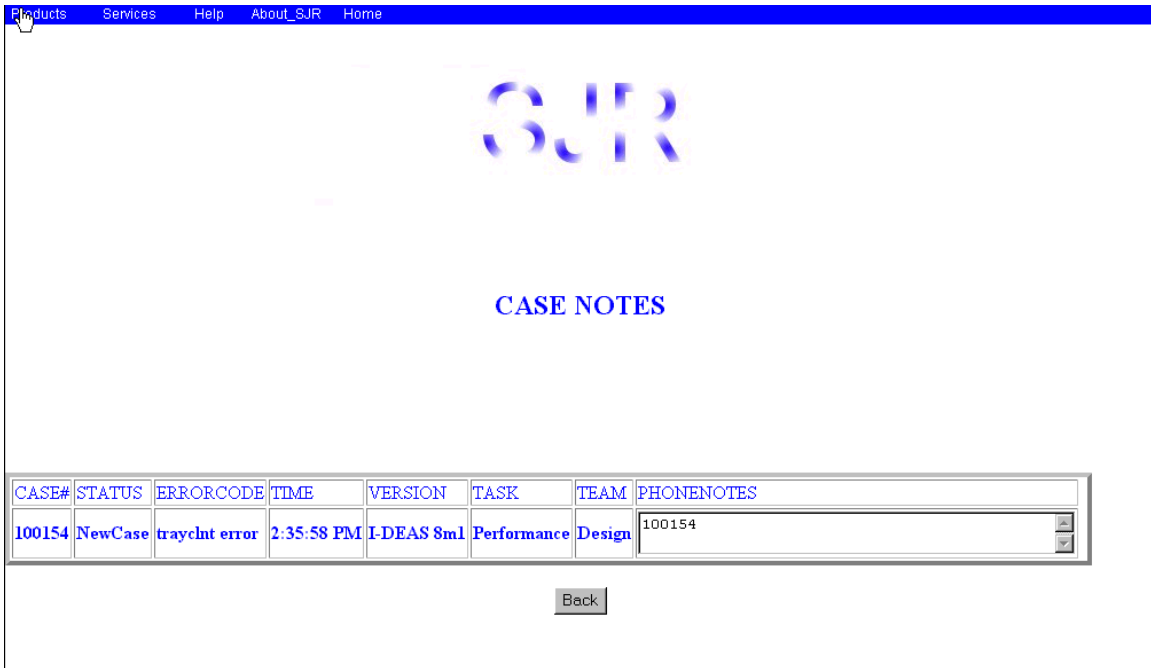


Figure 14. Current Case Page

Finally the Known Issues Page provides the customer with invaluable information on related software and hardware issues. It provides the customer with a at a glance perspective that truly allows them to take charge of their installation and begin to resolve issues for themselves. The Known Issues Page provides the user with a short explanation of the problem and any known solutions see figure 15.

