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COLLEGE OF ARTS AND SCIENCES

Customization of the Remedy Action Request System for FSU User Services

By

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ABSTRACT

The User Services division of the Office of Technology Integration is the "safety net" for computer support at Florida State University (FSU). Areas of support include training, help desk services, campus-wide software site licensing and assistance by highly trained computer technicians. Support is provided seven days a week for 40,000 students, faculty, university administration, and staff. This document outlines the steps taken to update, improve and expand the technological support services offered at FSU.

The entire software system of collecting, recording, and tracking problems has undergone an update to the present-day needs of the technological community at FSU. Previously, two job-ticketing software systems were in use, Lotus Approach© and the Remedy Action Request System© (ARS) for administrative and academic support. Updating the system involved moving to a single job ticketing system (ARS) and incorporating the best features of both applications into the help desk support process. The needs of the various support groups using the system have been met through improved form design, automatic notifications, escalations, and the addition of data analysis methods for reporting information gathered into the database. Another improvement includes a web-accessible means to tap into ARS that will provide greater ease of use by technicians who travel on-site to provide technical support.

The goals of this project encompassed becoming thoroughly familiar with the Remedy ARS software, upgrading the present software to the latest version, and revamping procedures used toward the integration to the Remedy ARS software. Additional goals were to provide a web accessible link to the Remedy ARS and replacing the flat-file database scheme with an Oracle 8i database. During the project period from March – December, 2000 those goals were accomplished. Also, I have had the opportunity to communicate with groups of users, produce training materials, provide system documentation, and assist in the installation and system administration of the Remedy ARS software servers. In addition, I presented a paper that outlined this project at the Association for Computing Machinery's SIGUCCS Fall Users Conference in November, 2000.

In order to meet growing demand, the User Services staff continues to examine and expand its role to provide up-to-date, efficient response on support issues facing the users of technological resources at FSU. This document provides a record of my contributions to the upgrading of the process used to record, track and route data on support requests by FSU computer users.

1. INTRODUCTION

The User Services (US) division of the Office of Technology Integration (OTI) at FSU was formed to serve common computer support details previously handled in other divisions of OTI. User Services became responsible for managing a computer support help desk, software training, campus-wide software site licensing and technical computer support.

Initially, there were two help desk staffs. An administrative help desk provided support response for administration and staff during the business day. The academic help desk served primarily the faculty and students of the university and operated longer hours, including weekends. During the project period, these two staffs would be combined into a single help desk staff.

A person requiring technical support contacts a help desk staff member by telephone, electronic mail or walk-in to the office. The staff member gathers information relating to the support request and enters the information into the software *ticketing* system used to record, track, and store data on technical support requests. If possible, the help desk staff member works with the person until the technical problem is resolved. Otherwise, the help desk staff member will consider the support request and route information to the appropriate group to handle the request.

When User Services was first formed, two software systems were used to record support requests. The administrative and academic help desks employed Lotus Approach and the Remedy Action Request System (ARS), respectively. Both systems had some staff involvement to customize the systems for the particular support staff needs to track support requests.

Merging the two help desk staffs into a single User Services help desk involved many considerations in order to improve support for all users of technological resources at FSU. This task would become the overview of my project. During the project my goals included:

- Becoming thoroughly familiar with the software to administer the project
- Upgrading the present software to the latest version available from Remedy
 - examining and updating the forms used by the Helpdesk to communicate problems reported and routed through the system
 - updating forms in use
 - creating new forms
 - new user groups in the system (ODDL, OTC)
 - customizing views of information by current user groups of the system
 - provide documentation of the system use
 - user guides and in-form help text
 - training guides for Help desk personnel
 - usage guides for web-access
 - administration guide for US Remedy system administrators
- Revamping procedures used in previous system toward integration into Remedy system
 - consider old procedures in updated system use
 - integrate the previous Lotus Approach uses by the former Administration Help desk and former AUS into the Remedy system

- Provide programming support for a web accessible link to the Remedy system
 - become familiar with administration of component tool RemedyWeb
 - provide documentation for administration guide for US Remedy system administrators

- Replace current flat-file database scheme with Oracle© backend for the system
 - build (and grow) knowledge base through new database scheme
 - investigate importing present database information into the new database schema from the outgoing sources (Remedy and Lotus Approach)
 - provide documentation for administration guide for US Remedy system administrators

- Provide management statistical reporting methods and specific reports
 - gather information on types of reports needed and provide procedures for creation of reports
 - provide documentation for administration guide for US Remedy system administrators

- Meet with user groups, as a representative of User Services, and assess needs as those needs apply to the updating of the system

- Provide training and distribute information as the system upgrade progresses through meetings, seminars, and distribution of documentation produced

- Assist in the system administration of the servers (Remedy ARS, RemedyWeb, Remedy Dashboards) and the installation of same

The integration of the two software systems into an improved single software solution is the scope of this document.

2. PAST PROCESS REVIEW

2.1. Comparison of software in use

Following the decision to integrate the two systems, the first task became to decide which of the two systems in use would satisfy future needs. The next task was to examine both systems to select the best features of each for the resulting software system. (See Appendix A.)

The comparison of Lotus Approach and the Remedy Action Request System (Remedy ARS) followed the same considerations as a report comparing help desk software systems that appeared in a *PC Week Online* review:

- www.zdnet.com/eweek/stories/general/0,11011,2379025,00.html

Each product was reviewed in several categories. Those categories included:

- the ability to store support request data and search the problem resolutions easily from a knowledge base
- the ability to recognize and notify users of high-priority support requests
- the ability of the system to escalate notifications to managers of unresolved support requests at administrator-defined time intervals
- the ability to route support requests (and notifications) to the appropriate technical support staff according to problem types designated by the help desk staff
- the ease of use of the interface tools from the administrative as well as help desk and technical support perspective
- the ability to customize the product to the users needs
- the ability to import legacy data into the system database
- the ease of training in the areas of user training and developer customization ability
- the ability to access the system, update records, enter new support requests and retrieve information from searches via the Internet

Considering these categories required some experimentation with the actual applications reviewed, but the great majority of information was gathered from the help and tutorial files provided in the software and online.

The Lotus Approach emulation of a support request ticketing system served the purpose well for the administrative help desk and technical support staffs. Expanding beyond the initial users group would be difficult to realize, primarily due to limitations of the software. Despite its being

easy to use as well as to get up and running, the future needs (web access especially) would not be reached with this system.

The Remedy ARS software was designed for uses such as help desk and technical support request routing. Flexibility in administrator-defined customization would tilt the final recommendation toward this system. A large drawback was the investment required to fully learn the system to take advantage of all of the features available. During the earlier implementation of the Remedy ARS system, the persons responsible for administering the system shouldered additional work duties that prevented full focus on Remedy ARS development. In order to update the system fully, a person devoted to administration, development and maintenance of the system was recommended to see the fastest results.

The recommendation to upgrade and further develop the Remedy ARS system for use by the User Services help desk staff was accepted by the director.

2.2. Gathering information

Understanding how the various user groups used the systems became an important factor in the development of the final system.

Meetings were held with users, both individual one-on-one interviews and user group gatherings, to assist in identifying the system features that worked well in the legacy systems.

Users were asked to consider questions such as:

- How does the current system work?
- What works well about the current system? (Then, specifically, how does it work well?)
- How could the current system be improved?
- What kinds of improvements would be helpful in the form used to initiate a support request or to pick up and complete a support request?
- If certain tasks could be automated, which tasks would provide the most benefit for speeding up the process of entering, modifying and completing (closing) a support request?
- What areas of data analysis would provide assistance to the manager balancing resources?

Many different users of the software contributed input. Both software systems remained with the merging of the full-time employees of the administrative help desk and the mainly Other Personnel Services (OPS) student employees of the academic help desk. All help desk staff members were then responsible for understanding both software ticketing systems since both would continue to be used while the new system was developed. This transition period assisted in gathering first-hand user comparisons of the two systems.

User groups beyond the help desk staff utilizing the support request ticketing systems include the User Services technical support staff, software training staff and software site licensing staff. The technical support staff had no recent experience with Remedy ARS. (In fact, the Lotus Approach system was developed to replace the Remedy system due to user dissatisfaction with an earlier implementation of Remedy ARS). The training and site-licensing groups had little or no use of the systems, but future uses were envisioned. The User Services management perspective also was considered, especially in the areas of data analysis for resource allocation and notification of support requests that had not been resolved within a specified period of time.

Groups outside of User Services at FSU utilizing the software to track support requests include Academic Computing and Network Services (ACNS), the Office of Distributed and Distance Learning (ODDL) and the Office of Telecommunications (OTC). ACNS users were familiar with both software systems. ACNS users include specialized groups supporting university computer labs, technologically-enhanced classrooms and campus-wide network engineers. ODDL and OTC were new users becoming introduced to the software to assist in tracking problem reports relating to ODDL and OTC issues.

Consideration for the many user groups' methods and recommendations for the software systems were important to ensure a successful integration of the two software systems into one. The perspectives of new users, familiar users, users favoring one system over the other, users within User Services and without, primary users (help desk staff) and secondary users (technical support staff) as well as managerial versus line employee users were weighed to construct recommendations for the needs of the resulting software implementation.

2.3. Requirements specification

After information was gathered from the potential users of the resulting system and prior to beginning the integration development, a requirements document was written to identify the needs of the user groups that would be affected by the upgrade to the existing Remedy ARS system. The document described each group, how the group would use the system, and desired improvements for the resulting software system described during the information gathering process. Representatives from the user groups reviewed the document for clarification, comment, correction and agreement. Following the collection of feedback from the user groups relating to the requirements document, the implementation work would begin. (See Appendix A.)

3. REMEDY ACTION REQUEST SYSTEM

3.1. Overview

The following information on the Remedy ARS is provided, in most part, from a paper I presented to the Association for Computing Machinery Special Interest Group on University Computing Center Services (ACM SIGUCCS) at the annual conference held in Richmond, Virginia in November, 2000. (See Appendix F.)

The Remedy ARS is based on a multi-tier client/server architecture. The client layer provides all of the user interface functionality through various software tools. The ARS server controls workflow processes and access to the database. The ARS web server allows accessing the system from a web browser. The database server acts as the data storage and retrieval engine. The servers in coordination can be compared to a library with reference material and librarians available to help those requesting information [1].

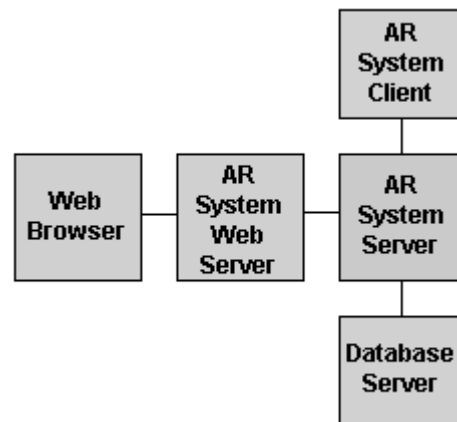


Figure 2. Remedy ARS multi-tier architecture.

3.2. Components

3.2.1. Forms

The main component used is the form. Users create requests to be entered into the system database through the information fields held within the definition of the form. Information fields include character, date/time, diary, numerical (integer, real, decimal), radio-button, drop-down list, table, page and attachment field types. Additional functionality is provided through buttons, menu-display and form design components such as horizontal and vertical lines and text boxes. Remedy ARS provides for defining different views or permissions for form fields that are appropriate for different user roles. For example, a form can be developed with quick-action buttons for the technical support group viewing the form, but are not visible to the data entry group viewing the same form.

3.2.2. Menus

The menu component provides for listing multi-tiered views of information to assist in filling a field of the form. ARS menus can be defined explicitly or can be dynamically built from information within the form or through search action from information provided from other forms in the system. It also is possible to create a menu definition that allows for appending new choices to the current menu list. Additional types of menus include a file menu that retrieves information from a file to produce the menu and an SQL menu type that retrieves data from a database table.

3.2.3. Active Links

The active link component of ARS is an action or group of actions performed on the client-side of the system. The actions are triggered in response to user actions on the client view of the form and can be described as event-based. Active links can be created to verify data input and initiate automatic filling of form fields. Grouped together in an administrator-defined sequence, active links can be used to create a guide for assisting the user through a form. The administrator may also define the order of execution for the active links developed for a particular form.

3.2.4. Filters

The filter component provides for server-side actions within the system. As the ARS server processes a request submitted to the system, actions defined through filters are triggered. One use of filters is for ensuring system and data integrity. Comparisons of transactional and database-stored, form-field information can be accomplished through filter actions. The administrator may also define the order of execution for the filters developed for a particular form.

3.2.5. Escalations

The actions of escalations within ARS occur at administrator-defined regular time intervals. Similar to active links and filters, escalation actions are defined according to criteria associated with the state of certain requests within ARS. When the criteria is found to be true, the escalation action is executed for the time intervals defined until the criteria is no longer true. Support groups can be notified of unassigned requests through the escalation action with notification repeating until the requests have been assigned.

3.3. Client-based tools

ARS client-based tools are available for Microsoft Windows 95/98/NT/2000, UNIX/X Windows and the web (using ARWeb or Remedy Web). Macintosh client tools are no longer supported in the latest releases of the Remedy ARS [2]. FSU is examining access to Remedy ARS from web-based Remedy tools for Macintosh support staff members.

3.3.1. Client

The client user tool provides the interface for day-to-day access to the ARS system forms. Through the client user tool, form "requests" are submitted or modified. The client user tool also

provides for searching previous requests and generating reports. In the most recent version of the client user tool, 4.05, the user is able to customize the view of the graphical display through font, color and format choices.

3.3.2. Administrator

The Administrator tool provides an interface for the ARS administrator to develop or modify applications relating to the needs of the users of the system. The administrator of the system can utilize the tools to create customized uses for the components available to build forms and create workflow actions. Active links, filters, menus and escalations also are defined through the administrator tool. Individual user and group access permissions are defined at the administrator level. In addition, administrator-defined help text can be included to document component applications.

3.3.3. Notifier

The Notifier tool has been described as a desktop "pager" [2]. The tool provides actions to alert the user of incoming requests submitted to the system by changing color, blinking, making an audible sound or opening a pop-up message window on the desktop. An alternate method of notification is electronic mail, where form-field information is automatically included in a message sent according to administrator-defined actions.

3.3.4. Import

The Import tool is utilized to import and export data into ARS forms. The import and export formats supported include AR Export (*.arx) for ARS-to-ARS movement of data, such as from one ARS server to another and comma-separated value (*.csv) as well as ASCII (*.asc) for movement from external data sources into ARS. Import and export of form and other component definitions are handled through the Administrator tool only.

3.3.5. Flashboards

The Remedy Flashboards tool provides real-time or historical viewing of ARS data through graphical displays. The tool can provide a view of events and entries to monitor the state of the ARS workflow. Display methods include charts, bar graphs and meter formats. Managers can utilize the tool for more effective gathering of employee productivity measurements and evaluation of overall staff efficiency [3].

3.4. Summary

The Remedy ARS enables the administrator with a broad range of tools and components that provide a framework from which to build a specific implementation. The system can be used in many workflow situations and the development of the User Services implementation demonstrates one such customized application of the software.

4. IMPROVING THE PROCESS

4.1. Improved infrastructure

The previous implementation of the Remedy ARS version 3.2 was operated from Solaris 6 on a Sun Ultra Sparc server with a flat-file database format. Anticipating future growth of the system, a new server was purchased to operate the Remedy ARS server, the Remedy Web server, the Flashboards server and the upgraded database system. A Sun 420R server with four 450 MHz UltraSparcII processors, 4 GB of RAM and 9 GB hard disk space was installed with the latest Solaris 8 operating system. In addition, the latest Apache Web Server 1.3.14 was installed. The flat-file database was replaced with the database Oracle 8i. The Remedy software was also upgraded to the latest released versions to take advantage of any new features available that might be useful in the upgraded support request system including Remedy ARS 4.5.1, Remedy Web 4.1 and Flashboards 2.0.

4.2. New designs for gathering and viewing information

4.2.1. The main form for recording support requests

Following the information gathering stage, considerations were made regarding how to include all user group requests for information to be gathered into the creation of a support request. Some requests for information overlapped between groups such as the problem description and solution areas of the support request. Other groups' information needs were very specific to that group and did not seem relevant to the other user groups, such as the course number and prefix of a class attended by a distance learning student requesting support.

Consideration was given to the creation of separate group-specific forms that would provide information fields desired by the group represented in the form design. This design style also had to consider the possible need for the exchange of data across forms, the ease of search for support request records from separate forms and the means to examine data records of all groups in data analysis. Also, the ease of transfer between forms for those most involved with creating support requests, especially the help desk staff. (See Appendix C.)

Consideration was given to the creation of a super-form that contained all of the specific information fields requested for support request records. This design style required consideration for the length of time to complete the form and the area of space taken on the monitor screen by staff members creating or reviewing support request records. The previous Remedy ARS form extended beyond a single window screen, and including additional information fields might prohibit a single-screen, compact form development.

After weighing the possibilities and examining the latest features available in the form design within the upgraded Remedy ARS, I decided to develop a super-form. The super-form would contain common areas and group-specific areas that would satisfy the requests for information fields from all user groups. The form design would attempt to provide a compact layout that

required as little space as possible, but did not include features so closely arranged as to complicate negotiating through the form to complete it. The help desk group placed the highest priority on ease of use, as its staff would be the greatest users of the resulting form. The ability to quickly create and resolve or route a support request no matter which support group needed to address the request would affect the efficiency of the help desk staff to receive and generate a corresponding support request record. At the same time, other groups not within the help desk staff would need to quickly and easily retrieve, negotiate and update information fields on support requests assigned to the group. The resulting super-form, HD-v1.0 (referred to as the super-form within the text), was developed.

The identification section of the new super-form included an FSU identification field to be used for queries to the FSU lightweight directory access protocol (LDAP) as the protocol became available to automate the filling of identity information on the user reporting the problem. Room number and building identification became separated and required fields for support request submission. The addition of a building code field anticipated the potential for information being sent to pagers via electronic mail notification from Remedy ARS on critical-priority support requests. The Problem Type and Group Assigned drop-down menus were simplified for easier negotiation.

The screenshot shows a web browser window titled "HD-v1.0 [Search]". Below the title bar is a grey header with a search icon and the text "Search HD-v1.0". The main form area has a light blue background and contains several input fields and controls:

- FSU Identification:** A text input field followed by a purple "UPDATE" button.
- Last Name:** A text input field.
- First Name:** A text input field with a dropdown arrow on the right.
- FSU:** Radio buttons for "Faculty", "Staff", "Student", and "None".
- E-mail Address:** A text input field.
- Phone Number:** A text input field.
- Department:** A text input field.
- Room #:** A text input field.
- Building Identification:** A text input field with a dropdown arrow on the right.
- Bldg Code #:** A text input field.
- Entity-Id:** A text input field.
- Problem Type:** A text input field with a dropdown arrow on the right.
- Group Assigned:** A text input field with a dropdown arrow on the right.

Figure 3. Identity segment of the HD-v1.0 form.

The center section of the form was devoted to group-specific information gathering and took advantage of new form components that allowed for creating tabbed folder style stacking of information through "page fields" that resemble tabbed folders. Page fields were developed for four main groups, User Services, ACNS, ODDL and OTC. Information fields specific to the main group were included in the page field as well as common information that would later be propagated to the other page fields for ease in reassignment across main group boundaries.

[User Services](#) | [ACNS](#) | [CourseInfo](#) | [FSU@Home](#)

[Internet Progs](#) | [Accts](#) | [Passwd](#) | [General Info](#)

[Software](#) | [Campus Net](#) | [SysDown](#)

Garnet Mailer Admin PPP

Hardware Brand: Operating System:

Source of Contact: Priority Assigned: Status:

Problem Description

Solutions: Additional Comments:

Figure 4. User Services page field of the HD-v1.0 form.

[User Services](#) | [ACNS](#) | [CourseInfo](#) | [FSU@Home](#)

Hardware Brand: Operating System: Computer/Vendor #: Work Report #:

Problem Description

[FSU Housing](#)
[Dorms](#)

Priority Assigned: Status:

Solutions: Additional Comments:

Figure 5. ACNS page field of the HD-v1.0 form.

[User Services](#) | [ACNS](#) | [CourseInfo](#) | [FSU@Home](#)

Prefix & Course # Sec # Role in Course

Area Code Op System Browser

Problem Category Priority Assigned Status

Problem Description

Solutions Additional Comments

Figure 6. CourseInfo (ODDL) page field of the HD-v1.0 form.

[User Services](#) | [ACNS](#) | [CourseInfo](#) | [FSU@Home](#)

Operating System Computer/Vendor # Work Report # Estimated Time

Actual Time to Complete Elapsed Time Priority Assigned Status

Problem Description

Solutions Additional Comments

Figure 7. [FSU@Home](#) (OTC) page field of the HD-v1.0 form.

The remaining fields of the form describe the support staff person submitting the support request, the individual assigned to resolve the request, the time the request was created and last modified. An elapsed time field was added to display the time to resolve the support request from creation to closure.

The screenshot shows a form section with the following fields and controls:

- Current Owner:** A text input field with a dropdown arrow.
- Last Action Taken:** A text input field with a dropdown arrow.
- Elapsed time (ARS):** A text input field.
- User:** A text input field.
- Create-date:** A text input field.
- Last-modified-by:** A text input field with an ellipsis button.
- Modified-date:** A text input field with an ellipsis button.
- Submitter:** A text input field with a dropdown arrow.
- Status Log:** A large text area with a small icon on the right.

Figure 8. Staff-related information area of the HD-v1.0 form.

The remaining section of the form was initially devoted to providing spreadsheet-style listing of support requests for all user groups utilizing multiple page fields within page fields. The User Services HelpDesk page field, for example, included interior page fields containing table fields for displaying open requests, unassigned requests and requests unresolved over a 24-hour period. Providing these reference-only page fields for all groups proved to cause a performance drain on the retrieval and saving of support requests created in the new form. The spreadsheet-style reference page fields were removed from the super-form and separate group specific reference forms developed for spreadsheet style viewing of current requests by the four main groups described earlier. Instead, a single page field, 'Customer History,' containing a table field accesses information held in the database and displays a spreadsheet listing of any previous support requests matching the first and last names of the person identified in the current support request.

The screenshot shows a table titled "CUSTOMER HISTORY" with the following data:

Create-date	Owner	Status	Problem Type	Hardware	Op System
10/19/00 11:47:37 AM	kpiqott	Closed	HD:Passwords	Unknown	Other, specify
10/20/00 10:27:57 AM	Helpdesk	Closed	HD:General Information	Unknown	Unknown
10/20/00 10:28:20 AM	Helpdesk	Closed	HD:General Information	Unknown	Win95/98
10/20/00 2:06:54 PM	Helpdesk	Closed	HD:General Information	Unknown	Other, specify
10/23/00 9:28:39 AM	Helpdesk	Closed	HD:General Information	Unknown	Other, specify
10/24/00 8:15:15 AM	Helpdesk	Closed	HD:Passwords	Unknown	Other, specify
10/25/00 11:37:47 AM	Helpdesk	Closed	HD:Passwords	Unknown	Other, specify
10/26/00 8:48:55 AM	Helpdesk	Closed	HD:Passwords	Unknown	Other, specify
10/26/00 1:33:05 PM	Helpdesk	Closed	HD:Passwords	Unknown	Unknown
10/30/00 8:14:16 AM	Helpdesk	Closed	HD:Passwords	Unknown	Other, specify
10/30/00 10:25:21 AM	Helpdesk	Closed	HD:General Information	Unknown	Other, specify
10/30/00 10:25:29 AM	Helpdesk	Closed	HD:General Information	Unknown	Other, specify
10/30/00 2:31:34 PM	Helpdesk	Closed	HD:Passwords	Unknown	Other, specify
10/30/00 2:31:48 PM	Helpdesk	Closed	HD:Passwords	Unknown	Other, specify
10/31/00 7:57:10 AM	Helpdesk	Closed	HD:General Information	Unknown	Other, specify
10/31/00 8:37:56 AM	Helpdesk	Closed	HD:Passwords	Unknown	Other, specify
10/31/00 8:38:03 AM	Helpdesk	Closed	HD:Passwords	Unknown	Other, specify

Figure 9. Customer History page field of the HD-v1.0 form.

4.2.2. Display forms for reference

After the spreadsheet-style segment of the super-form was removed, separate display forms were developed for use by the User Services help desk and technical support groups. In addition, a display form was developed for the various groups within ACNS. The forms contain table fields that display information in rows and columns for an overview effect. The various page fields developed for the specific groups reflect informational views considered important to the group. Staff members researching information from the display-style forms are able to choose a row of the table within the page field viewed and by double-clicking on the row, invoke the system to display the chosen support request entry in the super-form layout. The user may then view more detail of the support request or update and save changes to the support request chosen.

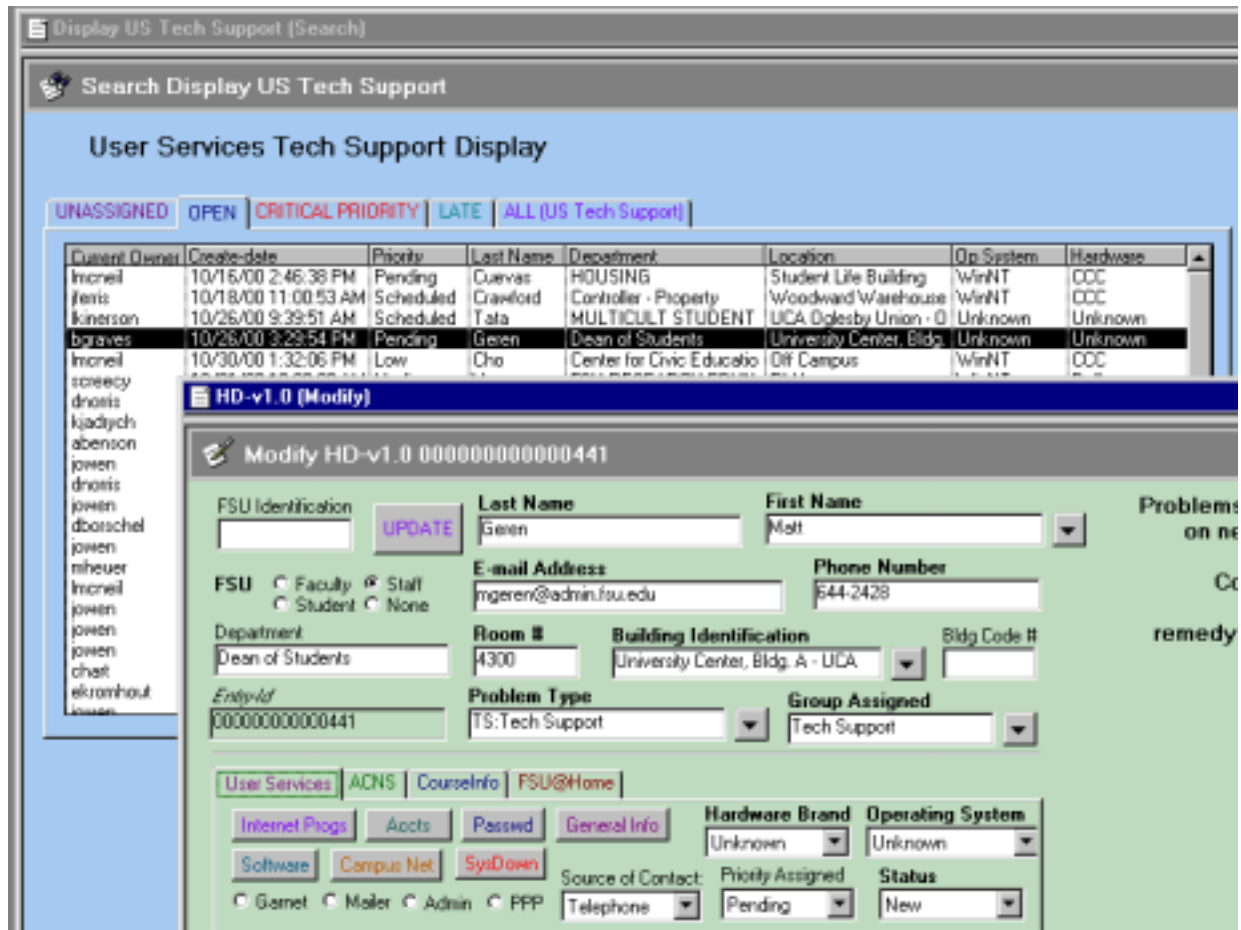


Figure 10. Sample row choice and super-form version recall.

The help desk staff version displays page fields for unassigned, open entries older than 24 hours, entries for other User Services Groups (such as Training, Site-Licensing, AR Application Software) and all entries for the help desk staff with tables containing administrator-defined information field columns of data collected from the super-form records.