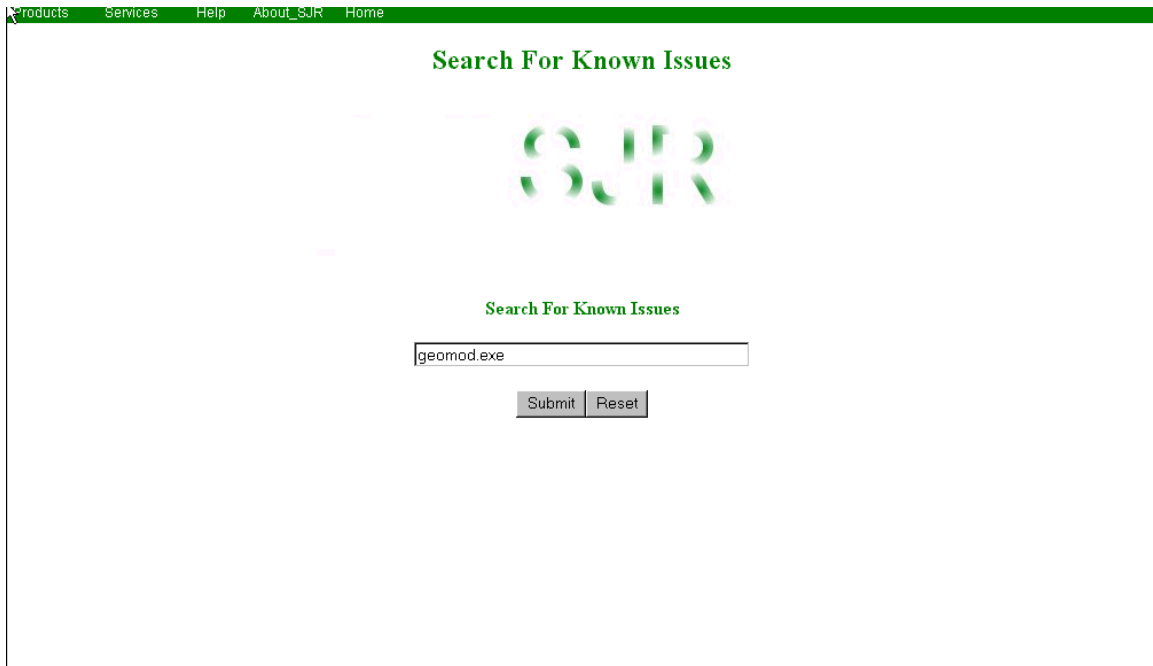


Figure 15. Known Issues Page

6. Conclusions and Recommendations

Below I will now discuss the conclusions I made in completing this project. I have acquired a great deal of known and experience from working and this project. In saying that, I now realize that a project of this magnitude could literally continue indefinitely. There are always modifications and improvements that can be made to enhance such a project. I now also realize why Microsoft comes out with new and improve versions of their software every of month. Completing a project such as this is difficult to say the least. You must first plan, and then you must plan some more. Then comes the hard part, you must take the plans you made prior to beginning the project and stick to them. Getting sidetracked by new and better ideas was for me the hardest part of working on this project.

As for recommendations, I believe that once this project is fully and thoroughly tested, its functionality will be a welcome addition to any help desk utility. I feel

confident in my ideas and their effectiveness and believe that given the opportunity to improve upon this project and with the proper guidance, this my helpdesk application could become marketable.

7. Appendix

APPENDIX A Software Used

The CIMS application will be developed using Microsoft products. At the heart of this project will be the Access database. This database will store all the customer data, as well as the case information needed.

Primarily, because of its flexibility and ease of use, Visual Basic 6 is the logical choice for my front-end application. This includes all my windows based forms used by the call agents and support engineers.

I will be using HTML, Java Scripting, Visual Basic Script and Active Server Page to develop my web based customer interface.

Each support engineers will receive a standalone executable that will be installed on their workstation. This will allow them to utilize the Access database. This database server will store all past and present customer cases as well as the customers' personal information on it. The web interface will be posted on EDS' web page. This interface will also give customers limited access to the database server. In particular it will allow them access to their own case information, past and present.

APPENDIX B

Hardware Requirements

Below you will find a listing of the hardware and software required as well as the cost. The minimum system requirements are as follows:

System Requirements

- Computer/Processor** PC with a 486DX, 66MHz or higher processor; Pentium or higher processor recommended
- Memory** 16 MB of RAM for Windows 95 or later (32 MB recommended); 24 MB for Windows NT 4.0 (32 MB recommended)
- Hard Disk** VB6.0: 76MB typical;94MB maximum
IE: 43MB typical;59MB maximum
MSDN: 57MB typical;493MB maximum
Windows NT 4.0 Option Pack: 20MB Windows95 or later;200MB WindowsNT 4.0
- Drive** CD-ROM drive
- Display** VGA or higher-resolution monitor; Super VGA recommended
- Operating System** Microsoft Windows 95 or later operating system or Microsoft Windows NT operating system version 4.0 with Service Pack 3 or later (Service Pack 3 included)
- Peripherals** Microsoft Internet Explorer 4.01 Service Pack 1 (included)
Microsoft Mouse or compatible pointing device
- Miscellaneous** MSDE for Visual Studio
Hard-disk: 40 MB (25 MB compressed)
- SQL Server 7.0 Developer Edition
-Hard-disk: 65-180 MB based on configuration
-PC with a Pentium (166 MHz or higher) or Alpha processor
-Windows NT 4.0 with Service Pack 4
- Windows 2000 Developer's Readiness Kit
-Hard-disk: 35 MB based on configuration
-Multimedia requirements: Microsoft Windows Media™
Player version 6.1 or later, minimum 16-bit sound card