The screenshot shows a web application window titled "Display US HelpDesk [Search]". Below the title bar is a search bar with the text "Search Display US HelpDesk" and a "Search" button. The main content area is titled "User Services Help Desk Display" and contains a set of filter tabs: "UNASSIGNED", "OPEN", "Over 24 hrs", "Other (US Groups)", and "ALL (HelpDesk)". Below the tabs is a table with the following data:

Create-date	EntryId	Submitter	Problem Type	Priority	Status
10/25/00 3:57:25 P	000000000000420	Hatch, Eric	ARS:AR Application Software	Low	New
10/23/00 1:10:10 P	000000000000340	Ornick, Diana ornick	ARS:AR Application Software	Low	Closed
10/18/00 5:36:58 P	000000000000275		ARS:AR Application Software	Low	Closed
10/18/00 3:13:52 P	000000000000274		ARS:AR Application Software	Low	Closed
10/18/00 3:13:51 P	000000000000273		ARS:AR Application Software	Low	Closed
10/18/00 3:02:31 P	000000000000272		ARS:AR Application Software	Low	Closed
10/18/00 12:59:49	000000000000266		ARS:AR Application Software	Low	Assigned - Grp
8/26/00 3:24:21 PM	000000000000077		ARS:AR Application Software	Low	Assigned - Grp

Figure 11. Example from the Display US HelpDesk form.

The technical support staff version displays page fields for unassigned, open, critical priority, late and all entries assigned to the technical support staff with tables containing administrator-defined information field columns of data collected from the super-form records.

Current Owner	Create-date	Priority	Last Name	Department	Location	Op System	Hardware
Imcneil	10/16/00 2:46:38 PM	Pending	Cuevas	HOUSING	Student Life Building	WinNT	CCC
jeiris	10/18/00 11:00:53 AM	Scheduled	Crawford	Controller - Property	Woodward Warehouse	WinNT	CCC
kinerson	10/26/00 9:39:51 AM	Scheduled	Tata	MULTICULT STUDENT	UCA Oglesby Union - 0	Unknown	Unknown
bgraves	10/26/00 3:29:54 PM	Pending	Gesen	Dean of Students	University Center, Bldg.	Unknown	Unknown
Imcneil	10/30/00 1:32:06 PM	Low	Cho	Center for Civic Education	Off Campus	WinNT	CCC
screecy	10/31/00 10:08:28 AM	Medium	Young	FSU RESEARCH FOUN	RMJ	WinNT	Dell
dnrois	11/3/00 9:09:44 AM	Pending	Calzade	MEDIA RELATIONS	WES	Macintosh 7.5	Apple
kjadtych	11/6/00 8:21:56 AM	Medium	Rodriguez	Public Safety	FAMU-FSU College of E	Win95/98	CCC
abenson	11/8/00 1:02:48 PM	Scheduled	Patterson	Financial Aid	UCA	Unknown	Unknown
jowen	11/8/00 3:12:09 PM	Scheduled	Ulrich	INSPECTOR GENERAL	WES	Win2000	Dell
dnrois	11/8/00 3:37:34 PM	Low	Abele	VP ACADEMIC AFFAIRS	WES	Macintosh 8.6	Apple
jowen	11/13/00 9:51:38 AM	Medium	Ulrich	INSPECTOR GENERAL	WES	Unknown	Unknown
dborschel	11/13/00 4:54:38 PM	Low	Jackson	DEAN OF STUDENTS	UCA	Win95/98	Dell
jowen	11/14/00 9:43:08 AM	Scheduled	Powers	VP FOR RESEARCH	WES	Unknown	Unknown
mheust	11/14/00 10:38:43 AM	Scheduled	Mulford	PERSONNEL SERVICES	UCA	Unknown	Unknown
Imcneil	11/15/00 9:59:09 AM	Medium	Essig	HEALTH SERVICES	Landis Hall	WinNT	CCC
jowen	11/15/00 11:10:12 AM	Medium	Ulrich	INSPECTOR GENERAL	WES	WinNT	Dell
jowen	11/15/00 1:28:55 PM	Medium	Chason	SPONSORED RESEARC	HMB Westcott Building	Win95/98	Dell
jowen	11/15/00 1:33:43 PM	Pending	Powers	VP FOR RESEARCH	WES	Printers/Scan	Unknown
chait	11/15/00 1:44:02 PM	Low	Bakan	SCHOOL OF MUSIC	HMU	Printers/Scan	Apple
elromhout	11/15/00 2:13:12 PM	Medium	Rackley	UNDERGRADUATE ST	UCA	Unknown	Unknown
jowen	11/16/00 9:20:48 AM	Low	Recess	VP STUDENT AFFAIRS	WES	Unknown	Unknown

Figure 12. Example from the Display US Tech Support form.

The ACNS version displays separate page fields for all of the subgroups within ACNS relating to technical support staff with tables containing administrator-defined information field columns of data collected from the super-form records. The page fields include the groups Dialup Troubleshooting, Engineering Support, (Computer) Labs, NT Admin, Network, Statistics, UNIX System Admin and all ACNS groups.

Display ACNS Groups [Search]

Search Display ACNS Groups Search Advanced

Academic Computing & Network Services Display

Dialup Troubleshooting Engineering Support Labs NT Admin Network Statistics UNIX System Admin ACNS (ALL GROUPS)

Date/Time	Entroid	Last Name	Phone Number	Campus Location	Problem Type	Priority	Status
11/20/00 12:41:3	00000000000093	Bience	853-3315	Lands Hall - LAN	ES-DHCP/IP Issu	Low	New
11/20/00 12:37:3	00000000000093	Alphonse	853-2531	Doorman Hall - DO	ES-Ethernet Setu	Low	New
11/17/00 12:30:1	00000000000091	Hullmaster	(850) 644-0336	MCH	ES-Building/LAN I	Medium	New
11/16/00 1:05:05	00000000000089	Talley	853-3541	Kellum Hall - KEL	ES-DHCP/IP Issu	Medium	New
11/15/00 2:58:53	00000000000088	Raym	853-1944	Jennie Musphree	ES-DHCP/IP Issu	Low	New
11/15/00 12:42:4	00000000000087	Snyder	853-2701	Solley Hall - SAL	ES-Building/LAN I	Low	Claimed - Indr
11/13/00 5:30:35	00000000000080	Maropod	853-2263	Cawthon Hall - CA	ES-Building/LAN I	Low	New

Figure 13. Example from the Display ACNS form.

4.2.3. Personnel information assistance form

During the implementation of the upgrade to the Remedy ARS system, access to the FSU LDAP was examined as a means to extract consistent, up-to-date identity information of users from the FSU community requesting support. As time passed, the availability of using FSU LDAP was stalled as the LDAP was still in development and finalization. In the meantime, a data-file extraction from the database for the Human Resources Management System (HRMS) was made available to the Remedy developer in order to provide the most recently available data on faculty, staff and administrative personnel at FSU. Student information was not included in the file. The file, reflecting information accessible from an FSU web site directory search, contains over 12,000 entries in an all-caps tabular text format. The motivation for using information from the

file was to provide the staff member creating a support request some assistance in filling the identity portion of the super-form.

The original HRMS information file required transformation to extract the fields needed for the identity portion of the super-form. In addition, the format, all capital letters, would require more horizontal space to display as well as be frustrating to support staff accustomed to entering upper and lower case names. A Perl program, developed in Active Perl© for MS Windows, was written by me to transform the raw data file into a format desirable for import into the Remedy ARS database. The data would then be available to mine for automating the filling of identity fields of the super-form. (See Appendix E.)

The program, processinfo.pl, performs these actions:

- Breaks down file(s), line-by-line, into the tab-delimited fields of interest
- Works with the substrings extracted from each line
 - Transforms all-caps first and last names to upper and lower case
Example: SULLENBURGER becomes Sullenburger
 - Recognizes 'Mc' names and adjusts for special format
Example: MCNEIL becomes McNeil
 - Recognizes hyphenated first and last names and adjusts for special format
Example: NAYA-DARICE becomes Naya-Darice
 - Recognizes multiple word first and last names and adjusts for special format
Example: VAN ENGELLEN becomes Van Engelen
 - Restructures phone numbers for easier reading
Example: 8506454691 becomes (850) 645-4691
 - Locates nicknames and attaches nickname to first name string
Example: CHRIS from nickname field changes ROBERT to Robert (Chris)
 - Locates empty or "NONE" values for email address information and replaces with "no email info"
 - Restructures identification number for easier reading
Example: 000000000 becomes 000-00-0000
- Builds list containing last name, first name, department, phone number, room number, building name, email address and identification number information strings
- Sorts list alphabetically and removes duplicate lines before writing out to new tab-delimited file

A form was developed, FSU_Data, to contain the personnel information in the transformed-data file. The file was then imported into the Remedy ARS form using the Remedy Import tool matching to fields provided in the FSU_Data form. The FSU_Data form would then be used to retrieve information for the identity section of the super-form.

4.2.4. Custom form for CourseInfo Problem Reports

During discussions with the CourseInfo support staff of ODDL the design of a custom form was developed to address support requests for users unable to access the problem report form within the CourseInfo system on-line. Anticipating the development of general public access to the Remedy ARS via the web, a custom form for ODDL, CourseInfoProbReport, was developed.

The form replicates the fields of the form provided within CourseInfo to report support requests. There is an identity section, distance learning information section, computer and internet service provider (ISP) information section and an administrator-only section for entering support request resolution data and support staff information. The form also has a button used to invoke a guide developed to step the person filling out the form through the form fields. The guide provides an information text area that explains the fields and allows the user to fill-out the form while working through the guide. A variation of the guide assists CourseInfo support staff administrators through the entire guide, including administrator fields.

The screenshot shows a web browser window titled "CourseInfoProbReport [Search]". The page header includes "Search CourseInfoProbReport" and "Advanced" search options. The main heading is "CourseInfo Problem Report". A note states: "NOTE: Bold Type indicates a required field". A "Start form guide" button is present. The form is divided into three tabs: "General Information" (selected), "Computer Information", and "Admin Information". The "General Information" section contains the following fields: "Last Name:" (required), "First Name:", "Primary email Address:", "Phone:", "FSU email Address:" (with a note "please include area code"), "Prefix & Course Number:", "Section Number:", "Role in Course:" (dropdown), and "Problem category:" (dropdown). Below these is a large text area labeled "Describe the problem:" with a "NEXT>" button at the bottom right. A footer message says "Please continue to the next section of the form."

Figure 14. Sample of CourseInfoProbReport form

4.3. Automating tasks in the system

Where possible, automatic actions were employed in the system design to speed support request entry and processing. In addition, automated notifications and support request escalations were defined by the administrator.

Automatic actions included assigning the appropriate group when particular problem types were designated for a support request. Specification of a particular group assigned (automatic or manual) would bring to forward focus the corresponding page field in the group-specific area of the super-form. In the area of identity information, the super-form design provided the ability of the support staff members creating a request to enter a last name for a faculty, staff or administrative employee of the university. Then the first name field of the super-form would dynamically display a drop list of all available persons having the last name entered. Upon choosing the correct first name the remaining identity fields (email address, phone number, department, room number and building identification) are filled from information held in the records of the FSU_Data form. If the information retrieved is not up to date ('no email info', for example) the staff member can update the identity fields and click the UPDATE button of the super-form and the identity information in the FSU_Data records are updated.

The image displays two sequential screenshots of a web-based form titled "New HD-v1.0".

Top Screenshot: The form is in a "New" state. The "Last Name" field contains "May". The "First Name" field has a dropdown menu open, listing names: Christopher, Jack, James, Julie, Mary, and Rita. The "UPDATE" button is visible next to the "FSU Identification" field.

Bottom Screenshot: The form is in a "New" state. The "Last Name" field contains "May" and the "First Name" field contains "Jack". The "E-mail Address" field contains "no email info". The "Phone Number" field contains "(850) 644-2768". The "Department" field contains "PSYCHOLOGY". The "Room #" field contains "209" and the "Building Identification" field contains "PSY". The "UPDATE" button is visible next to the "FSU Identification" field.

Figure 14. Sample of name search action in the super-form

Buttons designed for the super-form also provide a very fast method of support request creation and closure. During the beginning of the Fall and Spring semesters, the number of support request calls increase dramatically as students attempt to gain new university computer accounts or get their computer connected to the university network from their dorm room, for example. Simple support requests, such as a password reset on a student's computer account, are resolved more quickly than the time to gather identity information from the user reporting the request. For such routine support requests, and in the interest of gaining better records of these requests into the database records, buttons were developed on the form that fill required fields of the form with generic data and create a complete support request with a single click. Buttons were provided for standard questions on general computer-user information, Internet programs, computer accounts, simple software questions, campus network questions, password resets and a button to log calls from users confirming when a system network has gone down.

The 'diary' field of the form, the Status log, provides a history of the progress of a support request and certain actions in the form will cause informational text to be written to this field. For example, when a new support request has been submitted, certain form-field information is posted to the status log field. The problem type, priority setting, group assigned, user entering the request and the problem description at the time the request is submitted becomes part of the Status log record of the request.

Additional information regarding custom components is included under section 4.5.

4.4. Help for users and administrators

In order to provide as smooth a transition to the upgraded system process as possible, I held several training and information meetings with various users groups. Considering the audience, I provided training materials and transition information documents as the project progressed. (See Appendices B and D.) Follow-up meetings as the transition occurred and afterward assisted in the speedy discovery of features not working as expected or requiring modification for best use. I encouraged user groups to confer and reach consensus on major modification requests to features implemented in the forms created in the system related to support requests.

Training materials developed included an introductory brochure outlining the uses of the Remedy ARS for tracking support requests. Information documents were developed for incorporating custom background colors into the 4.0 version of the Remedy Client tool, creating a report in the 4.5 version of the Remedy Client tool, executing a search within Remedy ARS and a procedure for duplicating a support request entry within Remedy ARS. Instructions for accessing and updating a support record in Remedy ARS were developed for staff in OTC. In addition, a set of exercises designed to give a new user some experience with all features that might be utilized within support request processing was developed to assist new users (especially technical support staff unfamiliar with Remedy ARS).

Context-sensitive help text customized for the User Services implementation was created by me for the fields of the super-form. (Remedy ARS provides generic help.) The user clicks on the "What's This?" button in the menu bar of the Remedy Client tool and places the floating "?" over the field in question. After clicking on the field, generic context-sensitive help provided by the

Remedy system or, if defined, custom help text written by the administrator is displayed for the user.

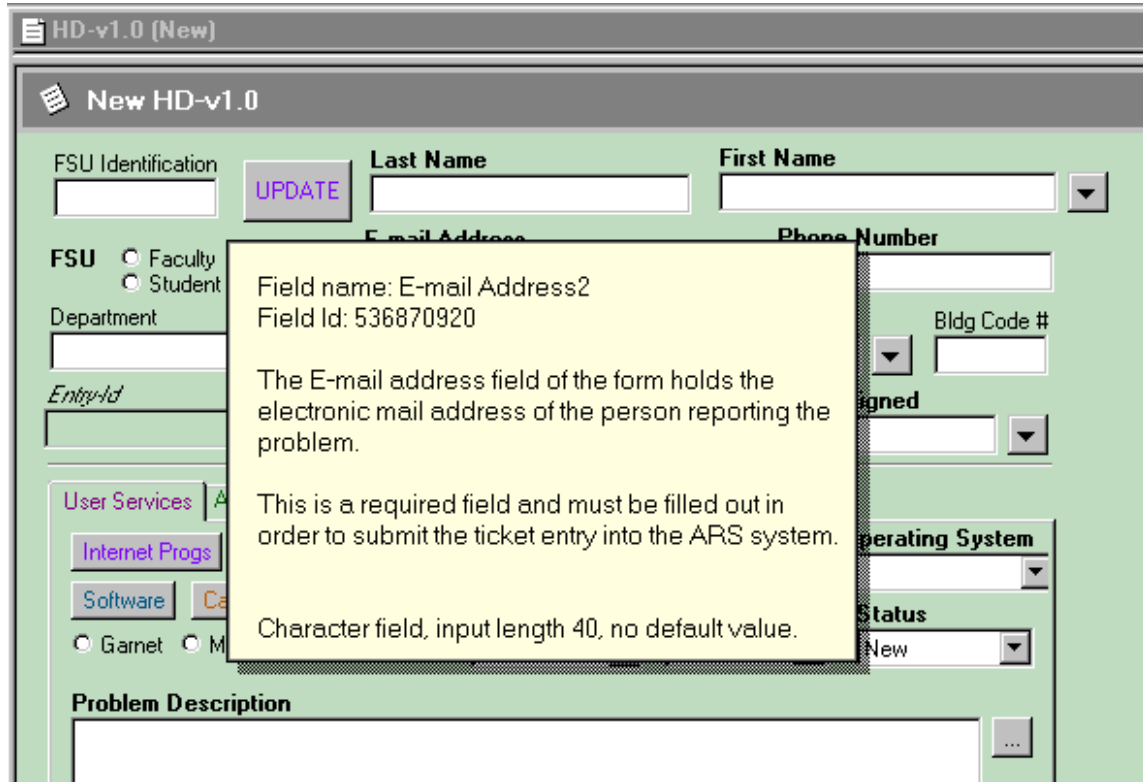


Figure 14. Sample of administrator-defined context help display

The previous implementation of the Remedy ARS was not well-documented. I designed an administrative help text style sheet for the consistent formatting of information documentation on components developed in the system. The style sheet documents the type and title of the component, descriptive text about the component, any qualification statement used by the component, notes modifications to the component, lists the form that the component refers to and lists any related other components by type. Diligent maintenance of the administrative help text will be of great assistance to future administrators in gaining a fast understanding of the custom components developed in the Remedy ARS used by User Services.

The Remedy ARS provides the ability to build guides for forms utilizing the grouping of active links. Stepping through the administrator-defined fields of the form, informational text can be written to correspond to each field highlighted in the guide. Users utilizing the guide format can also fill out the form while stepping through the guide. An extensive guide was developed by me for the super-form containing references to the over 90 fields of the form. Such guides give support staff the opportunity to become familiar with forms as training tools. Additional guides will be provided for Remedy ARS administrators to cover procedures in administrative tasks such as adding new users or changing an existing user's password.

After the Remedy Web server was installed providing web access to the Remedy ARS, corresponding documents outlining how to access support request records via the web were also generated for the user groups. Additional information provided by the developer included collecting data for statistical reports requested by managers on support request information. Transitional information documents kept users abreast of changes as the project implementation progressed or snagged on system problems.

4.5. Custom components developed

Each entry contains a short synopsis of how each component is used for the customized implementation of Remedy ARS for User Services. Each component listed was originally developed or updated and modified from the previous implementation of Remedy ARS by me.

Forms

CLK-HD

The CLK-HD form was modified from the original version of the form during the interim period as the old process was being phased out and the new process was being brought on board. Due to the heightened workload for the help desk staff during the initial weeks of the Fall semester of this year, the new process transition was postponed. Implementing the new process at that time would have required the user groups to manage three software methods for reporting support requests and would not contribute to a smooth transition from the Lotus Approach and older version of Remedy ARS. Because new user groups and problem types had been defined for the new process, the CLK-HD form was updated to include some of the new definitions. This provided better routing of support requests to valid support groups and an updated designation of problem types according to those that would be used in the final implementation.

Display ACNS Groups

The Display ACNS Groups form utilizes page (tab) fields to display information related to the support requests assigned to the various groups within ACNS. The form displays page fields for each group and provides a spreadsheet-style view of information from the support requests.

Display US HelpDesk

The Display US HelpDesk form utilizes page fields to display information related to the support requests assigned to the help desk staff and other non-technical support groups within User Services, such as Site Licenses and Training. The form displays page fields for certain categories of support requests, such as unassigned requests. The form also provides a spreadsheet-style view of information from the support requests.

Display US Tech Support

The Display US Tech Support form utilizes page fields to display information related to the support requests assigned to the User Services technical support staff. The form displays page fields for certain categories of support requests, such as unassigned and critical-priority requests. The form also provides a spreadsheet-style view of information from the support requests.

FSU_Data

The FSU_Data form provides a repository for particular field information taken from the transformation file of the HRMS information file for university faculty, administration and staff. The form is also utilized to automatically fill fields for the identity section of the HD-v1.0 form. Users can also update the data within the FSU_Data records from the HD-v1.0 form. Because the HRMS file is static, an update field within the FSU_Data form assists the administrator in differentiating between manually updated information entered by users and the record extracted from the latest HRMS information file.

HD-v1.0

The HD-v1.0 or "super-form" was developed as the main form for submitting support request records to the Remedy ARS. The form was developed to consider many user groups and the ease of use by the primary users, the help desk staff. The form is used to collect information relating to requests for technical support. The form includes multiple automatic actions to aid in completing a support request or in the routing of details relating to a support request to the group assigned to the request.

CourseInfoProbReport

The CourseInfoProbReport form was developed as an alternative method for participants of FSU distance learning to report CourseInfo problems. The form was developed for web-enabled access when the User Services Remedy ARS becomes available to the general university community. The form includes a user-initiated link to a guide that will step the user through the fields of the form.

Active Links

Auto check for subadmin

The Auto check for subadmin active link checks if the current user is the designated subadministrator of the Remedy ARS and if so, sets the Submitter field of the HD-v1.0 form. This saves keystrokes required by the subadministrator.

CourseInfoAdminGuide

(See also CourseInfoAdminGuide under Guides)

The CourseInfoAdminGuide contains 27 separate active links to highlight each field of the CourseInfoProbReport form. The "Admin" or administrative version includes fields accessible only to administrator-defined users of the CourseInfoProbReport form. Each active link designates a single field and the corresponding informational text relating to the field.

CourseInfoUserGuide

(See also CourseInfoUserGuide under Guides)

The CourseInfoUserGuide contains 11 separate active links to highlight each field of the CourseInfoProbReport form from the perspective of a user reporting a problem. The user version includes fields accessible only to persons submitting a problem report. Each active link designates a single field and the corresponding informational text relating to the field.

ElapsedTime<group>

The ElapsedTime<group> active links capture time information from the HD-v1.0 form as support requests are completed. The active link actions include the difference in time from the creation and the last modification of the request entry. The active links utilize hidden fields of the HD-v1.0 form to break down the returned value from seconds to hours, minutes and seconds. The active links consider administrator-defined workdays and holidays for the corresponding group and utilizes the Remedy-supplied Application Business Time Difference tool to determine the time elapsed since the support request was entered into the system. Separate versions of the ElapsedTime<group> active links were developed due to the working hours and holidays observed by the particular group. The set includes:

- ElapsedTimeACNS
- ElapsedTimeHD
- ElapsedTimeODDL
- ElapsedTimeOTC
- ElapsedTimeUSOther
- ElapsedTimeUSTech

GroupAssign_<group>

The GroupAssign_<group> active links provide for the automatic setting of the group assigned field of the HD-v1.0 form on the action of designating a problem type from the Problem Type menu within the form. When the user chooses a particular problem type from the menu provided, the appropriate group assignment is made based on administrator-defined associations between the problem types and the groups.

- GroupAssign_ARS - (US) AR Application Software group
- GroupAssign_CI - (ODDL) CourseInfo group
- GroupAssign_CL - (ACNS) Classrooms group
- GroupAssign_DT - (ACNS) Dialup Troubleshooting group
- GroupAssign_ES - (ACNS) Engineering Support group
- GroupAssign_HD - (US) HelpDesk group
- GroupAssign_LB - (ACNS) Labs group
- GroupAssign_NE - (ACNS) Network group
- GroupAssign_NT - (ACNS) NT Admin group
- GroupAssign_OTC - OTC ([FSU@Home](#)) group
- GroupAssign_SL - (US) Site Licenses group
- GroupAssign_SS - (ACNS) Statistics group
- GroupAssign_TR - (US) Training group
- GroupAssign_TS - (US) Technical Support group
- GroupAssign_UN - (ACNS) UNIX System Admin group

HD_Auto<type>

The HD_Auto<type> buttons were developed for the help desk staff to speed entry of routine support requests. The active links execute when a button is clicked on the HD-v1.0 form. The action of the active link sets field values for many fields on the form to instantly create a complete support request ready to save into the database records.

During the beginning of the Fall and Spring semesters, the help desk receives numerous calls, especially from students establishing computer accounts at the university. When the support request involves general answers to routine questions, the help desk staff member frequently can answer the question in less time than it would take to gather and record individual information from the person requesting assistance. For these situations, rather than not entering the request into the data records, generic versions of several support request types were developed to provide better tracking of all the types of requests received by the help desk staff. A new support request is created, with all fields filled with generic information, when a button is clicked. The buttons are located in the User Services page field and are visible only to the help desk staff. The buttons include:

HD_AutoAccts_Button

Enters support request relating to computer account questions.

HD_AutoCampusNet_Button

Enters support request relating to campus-wide network questions.

HD_AutoDorms_Button

Enters support request relating to dorm connection questions.

HD_AutoInfo_Button

Enters support request relating to general questions of computer resource users.

HD_AutoInternetProgs_Button

Enters support request relating to questions on Internet programs.

HD_AutoPasswd_Button

Enters support request relating to the resetting of a user's password.

HD_AutoSoftware_Button

Enters support request relating to general software questions.

HD_AutoSysDown_Button

Enters support request relating to questions about downed campus networks.

HD_ChangeFocus_<group>

The ChangeFocus_<group> of active links execute following the GroupAssign_<group> active links. The action of the active links is to bring to the forefront the appropriate page field for submitting the support requests in the HD-v1.0 form. Bringing the correct page field section forward ensures that the information sought by the support group is addressed. The support groups considered are divided into main groups including User Services, ACNS, OTC, and CourseInfo (ODDL).

HD_ChangeFocus_ACNS

HD_ChangeFocus_CI

HD_ChangeFocus_OTC

HD_ChangeFocus_US

HD_FSUHousing_Button

The HD_FSUHousing button was developed for the ACNS Engineering Support group to provide for additional notification on dorm connectivity problems to the FSU Housing department. The active link action sends an electronic mail notification to members of the FSU Housing department if the button is clicked on the form. Otherwise, dorm-related support requests may not require notifying FSU Housing.

HD_SetFocus_<group>

The HD_SetFocus_<group> active links were added to ensure that the correct page field was in the foreground when a support request was viewed for modification after submission. If a staff member opens a previously entered support request, the group assignment will trigger the active link to bring forward the page field related to the group. The support groups considered are divided into main groups including User Services, ACNS, OTC, and CourseInfo (ODDL).

HD_SetFocus_ACNS

HD_SetFocus_CI

HD_SetFocus_OTC

HD_SetFocus_US

HD_SetReqFields_<group>

The HD_SetReqFields_<groups> active links were developed to provide for filling required fields within the page fields for the four main groups (User Services, ACNS, OTC, and ODDL's CourseInfo). Some of the fields within the page fields are unique to the page field and others are repeated in other page fields. After the support staff member completes the support request, the active link actions set the field values for the page field filled and then copies the information to the other page fields of the HD-v1.0 form. In the event that the support request is assigned to a different support group, the information collected is already available for viewing in the new page field without having to manually transfer information from one page field to another. In the case of unique required fields, the fields are filled with non-information in order to complete the support request submission (otherwise, Remedy ARS would reject the submission until the required fields were filled.)

HD_SetReqFields_ACNS

HD_SetReqFields_CI

HD_SetReqFields_Not-CI

HD_SetReqFields_OTC

HD_SetReqFields_US

HD-v1.0Guide active links

(See also HD-v1.0Guide under Guides)

The HD-v1.0Guide contains 92 separate active links to highlight each field of the HD-v1.0 form from the perspective of a support staff member completing a support request. Each active link designates a single field and the corresponding informational text relating to the field.

ODDL<button label> buttons for the CoureInfoProbReport form

The ODDL<button label> active links execute when buttons are clicked in the CoureInfoProbReport form.

ODDLBackButton

Moves the focus to the previous page tab of the form.

ODDLClearForm

Clears the field values entered in the CourseInfoProbReport form.

ODDLSubmitForm

Saves the problem report and submits the record to the database.

ODDLUpdateForm

Allows CourseInfo support staff to update support resolution information in the administrative text portion of the CourseInfoProbReport form.

Pull FSU-Data

The Pull FSU-Data active link executes after the support staff member has chosen a First Name from the dynamic menu drop-down list to pair with the Last Name entered into the HD-v1.0 form. Information from corresponding entries in the FSU_Data form that match the Last Name, First Name pair is used to set field values within the identity section of the HD-v1.0 form.

Push FSU-Data

The Push FSU-Data active link executes after a support staff member clicks on the UPDATE button of the HD-v1.0 form. Considering that the HRMS data provided for the FSU_Data form may not be up-to-date, the UPDATE action allows a support staff member an opportunity to update field values for a person's entry in the FSU_Data form from identity information modified in the HD-v1.0 form.

Filters

HD_SetReqFields_<group>2

The HD_SetReqFields_<group>2 filter action sets field values within the HD-v1.0 form after a previously submitted support request has been modified. The action is executed when the group assignment of the previous version of the support request and the modified version are found to be different. Comparison of the transactional versus database value of the fields is only available through the filter component.