APPENDIX C

Budget

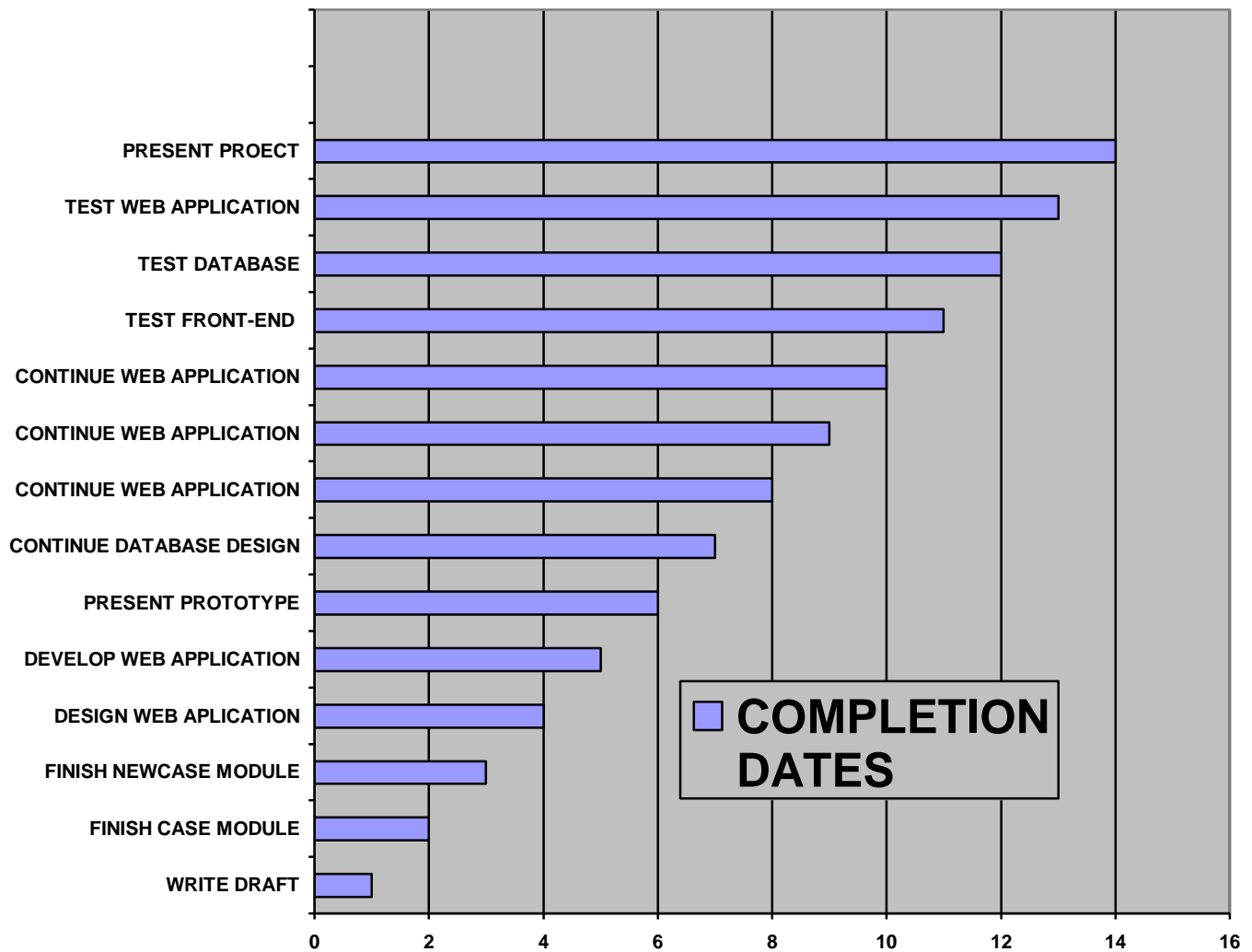
Below is a listing of the software needed to complete this project.

Visual Basic 6.0 Pro		total cost: \$429.00 (10)
Access (25 client)	7,475 per 25 clients:	total cost: 29,999.95 (10)
Office 2000 Professional		total cost: 449.00 (7)
Visual InterDev		Total cost: 401.00(1)

: Grand total: \$31278.95

APPENDIX D Timeline

Below I have attached, an updated chart displaying the major parts of this project as well as the time frame I intend to complete them in. Each specific task is mark and the number of days that I plan to work on them. .



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