HD_SetReqFields_ACNS2

HD_SetReqFields_CI2

HD_SetReqFields_OTC2

HD_SetReqFields_US2

Notify<group>

The Notify<group> filters provide for notification to the staff members who are assigned to a particular support request under administrator-defined circumstances. Notification occurs through electronic mail or the Notifier tool depending on the preference defined in the User form of Remedy ARS. The notification contains field information to alert the user or group members of pending support requests.

Notify Tech Support Cat

- Notify a US Technical support staff member of an individual support request assignment made by the assistant director of User Services.

Notify AR App Software

- Notify all members of AR Application Software of a support request assignment.

Notify Classrooms

- Notify all members of Classrooms of a support request assignment.

Notify Dialup

- Notify all members of Dialup Troubleshooting of a support request assignment.

Notify Engineering Support (Closed)

- Notify designated members of Engineering Support of a support request resolution.

Notify Engineering Support

- Notify all members of Engineering Support of a support request assignment.

Notify ES:SNA Connectivity

- Notify all members of the Engineering Support subgroup SNA Connectivity of a support request assignment.

Notify [FSU@Home](#)

- Notify all members of OTC (FSU@Home) of a support request assignment.

Notify HelpDesk

- Notify all members of HelpDesk of a support request assignment.

Notify Housing

- Notify all members of FSU Housing of a support request assignment.

Notify Imaging Workflow

- Notify all members of NT Admin subgroup Imaging Workflow of a support request assignment.

Notify Labs

- Notify all members of Labs of a support request assignment.

Notify Network

- Notify all members of Network of a support request assignment.

Notify NT Admin

- Notify all members of NT Admin of a support request assignment.

Notify Site Licenses

- Notify all members of Site Licenses of a support request assignment.

Notify Statistics Support

- Notify all members of Statistics of a support request assignment.

Notify Tech Support Critical

- Notify all members of US Technical Support of a critical or high priority support request assignment.

Notify Tech Support Critical2

- Notify all members of US Technical Support of an upgraded priority on a support request assignment to critical or high.

Notify Training

- Notify all members of Training of a support request assignment.

Notify Training - CBT Campus

- Notify all members of Training of a support request relating to CBT Campus.

Notify UNIX System Admin

- Notify all members of UNIX System Admin of a support request assignment.

Notify Web Admin

- Notify the manager of the NT Admin subgroup Web Admin of a support request assignment.

ODDL - Check<field>

The ODDL - Check<field> filters were developed to ensure that the user filling out the CourseInfoProbReport form completely fills all fields requested. The filter checks that the value for the designated field has not been left blank or has followed a specific format as in the case of phone numbers. If the filter action executes, the display of an administrator-defined dialog box directs the user to complete the field referenced. Successful completion of the problem report and posting to the database record is completed only after these checks are completed.

ODDL - Check Assigned to

ODDL - Check Browser 2

ODDL - Check Describe Problem

ODDL - Check First Name

ODDL - Check FSU Email Address

ODDL - Check Internet Browser

ODDL - Check Last Name

ODDL - Check Operating System

ODDL - Check Phone (blank)

ODDL - Check Phone (format)

ODDL - Check Prefix & Course #

ODDL - Check Primary Email

ODDL - Check Problem Category

ODDL - Check Role in Course

ODDL - Check Section Number

ODDL - Check Solution

Notify Group change - new

The Notify Group change - new filter executes a notification when the group assignment of a support request has been changed. This filter executes a notification to the new group assigned to the support request.

Notify Group change - old

The Notify Group change - old filter executes a notification when the group assignment of a support request has been changed. This filter executes a notification to the previous group assigned to the support request.

Notify New Owner

The Notify New Owner filter executes a notification when an individual staff member has been assigned to a support request. This filter executes a notification to the staff member assigned to the support request.

Notify Owner change - new

The Notify Owner - new filter executes a notification when the staff member assignment of a support request has been changed. This filter executes a notification to the new staff member assigned to the support request.

Notify Owner change - old

The Notify Owner change - old filter executes a notification when the staff member assignment of a support request has been changed. This filter executes a notification to the previous staff member assigned to the support request.

Reset Old Group

The Reset Old Group filter sets the field Old Group in the HD-v1.0 form following notification to affected group members.

Reset Old Owner

The Reset Old Owner filter sets the field Old Owner in the HD-v1.0 form following notification to affected staff members.

Set Old Group

The Set Old Group filter sets the field Old Group in the HD-v1.0 form following initial group assignment.

Set Old Owner

The Old Group filter sets the field Old Group in the HD-v1.0 form following initial Current Owner assignment.

StatusLogEntrySubmit and StatusLogEntryModify

The filters StatusLogEntrySubmit and StatusLogEntryModify were developed to post key field information from the HD-v1.0 form to the Status Log diary field of the form. The Status Log

field provides a means to create a history of the progress of a support request resolution and these filters provide automated setting of text information into the diary for the support request. On submission of the support request certain fields are recorded into the diary listing. Similarly, when modifications have occurred to the support request certain fields are recorded.

Escalations

There are six levels of priority available for assignment to a support request. Escalation actions have been defined for each priority level for each group that might need to receive notification of an unassigned support request.

the groups:

- Classrooms
- CourseInfo
- Dialup Troubleshooting
- Engineering Support
- HelpDesk
- Labs
- Network
- NT Admin
- OTC
- Site Licenses
- Statistics
- Tech Support
- Training
- UNIX System Admin
- Web Admin

Unassigned <group> 1

The escalation Unassigned <group> 1 will notify members of the <group> that a support request entry with priority level 1 or “Critical” has not been assigned to an individual group member within 30 minutes after the last time the entry was modified.

Unassigned <group> 2

The escalation Unassigned <group> 2 will notify members of the <group> that a support request entry with priority level 2 or “High” has not been assigned to an individual group member within 2 hours after the last time the entry was modified.

Unassigned <group> 3

The escalation Unassigned <group> 3 will notify members of the <group> that a support request entry with priority level 3 or “Medium” has not been assigned to an individual group member within 48 hours after the last time the entry was modified.

Unassigned <group> 4

The escalation Unassigned <group> 4 will notify members of the <group> that a support request entry with priority level 4 or “Low” has not been assigned to an individual group member within 5 days after the last time the entry was modified.

Unassigned <group> 5

The escalation Unassigned <group> 5 will notify members of the <group> that a support request entry with priority level 5 or “Scheduled” has not been assigned to an individual group member within 10 days after the last time the entry was modified.

Unassigned <group> 6

The escalation Unassigned <group> 1 will notify members of the <group> that a support request entry with priority level 6 or “Pending” has not been assigned to an individual group member within 20 days after the last time the entry was modified.

Guides

CourseInfoUserGuide

The CourseInfoUserGuide guide packages the CourseInfoUserGuide active links designed to assist the general user through the CourseInfoProbReport form. The sequence of the fields to be highlighted, displaying corresponding informational text about the fields, is defined by the administrator. Actions that start, continue and stop the guide are also definable by the administrator.

CourseInfoAdminGuide

The CourseInfoAdminGuide guide packages the CourseInfoUserGuide active links and CourseInfoAdminGuide active links designed to assist the CourseInfo support staff members through the CourseInfoProbReport form. The sequence of the fields to be highlighted, displaying corresponding informational text about the fields, is defined by the administrator. Actions that start, continue and stop the guide are also definable by the administrator.

HD-v1.0Guide

The HD-v1.0Guide guide packages the HD-v1.0Guide active links designed to assist the support staff member through the HD-v1.0 form. The sequence of the fields to be highlighted, displaying corresponding informational text about the fields, is defined by the administrator. Actions that start, continue and stop the guide are also definable by the administrator.

Menus

The administrator-defined menus developed for the Remedy ARS implementation for User Services are displayed in the HD-v1.0 form as drop-down lists with multiple tiers. Menu types currently in use include character menus (explicitly defined) and search menus (dynamically displayed depending on administrator-defined conditions).

HD-Actions

The HD-Actions menu displays an explicitly defined list of possible choices for last actions taken and is displayed from the Last Actions Taken field.

HD-Buildings

The HD-Buildings menu displays an explicitly defined list of possible choices for campus location of a person reporting a problem and is displayed from the Building Identification field.

HD-Groups

The HD-Groups menu displays an explicitly defined list of possible choices for group assignment and is displayed in the Group Assigned field.

HD-Owner

The HD-Owner menu displays a list of group members according a search from the HD-Staff form of all members belonging to the group designated in the Group Assigned field. The menu is displayed dynamically in the Current Owner field.

HD-ProblemType

The HD-ProblemType menu displays an explicitly defined list of possible choices for problem-type assignment and is displayed in the Problem Type field.

HD-User List

The HD-User List menu displays an explicitly defined list of possible choices for identifying the submitter of a support request and is displayed in the Submitter field.

FSU_Data

The FSU_Data menu displays a list of first names from the FSU_Data form records that have a corresponding matching Last Name entered into the HD-v1.0 form. The menu is available for dynamic display following the entry of a last name into the Last Name field (in the HD-v1.0 form).

5. FUTURE ENHANCEMENTS

5.1.1. Utilizing Dashboards for data analysis

At the time of this writing, the Dashboards tool for data analysis was just beginning to be incorporated into the Remedy suite of tools available to users within User Services. The tool will, by year's end, provide managers with a graphical method for viewing data collected in the database on support requests through charts, bar graphs and meter formats. Full implementation of the tool will provide assistance in decisions to balance workloads and staff concerned with addressing support requests.

5.1.2. Searchable knowledge base

At the time of this writing, an intern within User Services was working on a Java-based means to access the Oracle database and search for problem types and solution information to be displayed via the web.

A searchable knowledge base would provide an alternative for users willing to pursue a self-help means to resolve technical support issues and possibly reduce the number of calls received by the help desk staff. Furthermore, a support-staff specific knowledge base would make technical resolutions available for reference by other support staff such as while support requests are taken by the help desk or to assist in the training of new technical support staff members.

5.1.3. Web access for general users

The Remedy ARS provides the means to collect information via an electronic mail template that is immediately incorporated into the administrator-defined schema as a new support request. Combining this ability with form completion via the web, utilizing the common gateway interface (CGI) or Java, would provide an alternative method for computer users to submit support requests. The alternative method might also reduce the number of phone calls received by the help desk staff and the wait time on phoned-in support requests.

5.1.4. Mining FSU data through LDAP

The present method of using a static HRMS file extraction for updating the personnel information held in the database is somewhat high maintenance. Once the FSU LDAP is available for access, the ability to query the LDAP for the most current information, possibly including student information, would enhance the identity automation of the super-form.

5.1.5. More custom forms

Additional custom forms and data access methods could be developed in the areas of alternative uses for the Remedy ARS.

Departments wishing to view currently held campus site licenses might do so through a web accessible display following the secure submission of departmental information to retrieve site license data. Once site license data is held in the database, departments could be automatically notified of pending license expirations well in advance of the expiration date.

The computer laboratories on campus could utilize the system for keeping records on software and hardware maintenance. Notifications could be sent to support staff as maintenance schedule items approach pre-defined time intervals.

The training and application support group could use the system for registration of students for short courses. In addition, the system could maintain data on assistance calls of the training staff.

5.1.6. Web tools

At the time of this writing, the Java-based Remedy Web tool was available for use. The pure HTML version of Remedy web-based tools, ARWeb, could be added for users who are unable to download the Remedy Web required Java plug-in to the computer in use.

5.1.7. RemedyLink for Palm OS based Personal Digital Assistants (PDAs)

A recently released access method for Remedy ARS is through PDAs. In the future, technicians could carry a PDA with access to the User Services Remedy ARS system. This method would allow for rapid update and avoid some of the set-up obstacles present in the Java-based Remedy Web tool.

APPENDICES

Appendix A: Preliminary reports

- **Report on the Comparison of Remedy AR System and Lotus Approach**
- **Requirements document prepared for User Services software integration project**

Report on the comparison of Remedy AR System and Lotus Approach for consideration of the User Services Help Desk tool(s)

Prepared by Diana Orrick, January 4, 2000.

This report has been compiled using the criterion listed in the comparison of Help Desk software applications that appeared in the PCWeek OnLine Review at

- www.zdnet.com/eweek/stories/general/0,11011,2379025,00.html

The areas that were generally considered included:

Knowledge base – The product’s ability to catalog problems and easily search for resolutions within internal and/or third-party knowledge bases.

Escalation - The ability to automatically move high-priority tickets within the support staff’s queue.

Skills-based routing – The ability to route tickets to support staff relative to the type of user incident.

Client interface – The ease with which and extent to which tickets can be created, both for help desk staff and users in self-help settings.

Administration interface - The functionality and ease of use of the staff and client management tools.

Scalability – The ability to distribute the application across multiple servers.

Customization tools – The extent to which development kits allow IT managers to tailor the help desk to match business processes.

Database integration - The ability to import legacy user and asset data into the help desk database.

Ease of training – Overall staff training, user training and developer customization costs.

Aside: In the interest of time, the criteria listed above were considered, but not necessarily all demonstrated/tested on the systems reviewed. Some experimentation was done with the actual applications, but the main source of information for the report was found within the help and tutorial files provided in the software and on-line. Available documentation was researched, examined and, where possible, the documentation is provided as attachments to this report. Where attachments are provided, they are indicated in the text with ***##** (# - attachment number).

1) Lotus Approach Tool developed for the former Admin Help Desk

Knowledge base – Since the application is a DB app, there should be a means to create a query based on keywords that gathers all tickets containing the specified keyword. There does not appear to be a tool or recommended method provided in Approach for this. Did not attempt to complete this within the present software set-up. Also, Lotus offers an (Approach) application-specific technical support knowledge base for \$295/yr subscription *1*.

Escalation – Within the form created for the Help desk application, the priorities are set manually by the ticket creator. Priorities are changed manually as well.

Skills-based routing – Tickets are printed for the technicians reference. Approach does not appear to provide a means to email a particular ticket or sub section of the database to a particular individual. It looks like it could be done, but the method might be overly clunky and complicated. Experimented with the email options *2* and it seems that a copy of the entire database is sent to the recipient. There is the possibility of creating an email message “on the fly” as needed, but this has limitations as well. The message would require complete manual entry of all information required and allows text-only input. Subsections of the database cannot be isolated. It was not apparent, in the time allotted for the review, that a single ticket could be sent or a “form” response to a password change request, for example.

Client interface – The current form used was created with the Admin Help desk staff in mind. Includes a survey segment that is no longer used. Form is compact, straightforward with easy access buttons to run macros for different user views of the information. At the present time, there is no option offered for “self-help” by non-Help desk users. Additional note: The Approach software does have the ability to be accessible over the web*3*, however, the view is a read-only duplication of the database at that time and is not interactive. It does not appear the Approach software can be developed to allow ticket creation over the Internet. The read-only view might be helpful to the technician that wants to look at the specifics of a particular ticket, but no updates or changes available. Security within the application is generally maintained through the use of passwords*4*.

Administration interface – Quick roll up through the database format. The system was developed pretty quickly, according to Eddie Yon and improvements made without too much hassle. Pretty extensive help files within the application. Web site not as helpful (some glitch in using the search form, server 204.166.182.31 keeps timing out). Tried out macro creation and report creation. The tools, help available, and samples provide an easy to use interface that is this application’s strongest feature.

Scalability – Tried to locate information about this category online, but the web site only referred to distribution across multiple Domino servers*5*.

Customization tools – The software has shown to be flexible for adaptation to the Admin Help Desk needs (by Eddie Yon) with limitations (see reference to web and email usage under Client interface).

Database integration – For the Millennium version*6* of Approach, data sources such as Lotus Notes, dBASE, DB2, Oracle or “almost any other database format can be integrated. Tight integration with

Notes and DB2 provides database users (of Notes and DB2) with specialized functionality.” The Import Data form lists 24 types of database files that can be integrated into Approach.

Ease of training – Easy to get rolling from the present foundational application. Forms are easy to create and to provide macros for customizing info display. Creating macros is easy with the GUI provided. Making design changes are simple and the result can be viewed immediately. Aside: Have not actually worked inside the database, only through the Approach software. Haven’t tried creating a new table or a new join in the underlying database (dBase IV). Can’t speak to the difficulty of these tasks. Overall, the software seems easy to learn and become familiar with.

2) Remedy AR System Tool developed for the former Academic Help Desk

Knowledge base – The capability for text searches is available. Full text searches (FTS) can be enabled if purchased for the system. (Server information indicates that this option was not purchased.) Other (limited) searches can be enabled through the Admin tool using “Defining a Search Menu”^{*7*}.

Escalation – Several levels of escalation are available including notification. See “Creating an Escalation”^{*8*}.

Skills-based routing – Demonstrated with the current system’s assignment routing according to “group assigned” within the HD form. Notification^{*9*} routing follows via email. (Note, there is a question of whether the email notification is working fully correctly. While I visited with Angi Dutra one day, she noticed that the auto-notification on password change was not working. This may also effect other modes of notification.

Client interface – Current environment serves the purpose, however, could be improved. (The one-screen view of the Approach form is very easy to use and view on the monitor.) Ease of use of the Client form(s) is a big consideration for a user self-help option from the web. There is a web attachment to the application that claims to provide accessibility for users to enter ticket requests over the Internet, however, have not experimented with this attachment to the software, ARWeb.

Administration interface – Difficult learning curve. Complicated application, of course, requires more working knowledge to administer. Requires an administrator/maintainer for best results. Extensive help, both within and on-line provide assistance for most tasks.

Scalability – A procedure is provided for distributing across multiple servers within the help tools in the application. ^{*10*}

Customization tools – Widely flexible applications can be developed for the AR System tailored to the needs of the administrators. Also, adaptable to on-line usage. Other available “attachments” provide more flexibility (Flashboards, Gallery Tools, etc.) and can be downloaded from the web site. Due to the steep learning curve, however, may be slow to realize customization.

Database integration – The system help files describe an “Import” tool that provides for importing other data sources that have certain admin rights. (Comes with v4.0, haven’t seen it in the present v3.2) This appears to be a separate attachment application to ARS.

Ease of training – From the Administrator’s standpoint, the software is difficult to learn (compared to Approach). Will require a considerable investment in time to train an administrator. Then there is the consideration of the additional time to bring the system to its potential.

Overall assessment of the two systems:

The Approach software is easy to get going and use, but will never provide the features that have been mentioned as potential considerations for the Help Desk. This software has provided an emulation of a ticketing system that has worked well for the Admin Help desk. Considering the consolidation of the Admin and Academic Help desks, Approach can't step up to the task.

The Remedy software is designed for use in a help desk environment. Unfortunately, learning to administer the software is a bear. This will require an investment of time and a person to administer and then maintain the system. It might be worthy of consideration for employing a Remedy consultant to assist in building the framework of the envisioned system, but this might require considerable funds. (Found a reference*11*, but couldn't find an estimate on-line.)

It is recommended that the User Services office designate a person to be devoted solely to learning, administering and maintaining the AR System. With or without consultant assistance, the administrator should concentrate on making improvements to the client forms used, consideration of the consolidation of the Help desks in the forms, and then move on to the other features that could be implemented, for example, web-based ticket entry for current help desk staff and a web-based "self-help" option for users that would otherwise call the Help desk for problem resolution. Because of the possibility of turnover in the administrator's position, this person should also well document procedures for the most often used administrator tasks so that another person might be able to pitch hit or replace the administrator if needed. Ideally, an initial concentrated effort to realize the needed improvements and then focus on getting the system to the potential seen for the future of the help desk might pave the way for "lesser" administration needs and more of a maintenance role later for the administrator.

Another consideration is to examine other help-desk software applications and perhaps find another that would be easier to administer. However, this brings up the issue of causing even greater upheaval in the Help desk staff by introducing and getting a different help desk software up and running.

Requirements Document -

**Proposal for User Services, Florida State University
prepared by Diana Orrick, 5/2000**

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Bold type within text refers to glossary terms.

(this supplemental document page was included with the requirements specification)

Please Review:

Requirements specification document

Note the segment(s) highlighted in the table of contents.

- please review for correctness in content
- please note any information that is incorrect or missing as it relates to your work area
- please feel free to examine the entire document and offer comments and suggestions as well

Please return the marked up document by _____

Following the review of the requirements specification document, full production will continue on the upgrade to the User Services software, Remedy ARS. At some point in the future, your work area will be asked to become involved in the review and release of the system segments as it relates to your work area. This may include:

- migration to the ARS software, including training of personnel
- examination of form style and function
- testing (Remedy) system processes
- reporting on problems and/or additional improvements to the system as the new system is migrated into practice
- review and approval of documentation relating to the new system

Please review the above list and consider how your work area will be affected.

As the production schedule moves along it would be helpful to have the following questions answered prior to the system changes affecting your work area. Please be prepared to discuss these questions with the Remedy administrator soon.

- How much time can your work area devote to the above list?
- Is there a person in your work area that can be designated as a liaison to communicate information relating to your work area to the Remedy administrator during this period of transition? Do you have another preferred method of communication your work area would like to employ? (group meetings, electronic mail, etc)
- If personnel training are required, is there a "best" time during the workweek and duration of time that would cause the least disruption of work for your work area? (individualized instruction vs. group instruction?)

As the production cycle nears your work area being affected, you will be notified and requested to respond within a recommended period of time. Please understand that adhering to this schedule and requested response times/dates will assist User Services in providing as smooth a transition as possible.

Requirements Document -

Proposal for User Services

This document outlines the general requirements for meeting the operational improvements sought by the User Services division of the Office of Technology Integration for Florida State University (FSU).

User Services is the "safety net" for computer support at Florida State University. The areas of support include training, help desk services, campus-wide software site licensing and assistance by highly-trained computer technicians. Support is provided for students, faculty, and university administration or staff.

Previously, the division had two separate help desk staffs to provide support for the academic (student/faculty) and administrative (administration/staff) computer user communities. Recently, the two staffs combined into a single help desk staff. Persons requiring support contact the help desk by telephone, email, or walk-in to the help desk office on campus. A help desk staff member gathers information about the problem the user is having and creates a job "**ticket**". The created ticket is routed, via email notification, to the staff that will resolve the problem type identified through the information gathering process. Sometimes the help desk staff member can resolve a problem at the time of contact with the user. Other problems require forwarding information to other support staff. The receiving staff then adds additional information to the ticket about the resolution of the problem. Upon resolution of the problem, the ticket information is stored in the database utilized by the software.

In the past, the separate help desk staffs used different software for recording and tracking **requests** for support. The administrative staff used Lotus© **Approach** for creating, tracking, and storing information on user-reported problems. The academic staff used the Remedy© Action Request System. With the combination of the two staffs into one, there was an examination of the different software used. The Remedy AR System was chosen to replace the Lotus Approach method as a more adaptable system tailored for help desk support applications with additional potential for the future vision of the expanding role of the help desk support staff in serving the FSU computer user community. Figure #1 refers to the interaction of the various user groups (described in this document) with the Remedy AR System.

The current AR System application has not been updated much since installation in mid-1996. The present system uses a flat-file database storage scheme that requires flushing from time to time due to system storage limitations. Aspects of the legacy Lotus Approach method are to be folded into the AR System. Additional offices within the university provide support (related to the services provided through the particular office). Some of these offices have expressed interest in involving the User Services help desk staff to assist in gathering and routing information on specific problems to the office of interest. Figure #2 displays the future system vision.

Functional Requirements

User Services Help Desk:

The User Services Help Desk staff provides the front line assistance to the computer users of Florida State University. A student, faculty, administration, or university staff member needing computer support communicates their problem through the telephone, electronic mail or by walking into the help desk office. Members of the staff include full-time employees and part-time (often student) employees with varying levels of expertise in the area of computer support.

The help desk staff uses the Remedy Action Request System© (hereafter referred to as **ARS**) and Lotus Approach applications to enter information on problems reported from users of technological resources available at FSU. The software applications assist in recording, tracking, routing, and storing information on problems reported. The software, Lotus Approach, is to be phased out in favor of a single software solution, ARS.

The help desk staff member gathers information from the user and creates a job "ticket" that includes information about the user (name, location, email address) and information about the problem the user is reporting. A description of the problem the user is experiencing is entered into the ticket that is created to record the problem. The staff member will assign a **priority** to the problem dependent on the effect the problem is causing for the user or a group of users. If possible, the staff member will try to resolve the problem at the time the information is gathered, using information from the stored database or by providing a solution from personal knowledge and experience. In some instances, the software is set to automatically complete and close a ticket for common problems or work requests that have standard solutions. In other cases, the staff member manually closes the ticket adding resolution information that is stored in the database. Otherwise, the staff member may assign another group within the university support staff to handle the problem resolution. Once the preliminary information has been entered into the ticket, the ticket is saved and the software automatically routes a descriptive notification to the assigned group that a problem has been reported. The primary means of notification is electronic mail. The staff member of the group handling the problem follows up in the software, entering the solution description into the original ticket form and closing the ticket. At that point, the data gathered in the ticket is stored in the database provided by the software. At the present time, the database scheme (ARS) is a flat-file format that must be flushed or reduced due to system limitations.

The Lotus software offers several features that have not been realized in the ARS software. Users of the Lotus software have requested those features be incorporated into the ARS use including printable tickets and spreadsheet views of open, late, critical priority and pending problem reports.

The help desk is staffed seven days a week. On average 35 or more tickets are created per day on a wide range of technological problems related to computer use.

Inputs:

- information from user reporting problem via telephone
- information from user reporting problem via electronic mail
- information from user reporting problem via walk-in to the office
- information from other support staff on problem resolution
- information from other support staff on problem reassignment
- information from vendors on problem resolution

Processing requirements:

The help desk staff needs an updated software solution that provides an easy-to-view on-screen form that assists the help desk staff member navigate quickly through the information gathering process with the user reporting the problem. The help desk staff depends on ARS and Approach to record and track problems reported by users. The main form display in both systems extends beyond one screen window and requires scrolling down to complete the **entries**, even scrolling up and down to complete (ARS). The form should be viewed in one screen with related elements positioned together.

Considering the move to ARS, the main form has not been updated in some time despite many changes in the underlying support groups addressed in the form. The list of groups to which problem tickets can be assigned needs updating. The menu scheme provides multiple levels of detail that bog down the help desk staff member in noting key information in the form. Reducing the levels of the menus would simplify use. Some **fields** on the form are not used at all, some due to outdated and others due to the location of the field on the form. Some of the fields should be expanded in size to include more information, both to view on the screen and to enter into the field.

Due to the needs of additional groups wishing to involve the help desk staff in the support process, new fields are needed. Patching on an as-needed basis has occurred, but an overall review and update is needed to make the form more effective and easy to use. It would be helpful to the help desk staff for the form to be viewed within a single screen window without the need for scrolling to complete information in the problem reporting ticket form.

Since the consolidation of the two help desks, the help desk personnel still engage two systems, ARS and Lotus Approach to create job tickets. Since the ARS system is to be used for the single help desk, the best features of the Lotus system need to be folded into the ARS system. (See also, User Services Technical Support).

The priority levels need to be updated in the new system to reflect those used by the technical support staff and any automatic-features should include consideration for the new additional priority levels.

The ARS system provides for automatic actions through what is called **active links** and **filters** to automate some tasks. It has been found that some of the legacy automatic features are no longer helpful and should be eliminated. Other automatic features could be introduced to assist in frequent tasks performed by the help desk staff member. The staff member should be able to choose a particular problem type and the system should then auto-assign the group to handle the resolution of the problem. Certain types of problems that ordinarily have simple, routine solutions could be closed quickly with automation, filling particular fields to be captured for the database. In the past, this automatic fill feature was used, but could not be overridden. This created difficulty when an otherwise simple solution could not be kept open during resolution. The system auto-closed the ticket and once closed, no additional information can be added to the ticket. A **button** on the form that would enact the auto-close function would give the staff person the option to (auto)close or keep the ticket open allowing for edits on the ticket. Given access to some of the larger university databases of user information on campus, the system could auto-fill several fields on the form related to the information gathered about the user through a database query action. Providing an auto-fill based on the user FSU Card ID number would provide a unique key for drawing previously entered information from the database. Information such as name, email address, campus location and phone number could be auto-filled. This would save the staff member keystrokes as well as provide more consistency in the information entered. As FSU begins to utilize the Lightweight Directory Access Protocol (**LDAP**), drawing information into the form with this method should be given consideration.

Job tickets that have not been assigned within a certain time period or that haven't closed within a certain time period should be escalated with notifications going to varying levels of management until the ticket has been addressed. The present system provides for some escalation, but the additional priority levels should be included. In addition, a stepped escalation process needs to be implemented where the notification starts in the lower tier of management and continues up the management hierarchy until the highest level of management is notified of languishing or otherwise unresolved job tickets requiring attention, if necessary.

The latest version of the ARS provides for the creation of **guides** to assist a user through a form. The guide takes a user step-by-step through the form providing textual help for designated fields and allows the user to fill in the fields while working through the guide. Guides should be provided for less experienced help desk staff as a training tool to assist the staff member working through the form and familiarize the staff member with the different possibilities for filling out a job ticket. Additionally, help text should be added where possible for in-form assistance to the staff member not using the guide. At the present time, little or no help text has been entered into the system.

Within the present form is a status log field that has not been used. This "**diary**" field should be utilized to create a history of the events that have occurred for a particular ticket. The field could capture information and append the information to the diary. This would provide an easy, quick viewing log of information giving display of identities or names of persons entering information and each stage of modifications to the ticket. The field should retain the ability of the current staff member to add information to the log, as well as the system auto-logging key information as the ticket is modified in the process of resolution.

Data analysis methods and tools should be made available for review of data stored on the job tickets held in the system. The ARS has component tools, **Flashboards** and **Crystal Reports** that have not been placed into use. Consideration should be given to the type of data analysis required by management and appropriate methods for using the tools developed. Documentation outlining the use of the data analysis tools should also be provided.

Reporting formats should be preserved from the legacy systems (both Lotus and ARS) and methods documented for creating new reports and using current reports. This Helpdesk has requested the possibility for a menu of common report requests to provide the ability to quickly create reports on demand.

Outputs:

- partially completed job tickets routed by notification to other support groups
- completed job tickets and data into the database

Data Storage:

- storage for the ARS server software
- storage for the **Oracle** database backend to ARS
- data storage to hold up to 200,000 (and expanding) problem tickets

User Services Technical Support:

The User Services technical support staff provides hands-on technical support for both hardware and software for the FSU user community. Staff technicians go on-site to supply computer support for computer hardware and software applications.

The User Services technical support staff uses the Lotus Approach system to record and track job tickets. The staff will be migrating to ARS as the consolidated help desks move toward a single system.

The Approach system provides for spreadsheet viewing of all new, open, late, critical-priority and pending job tickets that can be sorted easily by column topic.

The tickets are printable and provide a survey area for the "customer" to report on customer service received. Currently, the printed tickets are carried with the technicians to the site receiving the support assistance.

The software provides for reports to be compiled from database information based on certain criteria and pre-formatted report style. Custom formats can also be developed.

The system automatically fills certain fields of the form used based on information drawn from the accumulated database.

Inputs:

- information from user reporting problem via telephone
- information from user reporting problem via electronic mail
- information from user reporting problem via walk-in to the office
- partially completed job tickets routed by notification from the help desk staff
- partially completed job tickets routed by notification from other support staff
- information from other support staff on problem resolution
- information from other support staff on problem reassignment

Processing requirements:

The User services technical support staff needs to become familiar with the ARS method of ticket processing. The update of ARS should incorporate the best features of the Lotus Approach form to ease the transition to ARS for the technicians. A guide, specific to the perception of the technician, should be developed to assist in training the technicians in the ARS software use. Documentation should be provided for reference.

The technical support staff should be added as users to ARS so technicians can access ticket information and add modifications as needed.

The technical support staff member viewing ticket information in ARS should be able to view the information as a spreadsheet, similar to the previous style. In addition, different views of new, late, critical, open, pending and technician-specific tickets in the system should be provided. The technical support staff member should be able to view previously created tickets as well as have the ability to create tickets.

The current form used by the help desk staff in ARS should be adjusted to include the operating system of the computer used by the person reporting the problem. This will assist in assigning work to the technicians skilled in the platform indicated.

If possible, the key data components of the current Lotus database should be imported into ARS to avoid loss of the accumulated data.

The current assistant director of User Services assigns work to the technicians and his view of the system should be considered for customization and ease of work assignment. The assistant director would like to be notified (via email) of any job ticket that has been given priority level "Critical" or "High". In addition, another designated member of the technical support group should also receive the same notifications. Otherwise, the assistant director prefers that ARS does not issue blanket notification to the entire technical support staff. Instead, the assistant director will review the open (unassigned) tickets from his "view" provided in the system and make technician assignments. At that point, the

specific technician should be notified that an assignment has been made for the technician to follow up and resolve.

Consideration should be given to a follow-up notification to the user when the resolution has been completed. The user could be given an opportunity to comment on satisfaction of service, etc through a reply to the completion message and completion of a survey of questions.

The reports generated by Approach should be replicated in ARS.

Data analysis methods and tools should be made available for review of data stored on the job tickets held in the system. Reporting methods should be communicated as well.

Outputs:

- partially completed job tickets routed by notification to other support groups
- completed job tickets and data into the database

Data Storage:

- *(see User Services Help desk)*

Academic Computing and Network Services:

The Academic Computing and Network Services (**ACNS**) division of the Office of Technology Integration works in conjunction with colleges and departments at FSU to provide services to help meet the University's computing and networking goals.

ACNS provides technological support relating to networking, computer laboratory, and technologically advanced classroom needs of the FSU community. To clarify, ACNS provides support for the infrastructure behind network connection to the computers and User Services provides support beyond the connection.

Staff members of ACNS have had experience with both the Lotus Approach and ARS methods of ticket creation and completion.

Staff members are able to create job tickets as well as complete job tickets initiated by other support staff members outside of ACNS, such as the help desk staff.

Staff members view job tickets that have been created and complete resolution information to be captured by the database.

Specialized groups within ACNS, such as Labs and Classrooms have specific forms for problem reporting on the web. Charged with the support for technologically advanced classrooms and, in the future, all general-purpose classrooms, these groups have turnaround needs on problem resolution that may employ pagers.

In the past, a staff member through the report making process in ARS monitored the Dorms and Engineering Support groups to note any open and pending problem reports in ARS.

Inputs:

- information from user reporting problem via telephone
- information from user reporting problem via electronic mail
- information from user reporting problem via walk-in to the office
- information from other support staff on problem resolution
- information from other support staff on problem reassignment
- information from vendors on problem resolution

- partially completed job tickets routed by notification from the help desk staff
- partially completed job tickets routed by notification from other support staff

Processing requirements:

ACNS staff members should continue to be able to create and complete job tickets relating to ACNS staff support or other support staff as needed.

The current ARS form used primarily to record problems should be updated to include the most recent group definitions for assignment to ACNS staff.

The ACNS staff members should be able to assign job tickets that have been designated for ACNS to individual ACNS staff members and have the ability to reassign job tickets to ACNS or other groups as needed.

The ACNS support staff has become familiar with the ARS ticketing process used by the help desk staff and understands the role of ACNS in completing job tickets initiated by the help desk staff. Software tools and training have been provided in the past for the ACNS staff members that are involved in the process of reporting on and following up on ACNS assigned problem reports. As the latest ARS software is implemented, so should the tools for ACNS be updated with training and documentation as needed.

The problem types listed in the current form should better reflect the present state of user support at FSU (a more clear definition of ACNS vs. User Services support of problems) and correctly assign the appropriate group to be notified of the problem needing resolution. The assignment of the group should be automatic by the system where possible.

Since the location of the user reporting an ACNS supported problem is of great importance to the technicians resolving the problem; a better means of gathering location information should be employed in ARS. Instead of a single field indicating campus location, the field should be split to designate room number and building. The building field should allow a choice from a list to provide consistent spelling of the building name. (This will improve data analysis queries also.) At the present time, the campus location field is not consistently filled with information. The gathering of campus location information should be required at ticket creation. Certain location defaults should be agreed upon for off-campus and otherwise non-campus locations.

The Labs and Classroom group within ACNS requires a custom reporting form specific to gathering information on problems reported in these environments. The form should be accessible from the web and allow users to report problems through the on-line version of the User Services Help Desk. In addition, new fields to capture vendor information need to be added. Considering vendor contact, a new job ticket status category of "Referred" should be added to reflect that a vendor (or other agency, such as building maintenance) has been contacted to assist in the completion of the problem resolution.

The Labs and Classrooms groups have also requested the addition of the field on the main form used by the help desk to reflect the building code assignment (alpha-numeric) as well as the room number and building name fields under consideration. The building code designation could be used in the future for pager notification of problems reported on general-purpose classrooms. ARS could send an email message to the ACNS pager indicating the building code, room number and the degree of priority assigned to the problem reported. This message (example: XXX*XXX*XXX, building code*room number*priority) would give the person holding and answering the page a shorthand view of the location and priority of the problem.

The Labs and Classrooms group has also requested consideration for a custom maintenance report form that would assist ACNS managers in keeping up with software license expirations, hardware replacement and computer/printer maintenance schedules.

Data analysis methods and tools should be made available for review of data storage on the job tickets held in the system. Reporting methods should be considered as well. The restructuring of groups under consideration now should assist in simplifying the report process eliminating the need to process separate reports for individual groups.

Outputs:

- partially completed job tickets routed by notification to other support groups
- completed job tickets and data into the database

Data Storage:

- (*see User Services Help desk*)

Office of Distributed and Distance Learning:

The Office of Distributed and Distance Learning (**ODDL**) provides support to students, faculty, teaching assistants, and guests of the distributed and distance learning system at FSU. Access to the system by users is primarily web based.

Members within the distance learning system report problems via a form provided on the web, by electronic mail or by telephone. The members are scattered in various cities mostly in the state of Florida and some other states.

The ODDL support staff has become familiar with the ARS ticketing process used by the help desk staff and understands the role of ODDL in completing job tickets initiated by the help desk staff. Software tools and training have been provided for the ODDL staff members that will be involved in the process of reporting on and following up on ODDL related problems.

The web-based problem-reporting form is filled out by the user reporting the problem and includes information about the user, the problem, the system used, and the type of connection used to access the web. If a user is aware of the problem reporting form and can access the web, the form contents provide information to the ODDL support staff to address the problem. If the user cannot access the web, the User Services help desk staff has been employed to assist in gathering information and relaying the information to the ODDL support staff using the main form used by the User Services Help Desk staff.

In addition, the ODDL staff includes persons answering general inquiries from prospective distance learning students. Information is gathered about the area of interest and follow up materials are mailed to the person initiating the request. Marketing information is gathered based on the inquiries gathered. The general inquiry staff uses a software product called, **Talisma**©, designed for electronic communication over the Internet between companies and customers.

Inputs:

- information from user reporting problem via the web

- information from user reporting problem via telephone
- information from user reporting problem via electronic mail
- partially completed job tickets routed by notification from the help desk staff

Processing requirements:

The ODDL staff requires a custom form in ARS that replicates the problem reporting form in use through CourseInfo. This form should be accessible from the web for members within the ODDL system. If a user of the ODDL system fills out the form, a detailed notification should be sent to the ODDL support staff. A guide to step the first-time user through the form should be an option (button) within the form.

Consideration should be given for the custom ODDL form to be used by the User Services Help Desk staff to report ODDL related problems.

Considering web access, a web-based tool that does not require Java plug-ins (**RemedyWeb**) and runs with straight **HTML (ARWeb)** would provide better service as some ODDL members will not have the option to download to computer laboratory and other environments.

The ODDL support staff would prefer to avoid user-initiated email following the report of a problem. Instead ODDL would like to notify the user reporting a problem via an electronic mail message that provides feedback on the problem reported through a **URL** link within the email message. If the user would like to add additional information or questions to the original request, it could be entered in the form section of the URL linked page and upon submission ODDL would receive an appended version of the original request. Another notification with URL reference would update the user on the status of the problem resolution (with additional notes added by the user or ODDL support). This method should also be considered for all web-based communications between general users reporting problems and the groups handled the problem resolution.

Documentation should be provided to the ODDL support staff relating to the custom form developed for ODDL and the form used by the help desk staff members to report ODDL related problems. In addition, a guide should be developed to assist ODDL in training new support staff with an administrative perspective.

ODDL is considering replacing the Talisma software used by the general inquiries staff with a User Services provided Remedy ARS solution. Since the majority of the inquires occur once with little electronic feedback to the inquirer, data gathering could be replicated through the ARS and reported to the marketing staff. A form view that replicates the Talisma form view used by the general inquiry staff should be provided in ARS. To provide ease of use, a method to recall a previous inquiry should return all data relating to all communication between ODDL and the person initiating the inquiry.

Data analysis methods and tools should be made available for review of data stored on the job tickets held in the system. Reporting methods should be communicated as well.

Outputs:

- notifications to ODDL on problems reported to the help desk staff
- ODDL completed job tickets and data into the database

Data Storage:

- (*see User Services Help desk*)

User Services Training and Application Support:

User Services Training and Application Support provides free Short Courses to faculty, staff and students. The courses are developed to support the software most commonly used by the campus community. This includes but is not limited to the MSOffice Suite 97/98/2000, FileMaker Pro, UNIX, WordPerfect, PageMaker and web development software. Extra courses are scheduled for departments for 7 or more persons. The Training and Applications Support group also conducts special classes at the request of faculty which are held during the regular class hours.

Classes offered by User Services Training provide computer-related skills for the beginner to advanced computer user at FSU. Registration for the classes is usually done by telephone and space is available on a first-registered, first-come basis.

CBTCampus "Smart Force" is now available for faculty, staff and students at FSU. This is a multimedia system that contains more than 200 computer based training courses for End-Users and IT certifications. These courses can be played via a PPP account as well as from the FSU on-site campus network.

Inputs:

- listings and information on current short courses offered
- requests for registration of short courses by FSU faculty, staff and students

Processing requirements:

Training and Applications Support could use a method for on-line registration of users wishing to attend short courses. The process should notify users if a class has been filled at the time registration is attempted. The process should be able to notify the user of a successful registration slot reserved and provide a reminder of the upcoming class with time and location information. The process should also be able to provide the training staff with a roster of registered students for a particular class.

Data analysis methods and tools should be made available for review of data stored on the course attendance records held in the system. Reporting methods should be communicated as well.

Outputs:

- registration confirmation and reminder notices
- course registration roster lists

Data Storage:

- *(see User Services Help desk)*

User Services Software Site Licensing:

User Services Site Licensing at FSU provides the service of coordinating site-licenses from various software vendors in order to get a better price than if departments purchased packages through a retail seller. By allowing departments to purchase multiple licenses and one set of media, they can save money, especially when purchases are for multiple machines in a department, such as in a computer lab.

Inputs:

- data entry of software site licenses currently held
- data entry of persons/departments holding site licenses on campus
- data entry for up-to-date site licensing price information

Processing requirements:

Site Licensing would benefit from a custom form accessible on-line that would allow a department representative to check on licenses currently held. Automatic notifications to the department(s) of pending expirations of licenses would provide assistance to the task of license renewal follow-up.

Site Licensing would benefit from a custom request form that would automate ordering/requesting licenses from an on-line form that provides listings of the licenses available. System initiated notifications to the site licensing staff via electronic mail would reduce telephone time required currently by the staff members to address requests for licenses. Consideration should be given to providing a view to "customers" of pricing information as well. A method of updating the price information with changes should be available to site license staff members as well.

Data analysis methods and tools should be made available for review of data stored on the license records held in the system. Reporting methods should be communicated as well.

Outputs:

- site license information to FSU departments
- site license orders/requests from FSU departments

Data Storage:

- *(see User Services Help desk)*

User Services Management:

The User Services management team has minimal provisions for data analysis tools within the current software. Through Lotus Approach, searches can be requested that return general information about the entries held in the database. More complex queries to the software can be made through the "Find Assistant" help to narrow or specify the range of data response desired. Currently, within Approach, there are report-style formats for returning data that are in use and give a textual display of basic fields of the data stored on problem reports.

Within Remedy ARS, a reporting feature is available for queries to the database. The resulting report is also textual and can be directed to more specific, statistical, display of data stored on problem report entries.

In the past, a Remedy component tool, Flashboards©, was experimented with, but never worked properly for more graphical display of data stored.

Inputs:

- specific queries by management for data on a variety of views
- data stored in the software database

Processing requirements:

The User Services management team would like to broaden the scope of the types of data analysis available from the software that stores records of the problem reports.

Lotus Approach report formats should be replicated in ARS .

The Dashboards component tool of ARS should be installed and available for graphical display of data analysis query results for management.

Also, another component software that works with Remedy ARS, Crystal Reports© should be made available for alternative report-style results on database queries.

The management team should be able to conceive and implement data mining tasks with little assistance from the ARS administrator. Consideration should be given to whether data analysis should be carried out through ARS to the database or if data queries should be run independent of ARS and directly from the database used by the software.

Procedures for using the report feature of the ARS software and component tools should be distributed through documentation and possibly additional hands-on training. The ARS administrator should be prepared to provide a foundation for querying the database, according to the result desired by the manager seeking the information, and instruction as to how the query could be replicated and saved for reuse.

Outputs:

- data analysis from the managerial perspective
- statistical information from the managerial perspective
- improved information for managerial decision making

Office of Telecommunications:

The Office of Telecommunications (OTC) is the University's coordinator and provider of telecommunications transport services on and off of campus.

OTC has been charged with overseeing the [FSU@Home](#) digital subscriber line (DSL) initiative to provide DSL services for purchase by FSU faculty, staff, and students to be used from their home. Because the service is purchased the customer service response has been given a sensitive priority with a goal of timely turnaround of problem resolutions.

Since DSL involves computer use, OTC has requested assistance in support for DSL instructing customers to contact the User Services Help Desk when problems arise. The support plan includes the help desk staff member gathering information about the DSL problem and creating a job ticket. If necessary, the help desk staff member will contact the commercial provider, Sprint, to relay repair needs for the DSL customer.

An OTC staff member will follow up on any created tickets and add any additional information needed for completion of the ticket.

Inputs:

- information from user reporting problem via telephone
- information from user reporting problem via electronic mail
- information from user reporting problem via walk-in to the office
- partially completed job tickets routed by notification from the help desk staff

Processing requirements:

Due to the additional involvement of the commercial provider, Sprint, the OTC staff needs additional fields added to the help desk form to allow recording the provider's contact name and the work report number given to the help desk from Sprint. Also, time information on estimated completion and actual time of completion will involve more additional fields. Inclusion of an elapsed time field calculated from the difference of the actual and create (ticket) time will assist in analysis of customer service and vendor response to problem reports.

Problem reports that have not been assigned within a certain time period or haven't been closed within a certain time period should be escalated and notifications go to varying levels of management (both OTC and User Services) until the ticket has been addressed. In addition, a stepped escalation process needs to be implemented where the notification starts in the lower tier of management and continues up the management hierarchy until the highest level of management is notified of job tickets requiring attention, if necessary.

Once a problem report or ticket has been created and an estimated repair completion time has been given from the vendor, the user originating the report of the problem should be notified via electronic mail. The mail message should give an overview of the status of the problem resolution and the estimated time of completion. Consideration should be given to a follow-up notification to the user when the resolution has been completed. The user could be given an opportunity to comment on satisfaction of service, etc through a reply to the completion message and completion of a survey of questions.

The OTC staff should become familiar with the ticket process used by the help desk staff and understand the role of OTC in completing job tickets initiated by the help desk staff. Software tools, documentation, and training should be provided for the OTC staff members that will be involved in the process of reporting on and following up on DSL related problems.

Consideration should be given to develop a custom form for the OTC related problems to be employed by the help desk staff and OTC.

Data analysis methods and tools should be made available for review of data stored on the job tickets held in the system. Reporting methods should be communicated as well. The OTC staff would like to know the turnaround time on problems and the time captured should reflect the best estimation of completion time. The time captured at the creation of a ticket indicates the start. The resolution time, however, may not align with the last modification time captured by ARS. This is especially true when the OTC person follows up on a resolution later in the process. For this reason, an additional time field should be added for entering the time reported by the vendor (Sprint) as to when a problem has been resolved. In addition, methods for creating and retrieving reports from ARS should be provided.

Outputs:

- completed job tickets and data into the database

Data Storage:

- (*see User Services Help desk*)

Public access and searchable knowledge base:

The present system does not allow for access over the Internet. Users reporting problems must email, telephone, or walk-in problem reports to the group that will handle the problem resolution. In most cases, the User Services Help Desk receives the requests and routes the problem reports to the appropriate group that will handle the problem resolution.

User Services Technical Support members print the tickets assigned and carry them to the site requiring assistance. Updating the information on the resolution of the problem is done later, or requires the ARS client software to be installed on the computer used to update the ticket information.

General users have no opportunity to search the database for problem resolutions in an effort to solve problems. General users have no opportunity to check on the status of a pending problem report without contacting the help desk staff through non-web-based methods.

Inputs:

- login information considering in-system or out-of-system users
- access to appropriate forms depending on type of user
- input of information relating to the problem by general users
- resolution information on in-process tickets by technicians

Processing requirements:

The latest version of ARS has two component tools, RemedyWeb© and ARWeb©, that provide for Internet access to the ARS system in use.

Using these tools, technicians in User Services Technical Support could immediately update the database with problem resolutions from any web-accessible computer without the need for the ARS client software. Other groups that require on-site problem resolution could also update, in a more timely manner, the problem resolution reports.

General users wishing to report problems could access the site and fill in a custom form with the problem description and submit the request to the help desk staff, reducing telephone time and telephone waiting time. Given a ticket reference number, a general user could research the status of the reported problem and its resolution.

A web-accessible knowledge base with keyword search on frequently reported problems would allow general users the opportunity to resolve problems on their own if so inclined. The knowledge base would be built from the database accumulation of problem reports and the resolutions. Security considerations of sensitive information that might appear in the problem reports should be weighed. A separate field should be considered for input of sensitive information (passwords, configuration information, etc.) by the in-system users. This sensitive information would not be incorporated into the database retrieval supplying information to the searchable knowledge base. An alternative would be to flag fields not to be accessible to the knowledge base retrieval of information from the database through a button choice on the form.

Outputs:

- on-line access to report resolutions by technicians
- alternate access to ARS by other user groups
- general user access to report problems
- general user access to research problem resolution status

Data storage:

- (see *User Services Help Desk*)

User Services ARS Administrator:

The task of administrating and maintaining the software used by the User Services and other support groups to report problems of computer users at FSU has been distributed to several persons.

The Lotus Approach© system is maintained primarily by members of the User Services technical support staff in addition to their other duties. ARS is maintained similarly by User Services computer applications staff members.

Regular updates to the software (especially ARS) have not occurred. The current administrators' function in maintenance roles only, providing fixes on an as needed basis.

The original flat-file database scheme provided with ARS for demonstration purposes has not been changed and requires flushing from time to time due to system limitations.

No User Services specific documentation has been developed for either system.

Inputs:

- considerations suggested by users of the systems
- needs identified by users and management as the system evolves
- assistance provided by the technical support of the companies providing the software

Processing requirements:

During the time period that the two systems will become a single (ARS) system, a dedicated administrator should be assigned. Allowing the administrator to focus only on the task of updating and consolidating the systems will provide the most efficient means to overhaul the present process in a timely manner.

The designated transition administrator should gather information from user groups of the two systems to determine the best features and highest needs to be incorporated into the resulting software system. The administrator should become familiar with the uses of both systems to gain understanding of how the systems are used by the user groups. The administrator should familiarize with the features of the most current ARS software in order to provide transition from the older software.

The database backend for ARS should be upgraded. Under consideration is Oracle 8.0. This will provide easier access for data mining and data analysis. Methods developed to query the new database scheme should be well documented with examples for future users and administrators.

Within the current ARS implementation, no custom help text has been entered. The system provides generic help text. User Services needs a more specific description of the features used as they apply to the implementation of the software by the staff. The user of a particular form to gain a better understanding of the fields in the form could view help text. Help text entered for the unseen features of ARS, such as filters and escalations, would provide explanations to the system administrator.

After the overhaul and update of the systems to ARS, documentation should be provided to assist the maintenance administrator in understanding the User Services implementation of the ARS software.

The documentation should outline how different features of ARS are used in detail. The documentation should provide a strong foundation of information for the maintenance administrator to be able to make system modifications as needed and after some training in ARS.

The transition administrator should also attempt to provide a User Services user manual to be available to in-system users of the updated system to provide a guide to the changes in the system update.

Outputs:

- updated/improved forms
- additional help text available to users and administrators
- updated documentation related to changes to the system
- updated methods for reporting and data analysis

Data Storage:

- (*see User Services Help desk*)

Processing Needs:

- latest Remedy Action Request System© software
- updated forms for current user groups and problem types
- greater automation for ease of use (especially for help desk staff)
- include best of the Lotus Approach© features to ARS software
- integration of new user groups into system
- web accessible link to ARS that doesn't require client software for support technicians traveling on-site
- methods and procedures for management driven data analysis
- documentation for general and administrative users
- help text for general and administrative users

Special Processing needs:

- Public access to the system from the web
 - in system users (support personnel)
 - out of system users (general user community)
 - RemedyWeb software
 - ARWeb software
- Building (and growing) a knowledge base for self-help search by general users to find answers to frequently occurring problems reported to the database.

Plan of Development:

May, 2000

- install ARS to new server
- install RemedyWeb tool to new server
- install ARWeb tool to new server
- install Oracle 8.0 backend to ARS on new server
- coordinate transfer of production and alternate ARS servers to new server
 - export and import of ARS schema definitions from/to new server
 - transfer of licenses to new server
- investigate and implement queries to FSU LDAP
- familiarize User Services Technical Support with ARS ticket system
 - training sessions
 - documentation and system guide
- update main form used by help desk staff
 - training sessions on changes to system
 - documentation and system guide

June, 2000

- complete transfer from ARS/Approach to ARS
- implement web access for in-system users with ARS accounts
 - training sessions
 - documentation and system guide
- begin documentation and guides for all groups using ARS
 - ARS Administrator
 - ARS
 - Oracle
 - RemedyWeb, ARWeb
 - Web access methods
 - Dashboards, Crystal Reports
 - ACNS, ODDL, OTC, Web users (in-system)
- begin programming work to provide web access for general users

July, 2000

- implement web access for general users with FSU accounts
 - system guide on the web
- implement self-help knowledge base for web access users
- complete documentation on ARS for User Services
- complete documentation and guides for data analysis tools
 - Dashboards
 - Crystal Reports
- incorporate amendments and requested adjustments to ARS by user groups and management

August, 2000

- finalize ARS use by User Services
- complete documentation

Glossary of Terms

ACNS - Academic Computing and Network Services, a division of the Office of Technology Integration at FSU.

Active link - Workflow that causes Remedy User to perform specific operations in response to specific user actions. AR System administrators can define many types of active links. For example, they can define active links that run macros, set fields to specified values, run independent system processes, send interactive messages to users, or change field characteristics.

Approach - Lotus Corporation relational database software that provides an easy to use interface to query, report on and analyze data.

ARS - Remedy Corporation Action Request System
Adaptable client/server software that provides a foundation for creating applications that can automate, track, and manage a wide variety of business processes.

ARWeb and RemedyWeb - Remedy products used to access a company's installation of the AR System from the Internet. Both display converted AR System forms in which users can submit, search, and modify AR System requests. ARWeb is HTML based, RemedyWeb is a Java Client.

Button - A field on a form that a user can click to execute an active link. A bitmap can represent a button.

Crystal Reports - Seagate Corporation software that provides ease of report generation including graphical representations from database sources.

Diary (field) - The data type used for fields that enable the user to capture a history of the actions taken for a request. The field stores character data. It is an append-only field, and each addition is stamped with the time, date, and name of the user who entered the item.

DSL - Digital Subscriber Line. Technology that uses existing the copper pair wiring that exists in almost every home and office. Special hardware attached to both the user and switch ends of line allows data transmission over the wires at far greater speed than the standard phone wiring.

Entry - An instance entered into the AR system to record a request for computer support relating to a problem experienced by a user at FSU. Also known as an ARS job request or ticket. A row in the database that represents a request.

Escalation - Workflow that searches at specified times or at regular intervals for any requests matching a specified condition and performs specified operations on all matching requests.

The AR System administrator can define escalations to perform actions such as notifying an individual, running a process, setting specified fields, or making an entry to a log file.

Filter - Workflow that tests every server transaction for certain conditions and responds to the conditions by taking specific actions. AR System administrators can define many types of filters. They can define filters that set fields to specified values, run independent system processes, send interactive messages to users, notify users when the state of requests change, or make entries in audit trail log files.

Flashboards - A Remedy real-time visual monitoring tool that shows the state of service operations, warns about potential problems, and collects and displays trend data. Flashboards component - An individual area chart, bar chart, line chart, or meter that is placed upon a dashboard.

(Form) field - In the AR System, the main entity of a form. All of the following are AR System fields: data, table, page, active link control fields (buttons, menu items, and toolbar buttons), and trim.

Guide - A set of ordered steps to help users achieve a specific goal. Instructions for each step can appear in the prompt bar if the administrator writes them. Internally, a guide is a collection of ordered active links, and it is an AR System server object. A guide is associated with a form.

HTML - Hypertext Markup Language used for web page development on the Internet.

LDAP - Lightweight Directory Access Protocol, a client-server protocol for accessing a directory service.

ODDL - Office of Distributed and Distance Learning at FSU.

Oracle - Oracle Corporation database software.

OTC - Office of Telecommunications at FSU.

Priority - Assignment of importance relating to response and resolution time of problems reported to User Services at FSU. Scale 1 (highest) to 6 (lowest).

Request - An entry entered into the AR system to record a request for computer support relating to a problem experienced by a user at FSU. Also known as an ARS job ticket or entry.

Talisma - Aditi Corporation software designed to provide better customer service through electronic communication between companies and customers over the Internet.

Ticket - An entry entered into the AR system to record a request for computer support relating to a problem experienced by a user at FSU. Also known as an ARS job request or entry.

URL - Uniform Resource Locator used to locate sites on the Internet.

Appendix B: Transition documents

- **US/ACNS Meeting Agenda to discuss improvements to Remedy system including group lists and problem types for discussion**
- **Information on transition to Remedy ARS 4.5**
- **Current status on transition to latest Remedy software**
- **Data reports prepared for User Services managers**
 - **Totals and average per day on tickets created by the Help desk staff**
 - **Breakdown of trouble report totals between 8/1/99 and 5/24/00**

**US/ACNS Meeting to discuss improvements to the Remedy system
Agenda -**

10 - 11 am 3/24/00 UCC 4601

- 10:00** **Review of last meeting
Distribute agenda and name cards**
- 10:10** **Begin working through descriptions of Problem Types
within the Menu provided in form used by the US Helpdesk**
- (10:10)** **Helpdesk and Helpdesk OPEN**
- (10:20)** **Tech Support**
- (10:30)** **Labs, Systems, Statistics Support**
- (10:40)** **Engineering Support (includes Dorms)**
- (10:50)** **Hostmaster, Other, CourseInfo**
- 10:55** **New Categories?**
 - **NT Admin**
 - **Classroom Support**
 - **Audio/Visual Support**
- 11:00** **Wrap up, news
(US Server purchase for Remedy ARS !!!)**

Group List – ARS

User Services

US Groups:

(Administrator)
AR Application Software
CourseInfo
CBTCampus
HelpDesk
Site Licenses
Tech Support
Training
US Mgmt

Group	User(s)
(Administrator)	Demo Jeff Bauer Ken Jadrych Nancy Kellett Caroline Kreimer (disabled acct for research purposes) Diana Orrick Craig Zody
AR Application Software	Caroline Kreimer Nancy Kellett Diana Orrick
CourseInfo	Gerardo Garcia Dany Yaker
CBTCampus	Camille Johnson Alan Stromberg Greg Tulenko Naya-Darice Ramos
Flashboard Administrator	Demo Caroline Kreimer

HelpDesk	Ronald Arestia Jason Fritz Chris Hairston Eric Hatch Ken Jadrych Danny Jordan David McDonald Carla Rhea Valerie Rivers David Sheaffer Carrie Wawrzyk Craig Zody
Site Licenses	Nancy Kellett Debbie Kelly Josh Willoughby
Tech Support	Dennis Barfield Alan Benson Tim Boerner Dave Borschel Kevin Borschel Sam Creecy Adam Deckinger Joey Ferris Bob Graves Leonard Kinerson Ethan Kromhout Lee McNeil Gayle Norris John Owen Benjamin Smith To-Ha' Tang Jeffrey Wagener Eddie Yon
Training	Camille Johnson Alan Stromberg Greg Tulenko Naya-Darice Ramos
US Mgmt	Jeff Bauer

Group List – ARS

ACNS

ACNS Groups:

System Administration

Dorms

hostmaster

Engineering Support

Networks Systems

SuperComputer

ACNS Mgmt

Statistics Support

Labs

Operators

Web Support

connect

Network Operations

Services

Systems

Tapes

User Accounts

Group

User(s)

ACNS Mgmt

Carl Baker

Robert Holden

Jim Lee

Jay Willoughby

connect

Rick Arendes

Fran Bridges

Phillip Callahan

Lee Garner

Jim Hoagland

Art Houle

Tom Kitterman

Jim Lee

Clint Ringgold

David Sammons

Scott Stursa

Rick Zeisler

Dorms	Rick Arendes Mark Benson Phillip Callahan Daron Deboer Jonathan Gans Derek Klootwyk Jim Lee Clint Ringgold Sherry Stafford Steve Tyson Rick Zeisler
Engineering Support	Rick Arendes Mark Benson Phillip Callahan Daron Deboer Jonathan Gans Jim Hoagland Derek Klootwyk Vince Lanh Jim Lee Bob Richardson Clint Ringgold David Sammons Sherry Stafford Steve Tyson Rick Zeisler
hostmaster	Fran Bridges Lee Garner Kathy Holiday Art Houle Mary Stephenson Scott Stursa
Labs	Chuck Bauer Jamie Becker Scott Brumage Earl Childers Charlene Hall Nicholas Nathans David Schrader Will Swicord Travis Zimmerman

Network Operations	Dan Allen Rick Arendes Danny Joe Burnett Phillip Callahan Jim Hoagland Kathy Holiday Jim Lee Sid McLeod David Sammons Clint Ringgold Rick Zeisler
Network Systems	Art Houle Breeze Pecorino Scott Stursa
Operators	Dan Allen Danny Joe Burnett Kathy Holiday Sid McLeod
Services	Betty Brown Robert Holden Jay Willoughby
Statistics Support	Betty Brown
SuperComputer	Robert Holden Mary Stephenson
System Administration	Fran Bridges Lee Garner Tom Kitterman Mary Stephenson Scott Stursa
Systems	Lee Garner Art Houle Tom Kitterman Mary Stephenson
Tapes	Lee Garner
User Accounts	Tom Kitterman
Web Support	Robert Holden

Problem Type Menu:

HelpDesk ➤

Internet Programs ➤

PPP Configuration
Netscape
Eudora
Outlook/Outlook Express
FTP
Telnet

Accounts ➤

New Accounts
Online Registration
Webpage
Email Questions
Class Email List
Clue Password

Reset Password ➤

Garnet
Mailer
PPP
Combo

General Information
Faculty/Staff Ethernet
Dorm Ethernet
Software Support
Network Problems
Walk-ins
Other

HelpDesk OPEN ➤ (submenus same as HelpDesk above)

- Tech Support ➡
 - Software ➡
 - Operating system
 - Application
 - Utility
 - Desktop Hardware ➡
 - Wintel
 - Apple
 - Disk ➡
 - Hard Drive
 - Floppy Disk
 - Zip Drive
 - CD ROM
 - DVD ROM
 - File Conversion
 - Server ➡
 - Novell
 - Windows NT
 - Windows 2000
 - Other
- Labs ➡
 - Administrative Support
 - Lab Prototype Development
 - Installation/Maintenance
 - Monitoring
 - Training
- System Admin ➡
 - Disk Quota
 - File Restoration
 - Accounts
 - Tape Reading
 - File Transfer
 - Other
- Statistics Support ➡
 - SPSS
 - SAS
 - Other

Engineering Support ➡

- Dorm Ethernet
- Campus Network
- Faculty/Staff Ethernet
- Hardware Troubleshooting
- Repair Issues
- Other

Dorms ➡

- Ethernet Setup
- IP Address
- Software Installation
- Hardware Installation
- Other

Hostmaster ➡

- New IP Address
- Assigned IP

Other

CourseInfo

DMO 2/21/00

Information on transition to Remedy ARS 4.5

Setting up the client user tool :

Download (Windows) new client software into a temp dir from:

`ftp://ftp2.us.fsu.edu/pub/remedy/arswut.exe`

Execute the file, arswut.exe

Follow usual instructions in set-up tool

[Add] server → ars8.us.fsu.edu
(current production server) ars.us.fsu.edu

Finish set-up and add shortcut to desktop, if desired.

Start Remedy ARS User tool.

At login window, click on Accounts button

In accounts window, top section, add your login name to list
Close Accounts window and login with password assigned.

Contact DM Orrick in order to change password, if desired.

Addendum:

Test the help feature of the tool, if it doesn't work or complains
of your machine having an older version of a file, you need to also
download this file:

`ftp://ftp2.us.fsu.edu/pub/remedy/redist.exe`

and execute. It will install several things**, be patient. Then you can use
the help files supplied in the ARS User Tool.

** see additional documents describing third party components.

Accessing the Remedy system from the web

(Probably the best means for Macintosh folks to use the ARS, sorry.)

Review the documents included, "Configuring Clients for Remedy Web" and "Using Remedy Web" (reprinted from the Remedy Web installation guide.)

More info will follow soon on pure HTML version ARWeb.

go to the site: <http://ars8.us.fsu.edu/index.html>

Try the link: Start the Remedy Web Java Applet

You may need to install the Java Plug-in, follow link on the site above.

(Mac users see additional information provided.)

At Login window, login as in the Client tool.

Or to open the form in the browser window (especially for printing!!)
Use this parameterized URL:

<http://ars8.us.fsu.edu/arj.cgi/?Dm=2&Lm=1&Tn=HD-v1.0&Tt=2&S=ars8.us.fsu.edu>

Login as before and the form should open inside the browser window.

NOTE: Remedy claims a new version of Remedy Web will be released in the third quarter of 2000. The GIGANTIC login window on parameterized URLs linked to the form dimensions will be addressed in the newer version.

Current Status on Transition to latest Remedy software

Prepared by DM Orrick - 8/19/00

Stable Server?

Remedy Tech support has identified the problem with the server and since fixes were applied, the server (ars8.us.fsu.edu) has been up and running. The server should now be accessible for all registered users.

Testing the new server form

Note: Remedy Tech support is still working on web access for Mac users, since no client tool is available. When a clearly working procedure for web access on the Mac OS is available, information will be distributed ASAP.

Now that the server accessibility problem has been solved, the new form (HD-v1.0) should be thoroughly tested prior to going full production. Understandably, this time in the semester is very busy for those folks using the Remedy ARS, so testing is expected only during lull periods. Users should install the new client software (ARS 4.5.1) and, as time permits, become familiar with the new form.

Note: the latest client tool can also be used to access the current production server (ars.us.fsu.edu).

During the week of August 21, 2000, sendmail will be set up on ars8 enabling the email notifications to be sent on entries created in the new form/server. In order not to disrupt the normal flow of work with "testing" email from the new server, the email notifications have been reset to a "Testing" group. Users wishing to verify testing on email notifications should request to be added to the Testing group for a period of time. *Note: ALL email notifications will go to the testing group. Users should notify the Remedy Administrator when to start, as well as, stop membership in the Testing group to reduce the volume of mail received as a Testing group member.*

When will we transition to the new Remedy server and form?

Considering the state of workflow during the first few weeks of the fall semester, transition to the new server and form will most likely occur during the last weeks of September. This will allow for thorough system testing with the understanding that user testing occurs only as time permits and should not be done while regular workflow demands must be met. At the point in time that the transition will occur, all affected users will be given clear, advance notice of the pending transition.

Can we access the current production server from the web?

No, the web server is installed on the new server only and does not access the current production server.

In the meantime?

Changes have been made to the form used in the current Remedy system to reflect group changes (mostly in ACNS) and the corresponding problem type categories. Additional features have been added to the form to assist the Help desk staff. *Changes on the production server have been considered carefully, but unexpected results might occur. Notify the Remedy Administrator of any actions of the system that are unexpected and the actions will be investigated immediately.*

DMO - 8/19/00

Totals and avg per day on tickets created by the Help desk staff

	REMEDY		APPROACH		COMBINED	
	total	per day**	total	per day**	total	per day**
5/99	675	21.77	473	15.26	1148	37.03
6/99	926	30.87	509	16.97	1435	47.83
7/99	685	22.10	433	13.97	1118	36.06
8/99	1506	48.58	596	19.87	2102	67.81
9/99	2231	74.37	414	13.80	2645	88.17
10/99	585	18.87	309	9.97	894	28.84
11/99	130	4.33	268	8.93	398	13.27
12/99	112	3.61	312	10.06	424	13.68
1/2000	728	23.48	372	12.00	1100	35.48
2/00	245	8.45	397	13.69	642	22.14
3/00	184	5.94	423	13.65	607	19.58
4/00	78	2.60	373	12.43	451	15.03
5/00****	47	4.70	250	25.00	297	29.70

 13261/376 days = 35.27/day

** ROUNDED UP TO TWO DECIMAL PLACES

**** THROUGH 5/10/00 ONLY

DMO 5/11/00

Breakdown of ARS trouble report totals between 8/1/99 and 5/24/00

	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Help Desk											
PPP Config	136	197	17	0	2	0	0	3	3	1	359
Reset PW											
(tot)	455	1054	272	66	56	505	95	58	26	71	2658
- Garnet	113	418	101	24	16	316	79	29	13	51	1160
- Mailer	15	9	9	6	4	17	6	6	4	3	79
- PPP	254	326	73	27	29	61	0	19	9	17	815
- Combo	73	301	89	9	7	111	10	4	0	0	604
Engineering support											
Dorm Ethernet											
9	19	16	6	3	11	6	8	2	3		83
Repair Issues											
0	0	0	0	0	1	0	0	0	0	1	2
Dorms											
Ethernet setup											
151	132	23	10	9	36	17	16	1	3		398
HW Installation											
1	6	2	0	0	2	0	0	1	0		12
										TOTAL 3512	

DMO 5/24/00

Appendix C: Forms developed

- **Original form used in Remedy ARS version 3.2**
- **Intermediate form upgraded during transition period**
- **Super-form developed for new Remedy ARS implementation**
- **Display US HelpDesk form**
- **Display US Tech Support form**
- **Display ACNS Groups form**
- **FSU_Data form**
- **CourseInfo Problem Report form**

Original form developed for use in Remedy ARS version 3.2.

Search HD-orig Search Advanced

Entg-Id **Problem Type** **Phone Number**

Status **Last Name** **First Name**

FSU
 Faculty
 Staff
 Student
 None

Department **Campus Location**

E-mail Address

Group Assigned **Priority Assigned**

Problem Description

Solutions

Current Owner **Last Action Taken**

Submitter **Create-date**

Last-modified-by **Modified-date**

Status Log

Escalated 1? No Yes **Escalated 2?** No Yes **Additional Comments**

Intermediate form upgraded from original during the transition period

The screenshot displays the 'CLK-HD (Search)' web application interface. The window title is 'CLK-HD (Search)'. The main header area contains a search icon, the text 'Search CLK-HD', a search icon with a dropdown arrow, and the word 'Advanced'. The form is organized into several sections:

- Top Section:** Includes text input fields for 'Entty-Id', 'Problem Type' (with a dropdown arrow), and 'Phone Number'.
- User Information:** Includes a 'Status' dropdown, 'Last Name' and 'First Name' text inputs.
- FSU Section:** Features radio buttons for 'Faculty', 'Staff', 'Student', and 'None'. It also includes 'Department', 'Room #', and 'Campus Location' text inputs.
- Contact Information:** Includes 'E-mail Address' and 'Vendor Contact' text inputs.
- Time and Request Details:** Includes 'Actual completion time', 'Elapsed time to complete', and 'Work request #' text inputs, each with a small '...' button.
- Assignment and Priority:** Includes 'Group Assigned' (dropdown), 'Priority Assigned' (dropdown), and 'Estimated completion time' (text input with '...' button).
- Description and Solutions:** Includes a large 'Problem Description' text area and a 'Solutions' text area, both with '...' buttons.
- Ownership and Action:** Includes 'Current Owner' (dropdown) and 'Last Action Taken' (dropdown).
- Submission and Modification:** Includes 'Submitter' text input, 'Create-date' (text input with '...' button), 'Last-modified-by' text input, and 'Modified-date' (text input with '...' button).
- Status and Comments:** Includes a 'Status Log' text area with a small icon, and 'Escalated 1?' and 'Escalated 2?' sections, each with radio buttons for 'No' and 'Yes'. It also features an 'Additional Comments' text input with a '...' button.

Super-form developed for new Remedy ARS implementation

HD-v1.0 [Search]

Search HD-v1.0

FSU Identification **UPDATE** Last Name First Name

FSU Faculty Staff
 Student None E-mail Address Phone Number

Department Room # Building Identification Bldg Code #

Entry-Id Problem Type Group Assigned

User Services | ACNS | CourseInfo | FSU@Home

Internet Progs | Accts | Passwd | General Info | Hardware Brand Operating System

Software | Campus Net | SysDown | Source of Contact: Priority Assigned Status

Garnet Mailer Admin PPP

Problem Description

Solutions Additional Comments

Current Owner Last Action Taken Elapsed time (ARS)

User Create-date Last-modified-by Modified-date

Submitter Status Log

Display US HelpDesk form

The screenshot shows a web application window titled "Display US HelpDesk (Search)". The main heading is "User Services Help Desk Display". Below the heading are several filter tabs: "UNASSIGNED", "OPEN", "Over 24 hrs", "Other (US Groups)", and "ALL (HelpDesk)". The "ALL (HelpDesk)" tab is currently selected. Below the filters is a table with the following columns: "Create-date", "Entry-Id", "Submitter", "Problem Type", "Priority", and "Status". The table contains seven rows of data.

Create-date	Entry-Id	Submitter	Problem Type	Priority	Status
10/25/00 3:57:25 P	000000000000420	Hatch, Eric	ARS:AR Application Software	Low	New
10/23/00 1:10:10 P	000000000000340	Orrick, Diana	ARS:AR Application Software	Low	Closed
10/18/00 5:36:58 P	000000000000275	orrick	ARS:AR Application Software	Low	Closed
10/18/00 3:13:52 P	000000000000274		ARS:AR Application Software	Low	Closed
10/18/00 3:13:51 P	000000000000273		ARS:AR Application Software	Low	Closed
10/18/00 3:02:31 P	000000000000272		ARS:AR Application Software	Low	Closed
10/18/00 12:59:49	000000000000266		ARS:AR Application Software	Low	Assigned - Grp
8/26/00 3:24:21 PM	000000000000077		ARS:AR Application Software	Low	Assigned - Grp

Display US Tech Support form

Display US Tech Support (Search)

Search Display US Tech Support Search Advanced

User Services Tech Support Display

UNASSIGNED OPEN CRITICAL PRIORITY LATE ALL (US Tech Support)

Current Owner	Create date	Priority	Last Name	Department	Location	Op System	Hardware
Inoneil	10/16/00 2:46:38 PM	Pending	Cuevas	HOUSING	Student Life Building	WinNT	CCC
Jemis	10/18/00 11:00:53 AM	Scheduled	Crawford	Controller - Property	Woodward Warehouse	WinNT	CCC
kinerson	10/26/00 9:39:51 AM	Scheduled	Tata	MULTICULT STUDENT	UCA Oglesby Union - D	Unknown	Unknown
bgraves	10/26/00 3:29:54 PM	Pending	Geren	Dean of Students	University Center, Bldg.	Unknown	Unknown
Inoneil	10/30/00 1:32:06 PM	Low	Cho	Center for Civic Education	Off Campus	WinNT	CCC
screepy	10/31/00 10:08:28 AM	Medium	Young	FSU RESEARCH FOUN	RMJ	WinNT	Dell
dnoris	11/3/00 9:09:44 AM	Pending	Calzado	MEDIA RELATIONS	WES	Macintosh 7.5	Apple
kjadych	11/6/00 8:21:56 AM	Medium	Rodriguez	Public Safety	FAMU-FSU College of E	Win95/98	CCC
albertson	11/8/00 1:02:48 PM	Scheduled	Patterson	Financial Aid	UCA	Unknown	Unknown
jowen	11/8/00 3:12:09 PM	Scheduled	Ulrich	INSPECTOR GENERAL	WES	Win2000	Dell
dnoris	11/8/00 3:37:34 PM	Low	Abele	VP ACADEMIC AFFAIRS	WES	Macintosh 8.6	Apple
jowen	11/13/00 9:51:38 AM	Medium	Ulrich	INSPECTOR GENERAL	WES	Unknown	Unknown
dborschel	11/13/00 4:54:38 PM	Low	Jackson	DEAN OF STUDENTS	UCA	Win95/98	Dell
jowen	11/14/00 9:43:08 AM	Scheduled	Powers	VP FOR RESEARCH	WES	Unknown	Unknown
nheuer	11/14/00 10:39:43 AM	Scheduled	Mulford	PERSONNEL SERVICES	UCA	Unknown	Unknown
Inoneil	11/15/00 9:59:03 AM	Medium	Essig	HEALTH SERVICES	Lands Hall	WinNT	CCC
jowen	11/15/00 11:10:12 AM	Medium	Ulrich	INSPECTOR GENERAL	WES	WinNT	Dell
jowen	11/15/00 1:28:55 PM	Medium	Chason	SPONSORED RESEARC	HMB Westcott Building	Win95/98	Dell
jowen	11/15/00 1:33:43 PM	Pending	Powers	VP FOR RESEARCH	WES	Printers/Scan	Unknown
chart	11/15/00 1:44:02 PM	Low	Bakan	SCHOOL OF MUSIC	HMU	Printers/Scan	Apple
ekromhout	11/15/00 2:13:12 PM	Medium	Rackley	UNDERGRADUATE ST	UCA	Unknown	Unknown
jowen	11/15/00 9:20:48 AM	Low	Reynolds	VP STUDENT AFFAIRS	WES	Unknown	Unknown

Display ACNS Groups form

Academic Computing & Network Services Display

[Dialup Troubleshooting](#) |
 [Engineering Support](#) |
 [Labs](#) |
 [NT Admin](#) |
 [Network](#) |
 [Statistics](#) |
 [UNIK System Admin](#) |
 [ACNS \(ALL GROUPS\)](#)

Create Date	Entry Id	Last Name	Phone Number	Campus Location	Problem Type	Priority	Status
11/20/00 12:41:3	000000000000093	Bience	853-3315	Lands Hall - LAN	ES:DHCP/IP Issu	Low	New
11/20/00 12:37:3	000000000000091	Alphonse	853-2531	Doman Hall - DD	ES:Ethernet Setu	Low	New
11/17/00 12:30:1	000000000000091	Huffmanmaster	(850) 644-0336	MCH	ES:Building/LAN I	Medium	New
11/16/00 1:05:05	000000000000089	Talley	853-3541	Kellum Hall - KEL	ES:DHCP/IP Issu	Medium	New
11/15/00 2:58:53	000000000000088	Raym	853-1944	Jennie Murphee	ES:DHCP/IP Issu	Low	New
11/15/00 12:42:4	000000000000087	Snyder	853-2701	Salley Hall - SAL	ES:Building/LAN I	Low	Claimed - Indv
11/13/00 5:30:35	000000000000080	Maropodi	853-2263	Cawthon Hall - CA	ES:Building/LAN I	Low	New

FSU_Data form

FSU_Data (Search) Search FSU_Data Search Advanced

Last Name First Name

Phone Number Email Address

Department Updated? Yes No

Room# Building

Request ID

Submitter

Create Date ...

Assigned To

Last Modified By

Modified Date ...

Status New Assigned Fixed Rejected Closed

Short Description ...

CourseInfo Problem Report form

The screenshot shows a web browser window titled "CourseInfoProbReport (Search)". The page header includes "Search CourseInfoProbReport" and a "Search" button with a dropdown arrow and the word "Advanced".

The main heading is "CourseInfo Problem Report". To the right, there is a text instruction: "Click the button below to start a guide that will take you through entering information into this form." Below this is a button labeled "Start form guide".

A note states: "NOTE: Bold Type indicates a required field".

There are three tabs: "General Information" (selected), "Computer Information", and "Admin Information".

The form fields include:

- Last Name:
- First Name:
- Primary email Address:
- Phone:
- FSU email Address: *please include area code*
- Prefix & Course Number:
- Section Number:
- Role in Course:
- Problem category:

A large text area is labeled "Describe the problem:" with a small "..." button to its right.

At the bottom, there is a "NEXT >" button and the text "Please continue to the next section of the form."

Appendix D: Training materials

- **User Services Introduction to Remedy Action Request System (ARS)**
- **Procedure for incorporating customized background colors into ARS 4.0 Client**
- **OTC instructions for using the User Services Helpdesk form**
- **Context Sensitive Help Text of the HD-v1.0 form of the ARS System**
- **Administrative Help Text documentation of the User Services ARS implementation**
- **Exercises in Using the Remedy ARS Client Tool version 4.5.1**
- **Creating a report in the Remedy ARS 4.5 Client tool**
- **Procedure for executing a search within Remedy ARS**
- **Duplicating a ticket entry within Remedy ARS**

The User Services

Introduction to

Remedy Action Request System (ARS)

Wednesday, August 2, 2000

**Diana Orrick
FSU User Services**

New HD-v1.0

FSU Identification **SEEK**

Last Name **First Name**

FSU Faculty Staff
 Student None

E-mail Address **Phone Number**

Department **Room #** **Building Identification** Bldg Code #

Entry-Id **Problem Type** **Group Assigned**

User Services | ACNS | CourseInfo | FSU@Home

Hardware Brand **Operating System** Priority Assigned **Status** **AutoClose**

Problem Description

Solutions Additional Comments

Current Owner Last Action Taken Elapsed time (ARS)

Submitter *Create-date* *Last-modified-by* *Modified-date*

Top View of form >>—> HD-v1.0

Bold type indicates REQUIRED Field

Last Name **First Name**
E-mail Address **Phone Number**
Room # **Building Identification** **Bldg Code #**
Problem Type **Group Assigned** Tech Support
 Helpdesk ACNS
 Tech Support User Services
 FSU@Home CourseInfo
 CourseInfo OTC (FSU@Home)
 Dialup Troubleshooting HelpDesk
 Engineering Support Training
 Hostmaster Site Licenses
 NT Admin AR Application Software
 Network US Management
 Statistics
 UNIX System Admin
 Labs
 Classrooms
Status New
 Additional Comments

Problem types and group assignments are made through drop-down menus with multiple tiers.

**Choosing a problem type will auto assign the group.
(Group assignments can be changed as needed.)**

Problem type and group assignment fires an "active link" that brings the appropriate page tab forward automatically.

US Tech Support tickets will be completed under the User Services page tab.

Hardware Brand and Operating System fields have been added as required fields.

Priority Assignment follows the previous scale used by US Tech Support.
(Default values highlighted.)

<p>Status:</p> <p>New</p> <p>Assigned - Grp</p> <p>Assigned - Indv</p> <p>Referred</p> <p>Closed</p>	<p>new ticket creation</p> <p>assigned to a group</p> <p>assigned to an individual</p> <p>problem referred to outside party, vendor, etc.</p> <p>ticket problem resolved and entry closed</p> <p>(Note: after ticket closure, no new data allowed)</p>
--	--

Remember to consider security when filling out solutions as the information may be posted later to a knowledge base for general users to access for self-help.
Information in the Additional Comments field will NOT post to the knowledge base.

Current Owner Last Action Taken Elapsed time (ARS)

Submitter Create-date Last-modified-by Modified-date

Status Log

Helpdesk [US Tech Support](#) [-ACNS-](#) [-CourseInfo-](#) [-FSU@Home-](#) [ALL \(TOTAL\)](#) [\\$USER\\$](#)

UNASSIGNED | OPEN | CRITICAL | LATE | ALL (US Tech)

Entrv-Id	Name	Building	Problem Type	Op System	Priority
00000000000000000000	test10	Love	DT: Dialup Trou	Win95/98	Low
00000000000000000000	test	Love	TS: Tech Suppo	WinNT	Low
00000000000000000000	bleh	Someplace	TS: Tech Suppo	Win95/98	High
00000000000000000000	bleh	Love	TS: Tech Suppo	Win95/98	Low
00000000000000000000	pffft	Keene	TS: Tech Suppo	Win95/98	Low
00000000000000000000	testing	UCC	TS: Tech Suppo	Win95/98	Low
00000000000000000000	bleh	Love	TS: Tech Suppo	Macintosh	Low
00000000000000000000	test	Love	TS: Tech Suppo	Macintosh	Low
00000000000000000000	test	MFCH	TS: Tech Suppo	Win95/98	Low

Bottom view of form >>—> HD-v1.0

Current Owner Last Action Taken

Submitter create-date Last-modified-by

Status Log

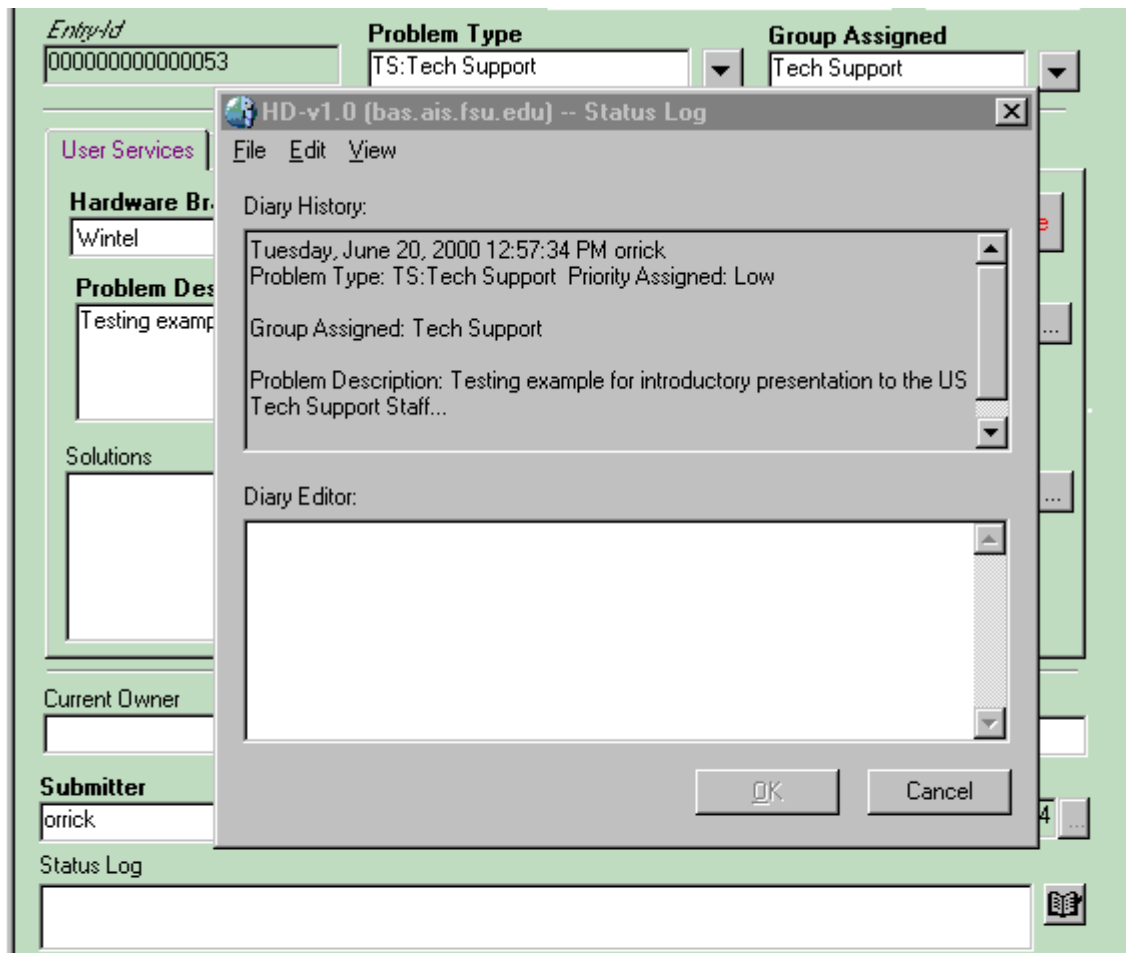
Helpdesk

UNASS

AL LATE ALL (US Tech)

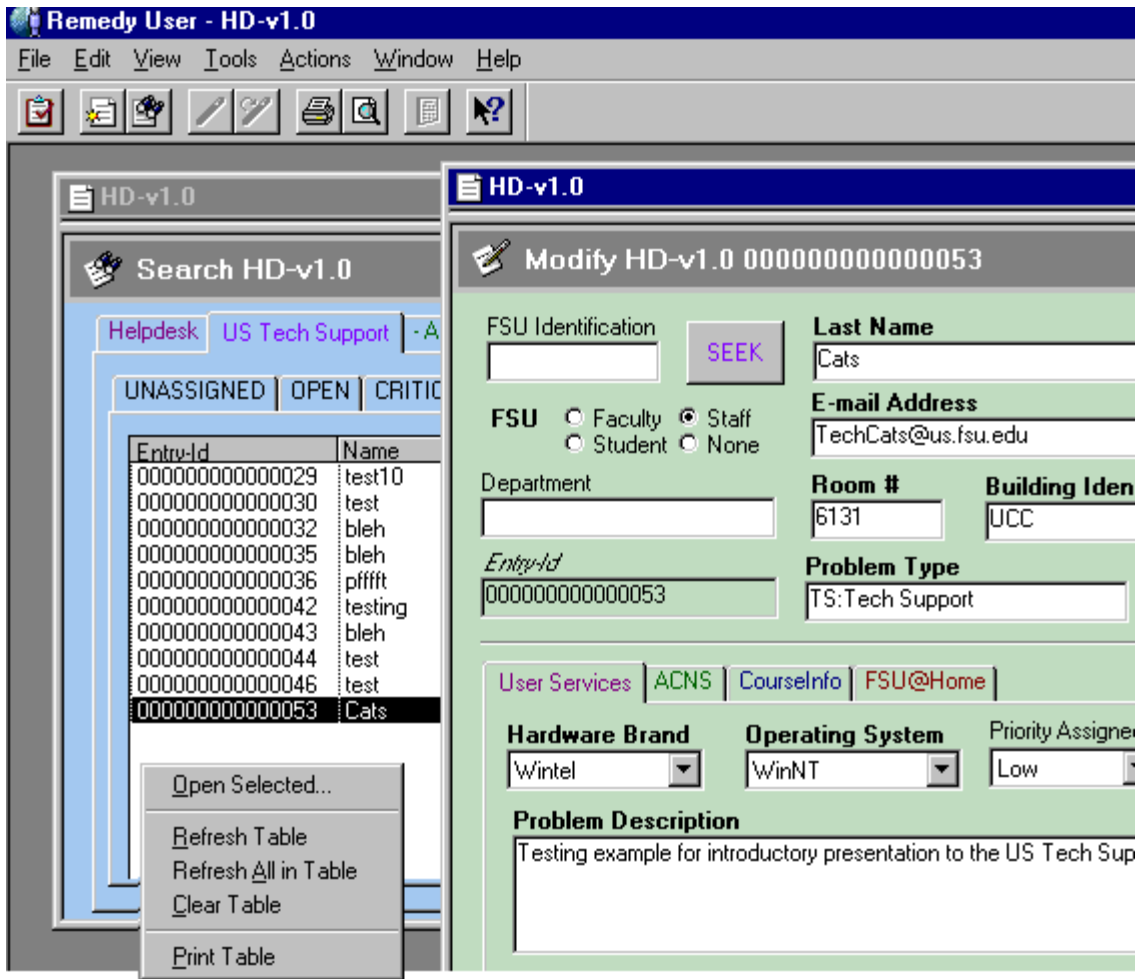
Entry-I	Building	Problem Type
00000	Love	DT:Dialup Troubleshooting
00000	Love	TS:Tech Support
00000	Someplace	TS:Tech Support
00000	Love	TS:Tech Support
00000	Keene	TS:Tech Support
00000	UCC	TS:Tech Support
00000	Love	TS:Tech Support
00000	Love	TS:Tech Support
00000	MFCH	TS:Tech Support
00000	UCC	TS:Tech Support

Assistant Director Bob Graves will continue to make assignments to tickets through the current owner field on the form.



The Status log field will hold a history of events on the particular ticket entry.

The system will auto post certain events and the Diary editor allows manual entry of information to the Status Log. (Once entered, cannot be removed/edited.)



There are a few ways to view ticket assignments in the form.

Simple Search

Spreadsheet view tabs at the bottom of the form

\$USER\$ view tab displays your assignments quickly

(Double click on a row and the full ticket is brought up.)

(Right click in the table field and the refresh options appear.)

Notable News:

- 1) Lotus Approach will be phased out by Mid August. For more information on Remedy Corp and Remedy products see, www.remedy.com**
- 2) Testing the new form functions will begin soon and you will be notified. This will include web access.**
- 3) All suggestions/comments/complaints welcome as we transition into full ARS mode.**
- 4) Contact D Orrick at 645-4691 or dorrick@us.fsu.edu**

Procedure for incorporating customized background colors into ARS 4.0 Client

This procedure outlines a method for using custom background colors set in the ARS Client 3.2 or 3.2.1 in the ARS 4.0 Client. (The ability for the user to set the colors was removed with the release of ARS Client 4.0 as a result of surveyed responses by ARS admins that users shouldn't have that much control, go figure.)

This procedure assumes the user has the ARUser 3.2 or ARUser 3.2.1 Client tool for use with ARS. (If not, the tool can be downloaded from [ftp://ftp.remedy.com/outgoing/patch88](http://ftp.remedy.com/outgoing/patch88)).

Open the 3.2.x tool

Under [File] choose [Preferences]
Choose the [Colors] tab

Using the [Select the Window Type] and [Color Attribute for Selected Window] drop lists, make choices on color assignments to be preferred. (May wish to experiment viewing a form or two to check final preferences.)

Once the color choices have been decided locate (and open for viewing) the ar.ini file (file type "Configuration Settings") in the C:\HOME directory where the ARUser 3.2.x tool installed. You should find a segment that looks like this:

```
[BackgroundColor]
Customize Default Window=164 200 240,0 0 0,255 255 255,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
Customize View Window=192 220 192,0 0 0,255 255 255,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
Display Window=255 255 255,0 0 0,255 255 255,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
Modify All Window=0 128 128,128 128 128,255 255 232,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
Modify Individual Window=192 220 192,0 0 0,255 255 232,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
Report Window=192 220 192,128 128 128,255 255 255,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
Ribbon Window=192 192 192
Submit Window=192 220 192,0 0 0,255 251 240,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
QueryBarColor=192 192 192,128 128 128,255 255 255,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
Query List Window=255 255 232,128 128 128,255 255 255,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
Query Window=164 200 240,0 0 0,255 255 255,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
Query Bar=192 192 192,255 255 255,255 255 255,255 255 255,255 255 255,255 255,255 255,255 255,255 255,255 255,255 255
Admin Window=192 220 192,0 0 0,255 255 255,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
```

Copy this segment of code from the ar.ini file.

Now locate (and open for viewing) the ar.ini file for the ARUser 4.0 client tool in C:/Program Files/Remedy/Home/ directory. Find a place within the file to add the segment copied from the previous ar.ini file for ARUser 3.2.x. Under the header segment

Add the segment between another segment, not within a segment. Segments are separated by "headers" enclosed in brackets [SAMPLE].

Add this line:

UseBackgroundColor key:1

Example:

```
[BackgroundColor]
UseBackgroundColor key:1
Customize Default Window=164 200 240,0 0 0,255 255 255,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
Customize View Window=192 220 192,0 0 0,255 255 255,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
Display Window=255 255 255,0 0 0,255 255 255,0 0 0,0 0 0,128 128 128,192 192 192,0 0 0,0 128 128
.
.
.
```

Restart the ARUser 4.0 tool and the color preferences should take effect. If color changes are desired, follow the same procedure after choosing and setting new color preferences.

This procedure was communicated to DM Orrick from a Remedy Corp. technician.

- DMO 5/11/00

Office of Telecommunications - OTC Instructions for using the User Services Helpdesk Form

These procedures allow for the OTC representative to recall OTC-related requests that have been entered into the US Helpdesk request system. The OTC representative can then view all OTC requests in the system, add solution information to conclude a particular request in the system, and close the request after a resolution has been entered.

- 1) Open the CLK-HD form in the "Aruser" Client application**
- 2) From the Menu bar at the top, choose "File" > "Search for" > "CLK-HD"
(this will open the form currently used by the User Services Help desk)**
- 3) Within the form, under "Problem type", choose "FSU@Home"**
- 4) From the Search bar, click on "Search"
(This will produce a list of all requests logged by the US Helpdesk related to the Problem Type> FSU@Home.)**
- 5) Note the resulting listings shown at the top of Search window.
The Status column will reflect whether a request is "New", "Assigned", or "Closed"**
- 6) Click on a particular request to view in the form display.**
- 7) Add solution/resolution information to the "Solution" text box.**
- 8) Change the "Status" to "Closed" if a solution has been entered.**
- 9) Click on "Save" in the Search window bar.
(This will reflect to users of the system that the particular request has been resolved and the "ticket" closed.)**

DMO 4/12/00

Context Sensitive Help Text of the HD-v1.0 form of the ARS System

Prepared by DM Orrick 7/9/00, modified 8/1/00; 9/20/00

FSU Identification

The FSU Identification field holds information used as a key to assist in pulling identification information from FSU databases.

The database information is used to auto-fill the identity portion of the HD-v1.0 form.

Character field, input length 25, no default value.

UPDATE button

The UPDATE Button of the form is used to update the FSU_Data form with new identification information following a search on the faculty/staff/admin data. The fields available for update include First Name, Last Name, Phone Number, Email Address, Department, Room# and Campus Building.

Last Name

The Last Name field holds the last or surname of the person reporting the problem.

This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 25, no default value.

First Name

The First Name field holds the first name of the person reporting the problem.

This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 25, no default value.

FSU

The FSU field is used to identify the relationship the person reporting the problem has to Florida State University.

This is a required field and a choice must be made in order to submit the ticket entry into the ARS system.

Radio button, selection type data field, no default value.

E-mail Address

The E-mail address field of the form holds the electronic mail address of the person reporting the problem.

This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 40, no default value.

Phone Number

The Phone Number field holds the phone number of the person reporting the problem.

This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 15, no default value.

Department

The Department field of the form holds information related to the university department associated with the person reporting the problem.

This information assists Technical Support personnel in locating the person should a site visit be required. This is an optional field and is not required to be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 25, no default value.

Room #

The Room # field of the form is used to identify the room number of the building where the person reporting the problem works, lives, or otherwise experiencing the problem they are reporting.

This information assists Technical Support personnel in locating the person should a site visit be required. This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 6, no default value.

Building Identification

The Building Identification field of the form is used to identify the building where the person reporting the problem works, lives, or is otherwise experiencing the problem they are reporting.

A drop-down list is available to use to choose frequently accessed buildings on campus, otherwise buildings not in the list can be entered manually. Note: Off-Campus is also available as a location choice.

This information assists Technical Support personnel in locating the person should a site visit be required. This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 25, no default value.

Bldg Code #

The Building Code # field of the form is used to identify the building where the person reporting the problem works, lives, or otherwise experiencing the problem they are reporting.

The alphanumeric code number is associated with the NWFDC codes assigned to buildings under FSU administration. The information assists ACNS technologically advanced classroom support personnel in locating the problem should a site visit be required. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 10, no default value.

Entry-Id

The Entry-Id field of the form holds the unique ticket entry number assigned by the ARS system to the entry.

This field is automatically filled by the system and cannot be modified by users of the system.

Character field, input length 15, no default value.

Problem Type

The Problem Type field of the form is used to identify the type of problem being reported.

The field is displayed as a drop-down menu (HD-Problem Type Menu). The menu is divided according to the support groups within US, ACNS, OTC, and ODDL. Choosing a problem type causes the system to execute an automatic selection in the Group Assigned field. This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Drop-down menu list, input length 30, no default value.

Group Assigned

The Group Assigned field of the form designates the group that will be handling the resolution of the problem being reported.

The field is auto-selected when a choice is made in the Problem Type field, but can also be modified should the group assignment require changing on the problem report. The field is displayed as a drop-down menu (HD-Groups Menu). A selection in the Group Assigned field causes the assigned support group tab page to be brought forward. A group assignment also auto-changes the Status field in the tab page to "Assigned - Grp" from "New". This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Drop-down menu list, input length 30, default value "HelpDesk".

User Services (tab page)

The User Services tab page holds the information required by the User Services support staffs to address the problem being reported by the user. (Includes HelpDesk, Tech Support, Training, Site Licensing, and AR Application software). In addition to fields to be filled, there are quick-close buttons (visible only to the HelpDesk staff) that provide a fast means to fill the form for frequently encountered questions/problems.

Hardware Brand

The Hardware Brand field of the User Services tab page is used to identify the brand of hardware in use by the user reporting the problem.

The field is displayed as a drop-down list of choices. If the information does not appear in the list provided, "Other, please specify" is chosen and the specifics included in the Problem Description field. This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, no default value.

Operating System

The Operating System field of the User Services tab page is used to identify the computer operating system in use by the user reporting the problem.

The field is displayed as a drop-down list of choices. If the information does not appear in the list provided, "Other, please specify" is chosen and the specifics included in the Problem Description field. This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, no default value.

Source of Contact

The Source of Contact field of the User Services tab page is used to identify the method used by the user to report the problem.

The field is displayed as a drop-down list of choices. The field assists in gathering data on how users report problems to the HelpDesk staff. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, default value "Telephone".

Priority Assigned

The Priority Assigned field of the User Services tab page is used to identify the priority level for resolution of the problem.

The field is displayed as a drop-down list of choices. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, default value "Low".

Status

The Status field of the User Services tab page is used to identify the status of the problem resolution.

The field is displayed as a drop-down list of choices. The field is auto-changed to "Assigned - Grp" when a group assignment selection is made from the Group Assigned field. The field is auto-changed to "Claimed - Indv" when a selection is made from the Current Owner list. There is another status value, "Referred", that is used when the problem has required referral to an outside vendor for resolution. When the status of the ticket entry becomes "Closed" no more modifications can be made to the ticket entry. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, default value "New".

Problem Description

The Problem Description field of the form holds the information describing the details of the problem reported by the user.

The information assists support personnel in understanding the problem reported. Clicking on the small box to the right of the field [...] brings up an editing window. This window allows for entering/viewing the information that does not fit in the viewing area of the field on the form. This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 580, no default value.

Solutions

The Solutions field of the form holds the information describing the details of the solution to the reported problem.

The information assists support personnel in understanding how the problem was solved. Clicking on the small box to the right of the field [...] brings up an editing window. This window allows for entering/viewing the information that does not fit in the viewing area of the field on the form. The system will require a solution to be entered before closing a ticket entry, but is not required for ticket entry submission.

Character field, input length 580, no default value.

Additional Comments

The Additional Comments field of the form provides an area of the form for support personnel to add additional notes to the progress of the problem resolution.

The information assists support personnel in understanding the progress of how the problem was solved. Clicking on the small box to the right of the field [...] brings up an editing window. This window allows for entering/viewing the information that does not fit in the viewing area of the field on the form. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 255, no default value.

Garnet radio button

The Garnet radio button is an independent choice for indicating a password reset for the Garnet domain.

The button is only visible on the form to HelpDesk staff members. The Mailer, Admin and PPP radio buttons work similarly. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Radio-button field, no default setting.

Mailer radio button

The Mailer radio button is an independent choice for indicating a password reset for the Mailer domain.

The button is only visible on the form to HelpDesk staff members. The Garnet, Admin and PPP radio buttons work similarly. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Radio-button field, no default value.

Admin radio button

The Admin radio button is an independent choice for indicating a password reset for the Admin domain.

The button is only visible on the form to HelpDesk staff members. The Garnet, Mailer and PPP radio buttons work similarly. Optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Radio-button field, no default setting.

PPP radio button

The PPP radio button is an independent choice for indicating a password reset for PPP accounts.

The button is only visible on the form to HelpDesk staff members. The Garnet, Mailer and Admin radio buttons work similarly. Optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Radio-button field, no default setting.

Internet Progs button

The Internet Progs button on the form is provided to quickly create and close an entry in situations where the user contacting the HelpDesk staff is requesting information relating to the use of programs/applications that involve Internet access.

The button is only visible on the form to HelpDesk staff members.

The action of the button sets field values automatically through the firing of the HD_AutoInternetProgs_Button active link.

Accts button

The Accts button on the form is provided to quickly create and close an entry in situations where the user contacting the HelpDesk staff is requesting information about their campus computer account (except password resets).

The button is only visible on the form to HelpDesk staff members.

The action of the button sets field values automatically through the firing of the HD_AutoAccts_Button active link.

Passwd button

The Passwd button on the form is provided to quickly create and close an entry in situations where the user contacting the HelpDesk staff is reporting a password access problem.

The button is only visible on the form to HelpDesk staff members.

The action of the button sets field values automatically through the firing of the HD_AutoPasswd_Button active link.

General Info button

The General Info button on the form is provided to quickly create and close an entry in situations where the user contacting the HelpDesk staff is requesting general information.

The button is only visible on the form to HelpDesk staff members.

The action of the button sets field values automatically through the firing of the HD_AutoInfo_Button active link.

Software button

The Software button on the form is provided to quickly create and close an entry in situations where the user contacting the HelpDesk staff is requesting information on software applications/programs (not involving the Internet).

The button is only visible on the form to HelpDesk staff members.

The action of the button sets field values automatically through the firing of the HD_AutoSoftware_Button active link.

Campus Net Button

The Campus Net button on the form is provided to quickly create and close an entry in situations where the user contacting the HelpDesk staff is requesting information on a campus network related problems.

The button is only visible on the form to HelpDesk staff members.

The action of the button sets field values automatically through the firing of the HD_AutoCampusNet_Button active link.

SysDown Button

The SysDown button on the form is provided to quickly create and close an entry in situations where the user contacting the HelpDesk staff is requesting information on a system being down.

The button is only visible on the form to HelpDesk staff members.

The action of the button sets field values automatically through the firing of the HD_AutoSysDown_Button active link.

ACNS (tab page)

The ACNS tab page holds the information required by the ACNS support staffs to address the problem being reported by the user. (Includes Dialup Troubleshooting, Engineering Support, Hostmaster, NT Admin, Network, Statistics, UNIX System Admin, Labs, and Classrooms.). In addition to fields to be filled, there is a quick-entry button, Dorms, (visible only to the HelpDesk staff) that provides a fast means to partially fill the form for dorm setup problem reports.

Hardware Brand

The Hardware Brand field of the ACNS tab page is used to identify the brand of hardware in use by the user reporting the problem.

The field is displayed as a drop-down list of choices. If the information does not appear in the list provided, "Other, please specify" is chosen and the specifics included in the Problem Description field. This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, no default value.

Operating System

The Operating System field of the ACNS tab page is used to identify the computer operating system in use by the user reporting the problem.

The field is displayed as a drop-down list of choices. If the information does not appear in the list provided, "Other, please specify" is chosen and the specifics included in the Problem Description field. This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, no default value.

Computer/Vendor #

The Computer/Vendor # field of the form holds a reference number for a computer or a particular vendor.

The field is used by the Labs and Classrooms groups within ACNS to record reference numbers assigned to computers (especially in lab situations) or vendor ID numbers when a problem has been referred to an outside vendor for resolution (ordering parts, software, etc.). This is an optional field and is not required to be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 15, no default value.

Work Report #

The Work Report # field of the form holds a reference number to a work entry recorded by the Building and Maintenance department of Florida State University.

The field is used by the Labs and Classrooms groups within ACNS to record work report numbers assigned by FSU Building Maintenance for problems reported outside the technical support area. Those problems might include electrical outlets, broken fixtures, etc. While the ARS ticket entry is being resolved, the field provides information for contacting Building Maintenance with a reference number for follow-up on the problems reported. This is an optional field and is not required to be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 15, no default value.

Problem Description

The Problem Description field of the form holds the information describing the details of the problem reported by the user.

The information assists support personnel in understanding the problem reported. Clicking on the small box to the right of the field [...] brings up an editing window. This window allows for entering/viewing the information that does not fit in the viewing area of the field on the form.

This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 580, no default value.

Priority Assigned

The Priority Assigned field of the ACNS tab page is used to identify the priority level for resolution of the problem.

The field is displayed as a drop-down list of choices. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, default value "Low".

Status

The Status field of the ACNS tab page is used to identify the status of the problem resolution.

The field is displayed as a drop-down list of choices. The field is auto-changed to "Assigned - Grp" when a group assignment selection is made from the Group Assigned field. The field is auto-changed to "Claimed - Indv" when a selection is made from the Current Owner list. There is another status value, "Referred", that is used when the problem has required referral to an outside vendor for resolution. When the status of the ticket entry becomes "Closed" no more modifications can be made to the ticket entry. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, default value "New".

Solutions

The Solutions field of the form holds the information describing the details of the solution to the reported problem.

The information assists support personnel in understanding how the problem was solved. Clicking on the small box to the right of the field [...] brings up an editing window. This window allows for entering/viewing the information that does not fit in the viewing area of the field on the form. The system will require a solution to be entered before closing a ticket entry, but is not required for ticket entry submission.

Character field, input length 580, no default value.

Additional Comments

The Additional Comments field of the form provides an area of the form for support personnel to add additional notes to the progress of the problem resolution.

The information assists support personnel in understanding the progress of how the problem was solved. Clicking on the small box to the right of the field [...] brings up an editing window. This

window allows for entering/viewing the information that does not fit in the viewing area of the field on the form. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 255, no default value.

Dorms button

The Dorms button on the form is provided to quickly create an entry in situations where the user contacting the HelpDesk staff is requesting information about dorm hall computer setup.

The button is only visible on the form to HelpDesk staff members. The button action does not set the Hardware Brand and Operating System fields, however, the HelpDesk staff member will need to set those required fields in order to submit the entry. Note: the auto-action fills the fields below and initiates notification to ACNS Engineering Support. It does not close the entry.

The action of the button sets these field values automatically:

Submitter:

<person creating the ticket entry>

Problem Description:

"User requested information on dorm ethernet setup."

Priority: Low

Status Log: "Auto entry on Ethernet setup problem."

CourseInfo (tab page)

The CourseInfo tab page holds the information required by the Office of Distributed and Distance Learning (ODDL) CourseInfo support staff to address the problem being reported by the user. This tab page has been designed to include the information required by the CourseInfo support staff to address problems reported by users of the Distance Learning system at FSU.

Prefix & Course #

The Prefix & Course # field of the form holds course information for the person within the Distance Learning system that is reporting the problem.

This is a required field and information must be provided in order to submit the ticket entry into the ARS system for a CourseInfo related problem report. The information should include a prefix and course number similar to: CGS2030. However, when ticket entries are created for non-CourseInfo groups in the system, this field is auto-filled with "n-a" (not applicable) to prevent the ticket entry from snagging on successful submission.

Character field, input length 20, no default value.

Sec #

The Sec # field of the form holds course section number information for the person within the Distance Learning system that is reporting the problem.

This is a required field and information must be provided in order to submit the ticket entry into the ARS system for a CourseInfo related problem report. The information should include a section number. However, when ticket entries are created for non-CourseInfo groups in the system, this field is auto-filled with "n-a" (not applicable) to prevent the ticket entry from snagging on successful submission.

Character field, input length 10, no default value.

Role in Course

The Role in Course field of the form holds information relating to the role of the person in the Distance Learning system reporting the problem.

The field displays a drop-down list of choices to identify the person's role and assists CourseInfo support staff in resolving the problem being reported. This is a required field and a choice must be made in order to submit the ticket entry into the ARS system for a CourseInfo related problem report. However, when ticket entries are created for non-CourseInfo groups in the system, this field is auto-filled with "n-a" (not applicable) to prevent the ticket entry from snagging on successful submission.

Drop-down list, selection-type data field, no default value.

Area Code

The Area Code field of the form holds additional telephone information for the person within the Distance Learning system that is reporting the problem.

This is a required field and information must be provided in order to submit the ticket entry into the ARS system for a CourseInfo related problem report. The information should include the area code for the location from which they normally access the CourseInfo system. However, when ticket entries are created for non-CourseInfo groups in the system, this field is auto-filled with "n-a" (not applicable) to prevent the ticket entry from snagging on successful submission.

Character field, input length 5, no default value.

Op System

The Operating System field of the CourseInfo tab page is used to identify the computer operating system in use by the Distance Learning user reporting the problem.

The field is displayed as a drop-down list of choices. This is a required field and must be filled out in order to submit the ticket entry into the ARS system. However, when ticket entries are created for non-CourseInfo groups in the system, this field is auto-filled with "n-a" (not applicable) to prevent the ticket entry from snagging on successful submission.

Drop-down list, selection-type data field, default value, "Windows 95/98".

Browser

The Browser field of the form holds information relating to the Internet browser used by the person in the Distance Learning system reporting the problem.

The field displays a drop-down list of choices to identify the browser type and assists CourseInfo support staff in resolving the problem being reported. This is a required field and a choice must be made in order to submit the ticket entry into the ARS system for a CourseInfo related problem report. However, when ticket entries are created for non-CourseInfo groups in the system, this field is auto-filled with "n-a" (not applicable) to prevent the ticket entry from snagging on successful submission.

Drop-down list, selection-type data field, default value, "Netscape 4.0 or later".

Problem Category

The Problem Category field of the form holds information relating to possible categories of problems faced by the person in the Distance Learning system reporting difficulties.

The field displays a drop-down list of choices to identify the problem category and assists CourseInfo support staff in preparing to resolve the problem being reported. This is a required field and a choice must be made in order to submit the ticket entry into the ARS system for a CourseInfo related problem report. However, when ticket entries are created for non-CourseInfo groups in the system, this field is auto-filled with "n-a" (not applicable) to prevent the ticket entry from snagging on successful submission.

Drop-down list, selection-type data field, no default value.

Priority Assigned

The Priority Assigned field of the CourseInfo tab page is used to identify the priority level for resolution of the problem.

The field is displayed as a drop-down list of choices. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, default value "Low".

Status

The Status field of the CourseInfo tab page is used to identify the status of the problem resolution.

The field is displayed as a drop-down list of choices. The field is auto-changed to "Assigned - Grp" when a group assignment selection is made from the Group Assigned field. The field is auto-changed to "Claimed - Indv" when a selection is made from the Current Owner list. There is another status value, "Referred", that is used when the problem has required referral to an outside vendor for resolution. When the status of the ticket entry becomes "Closed" no more

modifications can be made to the ticket entry. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, default value "New".

Problem Description

The Problem Description field of the form holds the information describing the details of the problem reported by the user.

The information assists support personnel in understanding the problem reported. Clicking on the small box to the right of the field [...] brings up an editing window. This window allows for entering/viewing the information that does not fit in the viewing area of the field on the form. This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 580, no default value.

Solutions

The Solutions field of the form holds the information describing the details of the solution to the reported problem.

The information assists support personnel in understanding how the problem was solved. Clicking on the small box to the right of the field [...] brings up an editing window. This window allows for entering/viewing the information that does not fit in the viewing area of the field on the form. The system will require a solution to be entered before closing a ticket entry, but is not required for ticket entry submission.

Character field, input length 580, no default value.

Additional Comments

The Additional Comments field of the form provides an area of the form for support personnel to add additional notes to the progress of the problem resolution.

The information assists support personnel in understanding the progress of how the problem was solved. Clicking on the small box to the right of the field [...] brings up an editing window. This window allows for entering/viewing the information that does not fit in the viewing area of the field on the form. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 255, no default value.

FSU @ Home (tab page)

The FSU@Home tab page holds the information required by the Office of Telecommunications (OTC) support staff to address the problem being reported by the user. This tab page has been designed to include the information required by the OTC support staff (and HelpDesk) to address problems reported by users of the DSL service called, FSU@Home.

Operating System

The Operating System field of the FSU@Home tab page is used to identify the computer operating system in use by the user reporting the problem.

The field is displayed as a drop-down list of choices. If the information does not appear in the list provided, "Other, please specify" is chosen and the specifics included in the Problem Description field. This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, no default value.

Computer/Vendor #

The Computer/Vendor # field of the form holds a reference number for a computer or a particular vendor.

The field is used by the Office of Telecommunications (OTC) to record reference numbers assigned to computers or vendor ID numbers when a problem has been referred to an outside vendor for resolution (ordering parts, software, etc.). This is an optional field and is not required to be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 15, no default value.

Work Report #

The Work Report # field of the form holds a reference number to the work entry recorded by the vendor providing support for the FSU@Home DSL connection service (presently, Sprint).

The field is used by the person creating the ticket entry to record work report numbers assigned by Sprint for problems reported on DSL related service calls. While the ARS ticket entry is being resolved, the field provides information for contacting Sprint with a reference number for follow-up on the problems reported. This is an optional field and is not required to be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 15, no default value.

Estimated Time

The Estimated Time field of the FSU@Home tab page of the form holds an estimated time of completion reported by the support vendor on resolution of DSL related issues.

The field is a date/time field that allows for bringing up a calendar window (clicking on the box to the right of the field [...]) and choosing the time reported by the vendor to resolve the reported problem. The calendar-editing window provides the simplest way to enter the information, since the date/time format must be followed for the text entry. This is an optional field and is not required to be filled out in order to submit the ticket entry into the ARS system.

Date/Time field, no default value.

Actual Time to Complete

The Actual Time to Complete field of the FSU@Home tab page of the form holds the actual reported time of completion reported by the support vendor on resolution of DSL related issues.

The field is a date/time field that allows for bringing up a calendar window (clicking on the box to the right of the field [...]) and choosing the time reported by the vendor to resolve the reported problem. The calendar-editing window provides the simplest way to enter the information, since the date/time format must be followed for the text entry. This is an optional field and is not required to be filled out in order to submit the ticket entry into the ARS system.

Date/Time field, no default value.

Elapsed Time

The Elapsed Time field of the FSU@Home tab page of the form displays the amount of time that has passed since the ticket entry entered the system and the vendor providing support actually completed the support call.

The time is displayed as __ h __ m __ s, hours, minutes, seconds. The time is calculated considering the working hours and holiday observances of the vendor. This field is visible and cannot be modified.

Character field, input length 35, no default value.

Priority Assigned

The Priority Assigned field of the FSU@Home tab page is used to identify the priority level for resolution of the problem.

The field is displayed as a drop-down list of choices. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, default value "Low".

Status

The Status field of the FSU@Home tab page is used to identify the status of the problem resolution.

The field is displayed as a drop-down list of choices. The field is auto-changed to "Assigned - Grp" when a group assignment selection is made from the Group Assigned field. The field is

auto-changed to "Claimed - Indv" when a selection is made from the Current Owner list. There is another status value, "Referred", that is used when the problem has required referral to an outside vendor for resolution. When the status of the ticket entry becomes "Closed" no more modifications can be made to the ticket entry. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Drop-down list, selection-type data field, default value "New".

Problem Description

The Problem Description field of the form holds the information describing the details of the problem reported by the user.

The information assists support personnel in understanding the problem reported. Clicking on the small box to the right of the field [...] brings up an editing window. This window allows for entering/viewing the information that does not fit in the viewing area of the field on the form. This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 580, no default value.

Solutions

The Solutions field of the form holds the information describing the details of the solution to the reported problem.

The information assists support personnel in understanding how the problem was solved. Clicking on the small box to the right of the field [...] brings up an editing window. This window allows for entering/viewing the information that does not fit in the viewing area of the field on the form. The system will require a solution to be entered before closing a ticket entry, but is not required for ticket entry submission.

Character field, input length 580, no default value.

Additional Comments

The Additional Comments field of the form provides an area of the form for support personnel to add additional notes to the progress of the problem resolution.

The information assists support personnel in understanding the progress of how the problem was solved. Clicking on the small box to the right of the field [...] brings up an editing window. This window allows for entering/viewing the information that does not fit in the viewing area of the field on the form. This is an optional field and does not need to be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 255, no default value.

Current Owner

The Current Owner field of the form is used to assign a problem ticket to a particular individual member of the assigned group.

The list of possible individuals is referenced by the Group Assigned field entry. The list of persons included in the group assigned is displayed as a menu drop-down list (HD-Owner). If the group assignment is changed the Current Owner field is cleared and the new group notified of the assignment. This is an optional field and is not required to be filled out in order to submit the ticket entry into the ARS system.

Drop-down menu list, selection-type data field, no default value.

Last Action Taken

The Last Action Taken field of the form is used to describe information about the progress of the problem resolution.

The list of choices shown is displayed as a menu drop-down list (HD-Actions). The field information describes the progress of the ticket entry and is posted to the Status Log field. This is an optional field and is not required to be filled out in order to submit the ticket entry into the ARS system.

Drop-down menu list, selection-type data field, no default value.

Elapsed Time (ARS)

The Elapsed Time (ARS) field of the form displays the amount of time that has passed since the last modification of the ticket entry.

The time is displayed as __ h __ m __ s, hours, minutes, seconds. The time is calculated considering the working hours and holiday observances of the assigned group. This field is visible and cannot be modified.

Character field, input length 35, no default value.

Submitter

The Submitter field of the form holds the login name of the person creating the ticket entry.

The field is automatically filled with the name of the person using the system at the time the ticket entry is submitted to the system (keyword, \$USER\$). This is a required field and must be filled out in order to submit the ticket entry into the ARS system.

Character field, input length 30, default value \$USER\$.

Create-date

The Create-date field of the form holds a timestamp assigned by the ARS system.

The date and time that the ticket entry was entered into the ARS system is captured and displayed in the field. This field is automatically filled by the system and cannot be modified by users of the system.

Character field, input length 15, no default value.

Last-modified-by

The Last-modified-by field of the form holds the login name of the user last modifying the ticket entry.

This field is automatically filled by the system and cannot be modified by users of the system.

Character field, input length 30, no default value.

Modified-date

The Modified-date field of the form holds a timestamp assigned by the ARS system.

The date and time that the ticket entry was last modified is captured and displayed in the field. This field is automatically filled by the system and cannot be modified by users of the system.

Character field, input length 15, no default value.

Status Log

The Status Log field of the form is a "diary" field to hold a running record of actions on an individual ticket entry.

Information is posted to the field either by auto-actions provided by the ARS administrator or by entering information into the editing field displayed. As entries are posted to the Status log, the ARS system also adds a timestamp (date and time of the posting) as well as the login name of the user posting the entry. The field is intended to create a history of progress on the ticket entry and provide additional information to users researching the ticket entry. Once information has been posted to the Status Log field, it cannot be removed or modified. This is an optional field and is not required to be filled out in order to submit the ticket entry into the ARS system.

Diary field, input length 32,000, no default value.

CURRENT USER (tab page)

The CURRENT USER tab page provides information about ticket entry status for entries in the ARS system for the person currently logged into the client tool.

Table field

The CURRENT USER tab page provides information about ticket entry status for entries in the ARS system for the person currently logged into the client tool. The tab page will provide a spreadsheet-style listing of all ticket entries that are currently in the system, open or closed that have been assigned to the current user.

When the form is first displayed, the area might be blank. Clicking inside the table area causes the system to then display all entries fitting the all (TS) qualification. Later, a right click in the area displays a menu of choices. The user can open an entry, refresh the table, or print the table. Double-clicking on a row of the table will also open the selected ticket entry.

DMO - 7/9/00 modifications 8/1/00; 9/20/00

Remedy ARS Administrative documentation

The Administrative Help text template was developed to establish a standard style format for documenting custom component parts developed in the Remedy ARS for User Services. Below is an example of the blank style template.

The pages following give some examples from the Administrative Help text written by the developer and visible from the Remedy Administrative tool for administrators as well as the printable document, *Administrative Help Text for Remedy ARS*. Each custom component of the User Services implementation of Remedy ARS contains a reference page such as these examples.

Type of component: Title of Component

Modifications:

Descriptive text:

Qualification statement:

Actions:

Form(s) referenced:

Related Component(s): *(separated by component type)*

Escalation: Unassigned AR 1

Modifications: 11/24/00 - DMO - added administrative help text

Descriptive Text:

The escalation Unassigned AR 1 will notify members of the (US) AR Application Software group that a support request entry with priority level 1 or "Critical" has not been assigned to an individual group member within 30 minutes after the last time the entry was modified.

Notifications are issued every 15 minutes until the qualification statement fails, usually after the entry is assigned to an individual.

Qualification statement:

('Group Assigned2' = "AR Application Software") AND ('Status2' != "Closed") AND ((\$TIMESTAMP\$ - 'Modified-date2') > 1800) AND ('Priority Assigned2' = "Critical") AND ('Escalated 1?2' = "No") AND ('Current Owner2' = \$NULL\$)

Actions:

The escalation searches for non-closed entries that have been assigned to the (US) AR Application Software group. If the priority for the entries is "Critical", the time interval since the last modification is greater than 30 minutes (specified in seconds, 1800) and the Current Owner field is empty, then the escalation action fires. The actions include setting the fields Last Action Taken to "Ticket escalated" and Escalated 1? to "yes". (The Escalated 1? field assists in the determination of higher level managerial notifications.)

The notification sent (user default, notifier or electronic mail) to the group members describes the priority level, the name as well as phone number of the person reporting the problem and the description of the problem entered into the entry.

Form(s) referenced: HD-v1.0

Related components:

- Escalations: Unassigned <group> 1
- Unassigned <group> 2
- Unassigned <group> 3
- Unassigned <group> 4
- Unassigned <group> 5
- Unassigned <group> 6

Escalation: Unassigned Classrooms 2

Modifications: 11/24/00 - DMO - added administrative help text

Descriptive Text:

The escalation Unassigned Classrooms 2 will notify members of the (ACNS) Classrooms group that a support request entry with priority level 2 or "High" has not been assigned to an individual group member within 2 hours after the last time the entry was modified.

Notifications are sent out every hour (8:01 am through 5:01 pm) on Monday - Friday of the work week until the qualification statement fails, usually after the entry is assigned to an individual.

Qualification statement:

('Group Assigned2' = "Classrooms") AND ('Status3' != "Closed") AND
((\$TIMESTAMP\$ - 'Modified-date2') > 7200) AND ('Priority Assigned3' = "High") AND
('Escalated 1?2' = "No") AND ('Current Owner2' = \$NULL\$)

Actions:

The escalation searches for non-closed entries that have been assigned to the (ACNS) Classrooms group. If the priority for the entries is "High", the time interval since the last modification is greater than 2 hours (specified in seconds, 7200) and the Current Owner field is empty, then the escalation action fires. The actions include setting the fields Last Action Taken to "Ticket escalated" and Escalated 1? to "yes". (The Escalated 1? field assists in the determination of higher level managerial notifications.)

The notification sent (user default, notifier or electronic mail) to the group members describes the priority level, the name as well as phone number of the person reporting the problem and the description of the problem entered into the entry.

Form(s) referenced: HD-v1.0

Related components:

- Escalations: Unassigned <group> 1
- Unassigned <group> 2
- Unassigned <group> 3
- Unassigned <group> 4
- Unassigned <group> 5
- Unassigned <group> 6

Escalation: Unassigned CourseInfo 3

Modifications: 11/24/00 - DMO - added administrative help text

Descriptive Text:

The escalation Unassigned CourseInfo 3 will notify members of the (ODDL) CourseInfo group that a support request entry with priority level 3 or "Medium" has not been assigned to an individual group member within 48 hours after the last time the entry was modified.

Notifications are issued every other hour (8:02am, 10:02 am, 12:02 pm, 2:02 pm, 4:02 pm) on Monday through Friday of the work week until the qualification statement fails, usually after the entry is assigned to an individual.

Qualification statement:

('Group Assigned2' = "CourseInfo") AND ('Status4' != "Closed") AND
((\$TIMESTAMP\$ - 'Modified-date2') > 172800) AND ('Priority Assigned4' = "Medium") AND
('Escalated 1?2' = "No") AND ('Current Owner2' = \$NULL\$)

Actions:

The escalation searches for non-closed entries that have been assigned to the (ODDL) CourseInfo group. If the priority for the entries is "Medium", the time interval since the last modification is greater than 48 hours (specified in seconds, 172800) and the Current Owner field is empty, then the escalation action fires. The actions include setting the fields Last Action Taken to "Ticket escalated" and Escalated 1? to "yes". (The Escalated 1? field assists in the determination of higher level managerial notifications.)

The notification sent (user default, notifier or electronic mail) to the group members describes the priority level, the name as well as phone number of the person reporting the problem and the description of the problem entered into the entry.

Form(s) referenced: HD-v1.0

Related components:

- Escalations: Unassigned <group> 1
- Unassigned <group> 2
- Unassigned <group> 3
- Unassigned <group> 4
- Unassigned <group> 5
- Unassigned <group> 6

Escalation: Unassigned Dialup 4

Modifications: 11/24/00 - DMO - added administrative help text

Descriptive Text:

The escalation Unassigned Dialup 4 will notify members of the (ACNS) Dialup Troubleshooting group that a support request entry with priority level 4 or "Low" has not been assigned to an individual group member within 5 days (120 hours) after the last time the entry was modified.

Notifications are issued every other hour (8:03am, 10:03 am, 12:03 pm, 2:03 pm, 4:03 pm) on Monday through Friday of the work week until the qualification statement fails, usually after the entry is assigned to an individual.

Qualification statement:

('Group Assigned2' = "Dialup Troubleshooting") AND ('Status3' != "Closed") AND
((\$TIMESTAMP\$ - 'Modified-date2') > 432000) AND ('Priority Assigned3' = "Low") AND
('Escalated 1?2' = "No") AND ('Current Owner2' = \$NULL\$)

Actions:

The escalation searches for non-closed entries that have been assigned to the (ACNS) Dialup Troubleshooting group. If the priority for the entries is "Low", the time interval since the last modification is greater than 5 days (specified in seconds, 432000) and the Current Owner field is empty, then the escalation action fires. The actions include setting the fields Last Action Taken to "Ticket escalated" and Escalated 1? to "yes". (The Escalated 1? field assists in the determination of higher level managerial notifications.)

The notification sent (user default, notifier or electronic mail) to the group members describes the priority level, the name as well as phone number of the person reporting the problem and the description of the problem entered into the entry.

Form(s) referenced: HD-v1.0

Related components:

Escalations: Unassigned <group> 1
Unassigned <group> 2
Unassigned <group> 3
Unassigned <group> 4
Unassigned <group> 5
Unassigned <group> 6

Escalation: Unassigned HelpDesk 5

Modifications: 11/24/00 - DMO - added administrative help text

Descriptive Text:

The escalation Unassigned HelpDesk 5 will notify members of the (US) HelpDesk group that a support request entry with priority level 5 or "Scheduled" has not been assigned to an individual group member within 10 days (240 hours) after the last time the entry was modified.

Notifications are issued every other hour (8:04 am, 10:04 am, 12:04 pm, 2:04 pm, 4:04 pm) on Monday through Friday of the work week until the qualification statement fails, usually after the entry is assigned to an individual.

Qualification statement:

('Group Assigned2' = "HelpDesk") AND ('Status2' != "Closed") AND
(((\$TIMESTAMP\$ - 'Modified-date2') > 864000) AND ('Priority Assigned2' = "Scheduled") AND ('Escalated
1?2' = "No") AND ('Current Owner2' = \$NULL\$)

Actions:

The escalation searches for non-closed entries that have been assigned to the (US) HelpDesk group. If the priority for the entries is "Scheduled", the time interval since the last modification is greater than 10 days (specified in seconds, 864000) and the Current Owner field is empty, then the escalation action fires. The actions include setting the fields Last Action Taken to "Ticket escalated" and Escalated 1? to "yes". (The Escalated 1? field assists in the determination of higher level managerial notifications.)

The notification sent (user default, notifier or electronic mail) to the group members describes the priority level, the name as well as phone number of the person reporting the problem and the description of the problem entered into the entry.

Form(s) referenced: HD-v1.0

Related components:

Escalations: Unassigned <group> 1
Unassigned <group> 2
Unassigned <group> 3
Unassigned <group> 4
Unassigned <group> 5
Unassigned <group> 6

Escalation: Unassigned OTC 6

Modifications: 11/24/00 - DMO - added administrative help text

Descriptive Text:

The escalation Unassigned OTC 6 will notify members of the OTC (FSU@Home) group that a support request entry with priority level 6 or "Pending" has not been assigned to an individual group member within 20 days (480 hours) after the last time the entry was modified.

Notifications are issued every other hour (8:05 am, 10:05 am, 12:05 pm, 2:05 pm, 4:05 pm) on Monday through Friday of the work week until the qualification statement fails, usually after the entry is assigned to an individual.

Qualification statement:

('Group Assigned2' = "OTC (FSU@Home)") AND ('Status5' != "Closed") AND
((\$TIMESTAMP\$ - 'Modified-date2') > 1728000) AND ('Priority Assigned5' = "Pending") AND
('Escalated 1?2' = "No") AND ('Current Owner2' = \$NULL\$)

Actions:

The escalation searches for non-closed entries that have been assigned to the OTC (FSU@Home) group. If the priority for the entries is "Pending", the time interval since the last modification is greater than 20 days (specified in seconds, 1728000) and the Current Owner field is empty, then the escalation action fires. The actions include setting the fields Last Action Taken to "Ticket escalated" and Escalated 1? to "yes". (The Escalated 1? field assists in the determination of higher level managerial notifications.)

The notification sent (user default, notifier or electronic mail) to the group members describes the priority level, the name as well as phone number of the person reporting the problem and the description of the problem entered into the entry.

Form(s) referenced: HD-v1.0

Related components:

- Escalations: Unassigned <group> 1
- Unassigned <group> 2
- Unassigned <group> 3
- Unassigned <group> 4
- Unassigned <group> 5
- Unassigned <group> 6

Exercises in Using the Remedy ARS Client Tool version 4.5.1 (with the HD-v1.0 form employed by User Services, FSU)

Prepared by DM Orrick 8/11/00

Familiarization with the form

Open the client tool, Aruser.

From the File → Open menu, start the guide: HD-v1.0 Guide

Step through the guide and familiarize with all fields of the form.

(Note: in the information text area, may need to scroll down to view all text available within a field.)

Creating entries

After working through the guide, open the HD-v1.0 form to create new entries in the system records.

Create one or more entries (tickets) with your name and additional identity information and assign the Problem Type to the group you work in. Fill in all required fields of the form (displayed in bold type) as if you are initiating a new problem report ticket. Don't close the ticket or fill in solution information yet.

Create one or more ticket(s) with imaginary information and assign to a group other than the group you currently work in.

Searches

Open the HD-v1.0 form in search mode and search for these groups of tickets. Try to perform separate searches to gain experience in different search types.

Find/search and open the first ticket created with your name in the identity fields.

In the Status log field of the form, enter the following information as you find the answers to the following questions. Save modifications to the form after each entry.

- 1) How many tickets are currently in the system?
Enter: Total tickets in the system = ____.
- 2) How many tickets have been created for Gene Generic?
Enter: Tickets created for Gene Generic = ____.
- 3) How many tickets have been created for Gene Generic on password problems?
Enter: Tickets created on password problems for Gene Generic = ____.

- 4) Create a search in the advanced search bar section (top right of the Search Window, Click "Advanced").

Advanced search example:

'Status2' = "New" AND 'Group Assigned2' = "CourseInfo"

Create an advanced search that retrieves all ticket entries not equal to "Closed" and Problem Type equal to Tech Support.

Enter: Tickets not closed and Problem Type Tech Support = ____.

Using Context-Sensitive Help

Using the [?] button within the HD-v1.0 form, explore the context-sensitive help provided for the fields of the form. (*Note: The context-sensitive help text is duplicated in the Information area of the HD-v1.0 Guide*).

Find/search and open the first ticket created with your name in the identity fields. In the Status log field of the form, enter the following information as you find the answers to the following questions. Save modifications to the form after each entry.

- 1) Is there an input length described for the "Role in Course" field?
Enter: 1) answer: ____
- 2) What is the input length of the "Problem Description" field of the form?
Enter: 2) answer: ____
- 3) Name the field(s) on the form that utilizes a radio button.
Enter: 3) answer: ____
- 4) What is the purpose of the ALL (TS) tab on the HD-v1.0 form?
Enter: 4) answer: ____
- 5) What is the default value of the "Status" field?
Enter: 5) answer: ____
- 6) Which field of the HD-v1.0 form has the greatest character input capacity?
Enter: 6) answer: ____
- 7) What does \$USER\$ mean as the default value in the "Submitter" field?
Enter: 7) answer: ____

Creating reports

Create a report from the original ticket entry created in your name and group.
(Refer to the document: "*Creating a report in the Remedy ARS 4.5 Client tool*")

Perform a search in the HD-v1.0 form and select (highlight) the ticket entry used to submit the answers to the previous questions.

Follow the report procedure to create a report named "Puzzle" that includes the following fields from the HD-v1.0 form:

- Entry-ID:
- First Name:
- Last Name:
- Email address:
- Phone number:
- Group Assigned:
- Status Log:

Preview the report for formatting adjustments.
Print or save the report.

Finishing the entries

Perform a search of the HD-v1.0 form for all ticket entries that have your login name in the "Submitter" field.

Go through the results list, entry by entry, adding solution information and changing the status of the ticket entry to "Closed".

DMO 8/11/00

Creating a report in the Remedy ARS 4.5 Client tool

Open the ARS Client tool.

From the menu bar, choose: File→Recent Search Forms
From the list of forms, choose the form to search from.

If the form needed for the search is not in the Recent Search Forms list, from the menu bar, choose: File→Open

This will bring up an window that displays all forms available.
Find the form needed in the list, highlight and click, Search
from the button choices at the bottom of the Open Window.

Once the form is displayed, there are several methods to create a search action. After the search method is used, the search screen window will split and a list of the entries matching the search criteria will be displayed in the top section of the window.

- 1) Clicking on "Search" in the top right of the window will return a list of all entries (up to 1000) for the chosen form.
- 2) Filling one or more of the fields within the displayed form will create additional Search criteria and narrow the search list results. For example: Choosing Group Assigned → Tech Support before clicking on the Search button will return a list of only the tickets that have been assigned to Tech Support.
- 3) The "Advanced" button to the right of the "Search" button in the top right of the window will display a new segment at the bottom of the window. This field is used for more advanced search criteria, such as searching for non-closed tickets between the dates of 6/1/99 and 10/1/99. *Detailed instructions on creating advanced searches are available through "Help" in the client tool. Enter "search bar, advanced" in the index field.*

When the search action has completed and a list of entries is displayed in the top segment of the window, the next step in creating a report is to choose the entries to be included in the report. This is done by highlighting row(s) of the search result listing. The highlighting can be done through clicking on an entry, shift/drag for several consecutive entries or Ctrl-click for non-consecutive entries.

Now, back at the top of the Client tool menu bar choose: Tools → Reporting
This will bring up a window, Report, that has a split screen. Report Styles are listed in the top segment, Style Preview, in the bottom segment.

(more)

If this is the first report to be created, only <<new style>> is displayed in the Report Styles segment. (As each report-style format is created, they will appear in the list and can be chosen to create

the report. A sample report format is available for download at
ftp://ftp2.us.fsu.edu/pub/remedy/Report%2034.arr)
Place (save link as) this file in C:/Program Files/Remedy/Home/ARCmnds/

Double click on <<new style>> and a "Properties" window will be displayed. There are several tab sections of the Properties window that provide for specifying aspects of the report style format to be created.

Fields - This tab allows choosing the fields of the form to be included in the report. Field names are chosen and added, from the top window to the bottom.

General - This tab allows for labeling the report for ease of re-use later. Also, the Comment area provides for a descriptive explanation of the report and its purpose.

Sort - This tab allows choosing one of the fields of the report for sorting the resulting report listing of the entries included.

Statistics - This tab provides for additional information to be calculated from the information in the report.

Page Setup - This tab provides for formatting the layout of the report on the printed page.

In the lower segment of the Report Window, the Style Preview area displays a no-data example of the report layout "style".

The menu in the top of the Client tool now has a "Report" category that that is used to finalize the report creation.

New - used to initiate a new report style to be built.

Save - saves the current report style in process.

Save As - saves with more specifics, especially when modifying a previous report.

Delete - choose a report style and remove it from the list.

Preview - provides for a preview, with data, of the final report. Very useful when creating the report style.

Print - executes a printing of the current report with the selected data entries.

Export To - allows exporting the report to a report or application. Useful when transferring report data from one ARS server to another, etc.

Properties - another means to bring up the Properties window relating to the current report.

Aside:

The HD-v1.0 form to be used for problem reporting has several fields that appear more than once in the form. For example, *Problem description*, appears in each of the Tab pages for the groups User Services, ACNS, CourseInfo, and [FSU@Home](#). When ticket entries are submitted to ARS, each of the duplicate fields has the data copied to all other same-name fields.

When viewing the list of fields for the HD-v1.0 form in the Properties window during report creation, these fields will appear multiple times. Since the data has been copied to the same-name fields, it shouldn't matter which of the four (4) *Problem description* choices are chosen for the report.

DMO - 7/26/00

Procedure for executing a search within Remedy ARS followed by building a report from the results of the search.

Using the Remedy User Client tool, initiate a search on the appropriate form (example: CLK_HD).

Click on the Advanced Search criteria button in the upper right of the search window.

Enter

Example 1

'Status' != "Closed" AND ('Problem Type' LIKE "ES:%" OR 'Problem Type' LIKE "DR:%")
^ for the search, these parentheses are important ^
to separate the AND portion from the OR portion of the statement

Pulls out all non-closed tickets under the current system that fall into the Engineering Support (ES:%) and Dorms (DR:%) categories of problem types.

Example 2

'Status' != "Closed" AND 'Problem Type' LIKE "ES:%"

Pulls out all non-closed tickets under the current system that fall into the Engineering Support (ES:%) category of problem types. Note, no parentheses are needed.

Example 3

'Status' != "Closed" AND 'Problem Type' LIKE "DR:%"

Pulls out all non-closed tickets under the current system that fall into the Dorms (DR:%) category of problem types. Note, no parentheses are needed.

Example 4

'Problem Type' LIKE "ES:%" OR 'Problem Type' LIKE "DR:%"

Pulls out ALL tickets under the current system that fall into the Engineering Support (ES:%) and Dorms (DR:%) categories of problem types. Note, no parentheses are needed.

Next steps:

Go to the listing at the top of the search window (the results) and choose all listed. (Shift and arrow down, highlight all or a part of the ticket entries listed).

Go to the "Tools" choice in the topmost menu of the Remedy User tool. Click on and choose "Reporting" (Note: Reporting is grayed out until a search action is chosen.)

If the report format is listed in the "Styles" segment of the Reporting window, click on the style to use. You should see the format of the report built and named for the style.

Go to the top menu again, notice that a new addition, "Report" is now available for choosing. Under this menu choice are several options:

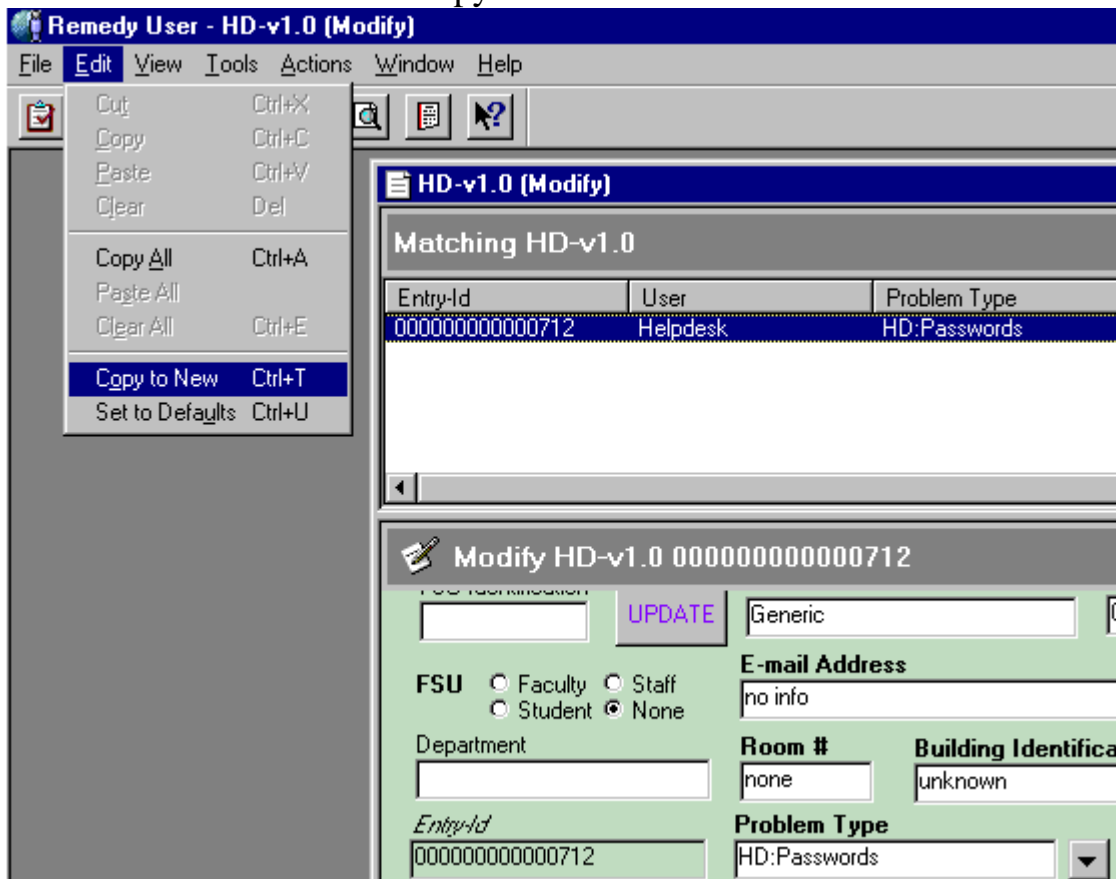
DMO 6/27/00

Duplicating a ticket entry within Remedy ARS

In order to duplicate an existing ticket entry in ARS

Follow these steps:

- 1) Through the search process, display the ticket to be duplicated.
(The ticket should have already been created and saved into the system.)
- 2) From the menu bar,
choose Edit > Copy to new



- 3) The system will display a "New" ticket window with the duplicated information from the previously designated ticket.
If no further changes are needed, Click on "Save" and the new ticket entry is entered into the system and the next new entry number is assigned.

If modifications are needed, make changes and/or additions inside the new ticket window and follow the same steps as above to enter the new ticket into the system.

DMO - 11/15/00

Appendix E: Perl code for data import

```

# file: processinfo.pl
#
# created 7/31/00, modified 11/16/00 - DM Orrick
#
# processinfo program -
# program for processing the HRMS personnel information file
#
# program has been developed for Active Perl Build 613 for Windows
#
#!/usr/local/bin/perl

use Win32;

# initialize variables
$DEBUG = 0;

$filecount = 0;
$filename = "";
$list = 0;
$k = 0;
@newlist = ( " ", " " );

# prompt for full path directory to file
print "\nEnter complete directory path where data files are found: \n";
print "\tExample >>>--> C:\\topdir\\nextdir\\filedir\\n\\n";
chop($path = <STDIN>);

# check path entered, if desired, via STDOUT
# print "\npath ==> $path\n";

# given the path captured from user input, open dir
# if dir not found, exit with error message
opendir(DATAFILES, "$path") ||
    die "Cannot opendir $path\n";

# find files ending in .txt and create array listing of filenames
@files = grep { /\.txt$/ } readdir(DATAFILES);
closedir(DATAFILES);

# create dir for DEBUG files
$debugpath = "$path\\DEBUG";

# check for pre-existing DEBUG dir,
# create dir if needed or exit with error message
if ( (opendir(TEMP, $debugpath) ) == 0 ) {
    mkdir("$debugpath", 0777) ||
        die "Cannot create dir $debugpath: $!";
}

# if open dir on DATAFILES successful, read and process each file
foreach $i ( @files ) {

    $origfilename = $i;

    # print info to STDOUT to follow file processing
    print "\nProcessing $origfilename\n";

    # need complete path to access file
    $filename = "$path\\$origfilename";

    print "new filename ==> $filename\n";

    # open file or exit with error message

```

```

open (FILE, "$filename") ||
die "Cannot open $filename for reading. Program exiting...\n";

# create file to hold new arrangement of info, need complete path
# uncomment line for particular version needed for output file type
# $newfile = "$path\\"."Newfile"."txt";
# $newfile = "$path\\"."FSU_Data"."csv";
# $newfile = "$path\\"."FSU_Data"."asc";

# open new file for output or exit with error message
open (NEWFILE, ">$newfile") ||
    die "Could not open newfile: $newfile\n";

# reset count for each file processed
$count = 0;

# collect DEBUG info into separate file if variable is set = 1
if ($DEBUG == 1) {
    $debugfile = "$path"."\\DEBUG\\"."$origfilename"."txt";

    open (DEBUGFILE, ">$debugfile") ||
        die "Could not open debug: $debugfile\n";
}

# process current file until EOF is reached
# break down each line of input file into component parts
# according to character count for the field in the line examined
#
# file format is all caps info, adjust format for output file
# adjust first, last, and nicknames to upper and lower case
# adjust for hyphenated, multi-word names also
#
# increment count to indicate the number of lines processed
while ( <FILE> ) {
    $line = $_;
    chop($line);

    # extract substring containing variable information
    # search and adjust for 'Mc'names into upper & lower case
    $mcname = "MC";
    $temp1 = substr($line, 0, 2);
    $temp2 = substr($line, 2, 18);
    if ( $temp1 eq $mcname ) {
        $temp1 = lc($temp1);
        $temp1 = ucfirst($temp1);
        $temp2 = lc($temp2);
        $temp2 = ucfirst($temp2);
        $last = "$temp1"."$temp2";
    } else {
        $last = "$temp1"."$temp2";
        $last = lc($last);
        $last = ucfirst($last);
    }
    $first = substr($line, 20, 15);
    $first = lc($first);
    $first = ucfirst($first);
    $middle = substr($line, 35, 15);
    $jr = substr($line, 50, 5);
    $position = substr($line, 55, 30);
    $dept = substr($line, 85, 30);
    $some_num = substr($line, 127, 9);
    $ph_num = substr($line, 136, 14);
    $fax_num = substr($line, 150, 14);
}

```

```

$location = substr($line, 164, 5);
$bldg = substr($line, 169, 6);
$room = substr($line, 175, 6);
$mail = substr($line, 181, 4);
$email = substr($line, 185, 50);
$yfield = substr($line, 235,1);
$nickname = substr($line, 236, 15);
$nickname = lc($nickname);
$nickname = ucfirst($nickname);
$id_num = substr($line, 251, 9);

if ($DEBUG == 1) {
    print DEBUGFILE "\n$line\n";
    print DEBUGFILE "\nlast = $last\n";
    print DEBUGFILE "first = $first\n";
    print DEBUGFILE "middle = $middle\n";
    print DEBUGFILE "jr = $jr\n";
    print DEBUGFILE "position = $position\n";
    print DEBUGFILE "dept = $dept\n";
    print DEBUGFILE "some_num = $some_num\n";
    print DEBUGFILE "ph_num = $ph_num\n";
    print DEBUGFILE "fax_num = $fax_num\n";
    print DEBUGFILE "location = $location\n";
    print DEBUGFILE "bldg = $bldg\n";
    print DEBUGFILE "room = $room\n";
    print DEBUGFILE "mail = $mail\n";
    print DEBUGFILE "email = $email\n";
    print DEBUGFILE "nickname = $nickname\n";
    print DEBUGFILE "id_num = $id_num\n";
}

# search and adjust for hyphenated last names into
# upper & lower case
($last, $last2, $remainder) = split(/-/, $last, 3);
$empty = "";
if ( $last2 ne $empty ) {
    $last2 = ucfirst($last2);
    $last = "$last"."-$last2";
}

# search and adjust for hyphenated first names into
# upper & lower case
($first, $first2, $remainder) = split(/-/, $first, 3);
if ( $first2 ne $empty ) {
    $first2 = ucfirst($first2);
    $first = "$first"."-$first2";
}

# search and adjust for last names with > 1 word
# into upper & lower case and eliminate excess white space
# from the end of the field
($last, $last2, $remainder) = split(/ /, $last, 3);
$empty = "";
if ( $last2 ne $empty ) {
    $last2 = lc($last2);
    $last2 = ucfirst($last2);
    $last = "$last"." $last2";
}

# search and adjust for first names with > 1 word
# into upper & lower case and eliminate excess white space
# from the end of the field
($first, $first2, $remainder) = split(/ /, $first, 3);

```



```

if ( $first2 ne $empty ) {
    $first2 = lc($first2);
    $first2 = ucfirst($first2);
    $first = "$first"." $first2";
}

# remove excess white space from the end of
# dept, room and building fields
# because the dept field contains multiple words
# reverse the field and remove excess from the front, reverse back

$revdept = reverse($dept);
#
print "reverse dept = $revdept\n";
($space, $dept2) = split(/\s+/, $revdept, 2);
$dept = reverse($dept2);
#
print "dept now = $dept!\n";

($room, $remainder) = split(/ /, $room, 2);
($bldg, $remainder) = split(/ /, $bldg, 2);

# breakdown and restructure ph number info for easier reading
$area = substr($ph_num, 0, 3);
$exchnge = substr($ph_num, 3, 3);
$phone = substr($ph_num, 6, 4);

$ph_num = "($area) ".$exchnge-"."$phone";

# create test field for locating any nicknames
$empty = "          ";

# if nickname found, combine with first name for display
if ( $nickname ne $empty ) {
    ($petname, $remainder) = split(/ /, $nickname, 2);
    $first = "$first"." ($petname)";
}

# create test fields to find email info
$none = "NONE";
$empty = "          ";

# replace blank space or NONE with 'no email info'
if ( $email eq $none || $email eq $empty) {
    $email = "no email info";
} else {
    # remove excess white space from end of email info
    ($email, $remainder) = split(/ /, $email, 2);
}

# breakdown and restructure id_num info for easier reading
$set1 = substr($id_num, 0, 3);
$set2 = substr($id_num, 3, 2);
$set3 = substr($id_num, 5, 4);

$id_num = "$set1-".$set2-".$set3";

# uncomment line for file version .txt, .asc or .csv
#
$newlist[$k] = "$last,$first,$dept,$ph_num,$room,$bldg,$email,$id_num\n";
$newlist[$k]=
"$last\t$first\t$dept\t$ph_num\t$room\t$bldg\t$email\t$id_num\n";

$k++;
$count++;
$list = $k;

```

```

}

# check position in file by line number via STDOUT
print "the value of list = $list k = $k\n";

$j = 0;
# sort list alphabetically
@newlist = sort(@newlist);
while ($j < $list) {
    # examine current line and last line to eliminate
    # duplicate lines and add line to output file
    if ( $j >= 1) {
        if ($newlist[$j] ne $newlist[($j-1)]) {
            print NEWFILE $newlist[$j];
        }
    }
    $j++;
}
close(NEWFILE);

# increment file counter
$filecount++;

# display info on processed file(s)
print "$filename has $count lines. \n";

if ($DEBUG == 1) {
    print DEBUGFILE "\n$origfilename has $count lines. \n";
    close(DEBUGFILE);
}

# return to while and process next file or exit
}
print "\n $filecount total file(s) processed in $path.\n";

# end of program

```


Remedial Help Desk 101 at Florida State University

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ABSTRACT

The User Services division of the Office of Technology Integration is the "safety net" for computer support at Florida State University (FSU). Areas of support include training, help desk services, campus-wide software site licensing and assistance by highly trained computer technicians. Support is provided seven days a week for 40,000 students, faculty, staff and university administration. This paper outlines the steps taken to update, improve and expand the technological support services offered at FSU and is directed to other university support staffs considering similar expansion.

The entire software system of collecting, recording, and tracking problems is undergoing an update to the present-day needs of the technological community at FSU. Currently, two job-ticketing systems are in use, Lotus Approach© and an older version of the Remedy Action Request System© (ARS) for administrative and academic support. Updating involves moving to a single job-ticketing system (ARS) and incorporating the best features of both into the help desk support process. The needs of the various support groups using the system have been met through improved form design, automatic notifications, escalations, and the addition of data analysis methods for reporting information gathered into the database. Another improvement includes a web-accessible means to tap into ARS that will provide greater ease of use by technicians in the field. In addition, a self-help knowledge base using customized CGI scripts is being developed to allow general users to mine data on frequently occurring problems.

In order to meet growing demand the User Services staff continues to examine and expand its role to provide up-to-date, efficient response on support issues facing the users of technological resources at Florida State University.

Keywords

User support, help desk, web access, self-help knowledge base.

1. INTRODUCTION

The User Services division of the Office of Technology Integration (OTI) at Florida State University is a relatively new computer support department at the university. It is composed of computer support pieces that were formerly a part of the two sister divisions of OTI (Academic Network and Computer Services and Administrative Information Systems). It was decided that common computer support details could be better served under a single administration by pooling some of the resources from the other divisions.

User Services was formed in 1999 with the task of managing a computer support help desk, software training, campus-wide software site licenses and technical computer support. The help desk in particular required special treatment, as two help desks existed, serving two different constituencies at the university. The administrative help desk was open during normal business hours and provided phone as well as detailed electronic remote access to the administrative computer users. The academic help desk had a longer workweek and catered to primarily students and faculty, with typically a quicker turn-around on problem calls. Each help desk had its own ticketing system, which were not compatible. Much effort was spent ensuring that the combined help desk continued to provide the same level of support (or better) to each of the former constituencies. This was done with cross training of personnel, increasing the size of the phone system and re-scheduling the work hours. The remaining piece of integration is the most difficult – the revamping and merging of the electronic ticketing systems. This paper addresses the issues involved in rebuilding an electronic ticketing system for a computer help desk.

2. PAST PROCESS REVIEW

2.1 Comparison of software products

The first step in the process of improving the system used at FSU involved examining the software products used to report problems under the two-help-desk scheme. The comparison of Lotus Approach© and the Remedy Action Request System© followed the same considerations as a report that appeared in a PCWeek Online Review [1].

Each product was examined in the areas of knowledge base (the ability to store problem report data and easily search for problem resolutions), escalation (the ability to recognize and notify users of high-priority reports), skills-based routing (the ability to route tickets to appropriate staff members according to the problem type), and client and administrative interfaces (the ease of use of the interface both from the administrative and help

desk staff perspective). Also examined were customization tools (the ability to tailor the product application to the needs of the user groups), database integration (the ability to import legacy data into the product database), ease of training (overall training required for both the staff and administrative levels), and web accessibility (the ability and limits of using the product from the Internet).

2.1.1 Lotus Approach©

The strong points of Lotus Approach© were in the client/administrator interface and ease of training [2]. The users could quickly learn the uses of the forms developed and also develop custom reports from the product. The spreadsheet-style listing of records provided an overall view of reports current in the system. The form-style view of the records provided a concise means for filling out problem reports and auto-fill features drew on information accumulated in the database. The form was compact and straightforward with easy access buttons to run macros for different user views of the information. Customizations tools ranked high as well, giving the administrators flexibility to adapt the system for the FSU help desk staff. Staff members could quickly be trained on problem-report creation and assisted on macro development through a GUI that provided ease of use. The basic implementation was developed in about a month's time with new features added as time passed and additional user needs addressed.

Skills-based routing involved a more cumbersome method of electronic mail notification that required complete construction of each notification. Escalation was handled through manual priority settings within the form and indicated by the user filling out the problem report. Web accessibility proved to be the greatest weakness as the product did not allow for database updates via a web interface. Snapshots of the database could be viewed for research purposes through manual HTML generation of the spreadsheet.

2.1.2 Remedy Action Request System©

The strong points of ARS were the ability to automate many communication features to provide for escalation notification and skills-based routing of problem reports [3]. Through customized system-composed electronic mail messages to specific support staff groups, information could be communicated quickly according to designated problem-type categories. In addition, a web access component tool, ARWeb, allowed for immediate update to the system database through a pure HTML interface similar to the client tool for Remedy ARS.

Widely flexible applications could be developed through the administrator interface but could not be customized to a great extent through the client tool. The system would require a considerable investment in time to learn for administrators. In order to reach the potential vision for the User Services support process, an investment in human resources and time to learn the system was recommended. To that end, a single staff member has invested several months in identifying how to provide for and implement a smooth transition to the latest version of the product.

2.2 Single software product decision

While the Lotus product proved the easiest to use, it would never provide the features that had been discussed as potential considerations for the improvements to the FSU process. The Remedy product was specifically designed for uses similar to

the help desk application process and already provided many of the features that would provide for efficient communication of problem report information for FSU User Services. The final recommendation suggested a staff member be designated solely to administer the system (instead of juggling many tasks, as in the past). The software administrator would be tasked with taking all user groups into account in updating the software use to the present needs and consideration be given to the anticipated future needs of the users.

The Remedy product was chosen to replace the Lotus Approach method as a more adaptable system tailored for help-desk support applications with additional potential for the future vision of the expanding role of the help-desk support staff in serving the FSU computer user community.

3. REMEDY ARS SYSTEM

The Remedy ARS is based on a multi-tier client/server architecture. The client layer provides all of the user interface functionality through various software tools. The ARS server controls workflow processes and access to the database. The ARS web server allows using the system from a web browser. The database server acts as the data storage and retrieval engine. The servers combined can be compared to a library with reference material and librarians available to help those requesting information [4].

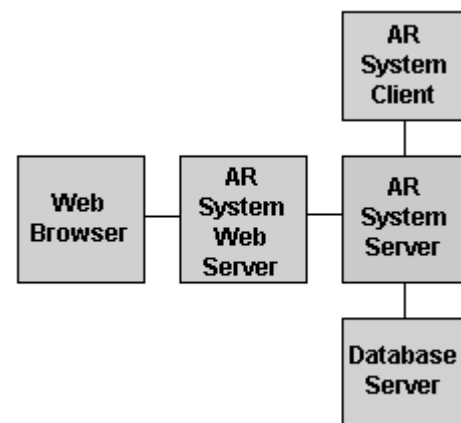


Figure 1. Remedy ARS multi-tier architecture.

3.1 Components of ARS

3.1.1 Forms

The main component used is the form. Users create requests to be entered into the system database through the form component that holds information fields to be filled in. Remedy ARS provides for defining different views of the forms fields appropriate for different user roles. For example, a form can be developed to provide quick-action buttons for the technical support group viewing the form, but are not visible to the data entry group viewing the same form.

3.1.2 Menus

The menu component provides for listing multi-tiered views of information to assist in filling a field of the form. ARS menus can be defined explicitly or can be dynamically built from information within the form or through search action from

information provided from other forms in the system. In addition, it is possible to create a menu definition that allows for appending new choices to the current menu list.

3.1.3 Active Links

The active link component of ARS is an action or group of actions performed on the client-side of the system. The actions are triggered in response to user actions on the client screen. Active links can be created to verify data input and initiate automatic filling of form fields. Grouped together, active links can be used to create a user guide for assisting the user through the form.

3.1.4 Filters

The filter component provides for server-side actions within the system. As the ARS server processes a request submitted to the system, actions defined through filters are triggered. One use of filters is for ensuring system and data integrity. Comparisons of transaction and database-stored, form-field information can be accomplished through filter actions.

3.1.5 Escalations

The actions of escalations within ARS occur at administrator-defined regular time intervals. Similar to active links and filters, escalation actions are defined according to criteria associated with the state of certain requests within ARS. When the criteria is found to be true, the escalation action is executed for the time intervals defined until the criteria is no longer true. Support groups can be notified of unassigned requests through the escalation action with notification repeating until the requests have been assigned.

3.2 Client Tools

ARS client tools are available for Microsoft Windows 95/98/NT/2000, UNIX/X Windows and the web (using ARWeb or Remedy Web). Unfortunately, Macintosh client tools are no longer supported [2]. FSU is examining access to ARS from web-based tools for Macintosh users.

3.2.1 User

The User tool provides the interface for day-to-day access to the ARS applications. Through the User tool form "requests" are submitted or modified. The User tool also provides for searching previous requests and generating reports. In the most recent version of the User tool, 4.05, the user is able to customize the view of the graphical display through font, color and format choices accessible in the tool.

3.2.2 Administrator

The Administrative tool (available for Microsoft Windows) provides an interface for system administrators to develop or modify applications relating to the needs of the users of the system. The administrator of the system can utilize the tools to create customized uses for the components available to build forms and create workflow actions. Active links, filters, menus and escalations are also defined through the administrator tool. Individual user and group access permissions are defined at the administrator level.

3.2.3 Notifier

The Notifier tool has been described as a desktop "pager" [2]. The tool provides actions to alert the user of incoming requests submitted to the system by changing color, blinking, making an audible sound or opening a pop-up message window on the

desktop. An alternate method of notification is electronic mail, where form-field information is automatically included in a message sent according to administrator-defined actions.

3.2.4 Import

The Import tool is utilized to import and export data into ARS forms. The import and export formats supported include AR Export (*.arx) for ARS-to-ARS movement of data, such as from one ARS server to another and comma-separated value (*.csv) as well as ASCII (*.asc) for movement from external data sources into ARS. Import and export of form and other component definitions are handled through the Administrator tool only.

3.2.5 Flashboards

The Remedy Flashboards tool provides real-time or historical viewing of ARS data through graphical displays. The tool can provide a view of events and entries to monitor the state of the ARS workflow. Display methods include charts, bar graphs and meter formats. Managers can utilize the tool for more effective gathering of employee productivity measurements and evaluation of overall staff efficiency [5].

3.3 Issues with the Remedy products

During the process of upgrading the Remedy products in use, FSU User Services found some aspects needing improvement.

The software complexity necessitates a staff member devoted to administering and maintaining the system. The development time for the administrative side of ARS is lengthy and user-initiated improvements are limited to the display of the client tool. Most action-related changes must be provided through the acting administrator. The documentation for the system is thorough, but incorporates several manuals and many hundreds of pages to research. (The technical support provided from Remedy Corporation, however, is excellent and has always demonstrated efficient turnaround on all support requests by FSU.)

The web-based display of the customized forms provides little flexibility in RemedyWeb due to cross-platform considerations. At the present time, the login window screen display is tied to the task window or form display size and if configured to display the form in the browser window can be too large. This problem is to be addressed in the next version of RemedyWeb due to be released later this year.

The problem of no support for Macintosh users (through client tools) is proving to be a problem at FSU. Configuring web browser access to ARS for Macintosh users has proved to be difficult.

4. IMPROVING THE PROCESS AT FSU

A series of user group meetings were held to gather information from users of both systems to identify key issues that would be incorporated into the final resulting solution demonstrated in the Remedy product. Interviews with staff members and managers provided insight into improvements that would greatly enhance the efficient use of the problem reporting system employed by FSU User Services. Listening to the input of the day-to-day users of the system also proved to be extremely helpful in the transition from two software products into a single system.

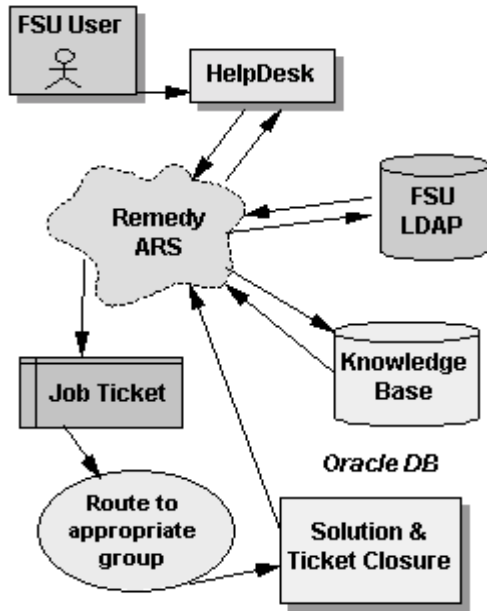


Figure 2. FSU User Services process workflow.

4.1 Improved Infrastructure

Additional computer hardware and software was purchased to ensure sufficient horsepower for current and expected future growth of the ticketing system. To this end, a Sun 420R server with four 450 MHz UltraSparcII processors, 4 GB of RAM, and sufficient hard disk space was purchased and installed. Software included Solaris 8, the latest Apache web server and Oracle 8i, as well as the latest version of the various Remedy products described earlier.

4.2 The Form

Many improvements were requested in the Remedy form used by the help desk staff. Users requested that related fields be positioned together for greater ease in filling out the form. The older version of the form needed updating to reflect the current user groups and associated problem categories. Many users requested the form choices (in selection lists and menus) be simplified for more efficient use. Day-to-day users of the software requested quick-action buttons to automate filling out problem reports for routine tasks, such as resetting passwords. In addition, several users noted that the university held several databases that could be tapped to automatically fill fields on the form relating to the identity of the person reporting the problem. Taking advantage of the FSU version of Lightweight Directory Access Protocol (LDAP), an auto-fill feature in the form would greatly reduce keystrokes required by the staff member and provide more consistency in the data stored from problem reports.

Another consideration that surfaced during the information-gathering stage was the different user groups required specific information to be gathered to address the problem being reported. In addition to the User Services help desk and technical support staffs, the Academic Computing and Network Services support staff on campus use the system to report and address campus-wide network and server problems. This year, the Office of Distributed and Distance Learning and Office of Telecommunications joined the groups utilizing the help desk problem reporting process (and software) to address their support needs.

At this point, either different forms needed to be developed for the different groups or a "super form" developed that would take into account the specific information needs of all groups. In the interest of ease of use, a super form was developed that provided information fields common to all help desk generated problem reports. Specific areas were designed for the groups requiring task-related information to be included in the problem report. Additional forms were created for use within particular groups where the information related only to that group and did not directly affect other groups. For example, the Computer Labs and Classrooms group requested a form be developed to monitor hardware and software maintenance for lab computers.

Additional fields were added to the form to reflect the elapsed time in resolving the problem reported. The status log diary field of the form was put into use as a collection field to provide technical support staff a history of the progress of the problem resolution.

4.3 Notifications to users

Both managers and staff requested notification on problem report assignments. The Remedy system provides for administrator-defined elements to "fire" actions to provide notifications on problem report assignments and reassignments at the group and/or individual level. The administrator can develop the framework for the notification, designate the situations (or rules) under which the notification should be sent out and define the time intervals that the notification should be distributed.

High-priority problem report notifications were developed for immediate distribution to the group assigned to handle the problem. Notifications on problem reports that lingered for specified periods of time were developed to assist managers in follow-up on problem report resolution turnaround.

4.4 Help

The previous application of the Remedy product did not provide customized help for the users of a particular form. Administrator-defined, context-sensitive help was added into the forms to assist all staff members, regardless of experience, to understand the uses of the fields of the super-form.

In addition, user guides were developed to instruct users of the super-form step-by-step through the fields of the form using the interactive guide application available in Remedy. The guide application allows the user to step through the form fields, displaying context-sensitive help in an information text area, and permits the user to fill in the form while working through the guide.

Materials and documentation have been developed to assist training new staff members in using the problem reporting process and software. Similar documentation is being developed for administrative-level users of the ARS software.

4.5 Web accessibility

One of the most requested improvements to the process has been the ability to access the system from the Internet and eliminate the need for the client tool to research and update problem reports.

Previously, the technical support members that traveled on-site to address problem reports often carried printed versions

of the problem report and at a later time entered resolution information into the database from handwritten notes.

With the addition of RemedyWeb, the technical support staff can enter information on site while the information is fresh and also check on other new problem assignments prior to returning to the office.

5. FUTURE ENHANCEMENTS

At the time of this writing several considerations for the improvements to the FSU process were ongoing or were to be addressed in future enhancements.

Currently, FSU is finalizing LDAP usage on a university-wide basis. Once finalized, User Services will take advantage to automatically fill identity and location fields of the problem reporting form within ARS. This is a much anticipated time-reduction feature for the help desk staff.

Customized CGI scripting is planned for allowing general users of the web-based FSU system access for login authentication, access to the self-help knowledge base and providing responses on problem report resolutions that reduce user-initiated electronic mail. CGI forms for registration will simplify the process for FSU students, faculty and staff wishing to attend User Services training courses.

CGI-driven forms that allow administrative personnel to view current site license information as well as licenses held by the departments will reduce telephone queries and assist in record keeping. Automatic notifications on upcoming software site licensing renewals will provide for reduction in time spent tracking and following up on renewal requirements for users and the site-licensing branch of User Services.

In addition to licensing renewals and training requests, User Services is examining maintaining records on hardware maintenance for university laboratory computers and equipment in technologically-enhanced classrooms on campus. Software maintenance and recommended upgrades could be incorporated through integration of the latest software information held in site licensing data and tracking software installed on computer lab equipment.

Also, FSU is beginning to investigate the Remedy Palm Link component tool for consideration of Palm OS access to the ARS. This feature would provide even more freedom for technical support staff that must travel to address problem reports.

6. CONCLUSION

Computer support for a large organization is a complex business, demanding that resources be dedicated to provide immediate, accurate and sufficient talent. The computer support help desk is the "front line" of support at Florida State University and is tasked with focusing the computer technical talent on solving user's problems.

User Services at FSU, soon after inception, realized the need for continual restructuring and development of an electronic ticketing system. The Remedy ARS System provides a framework for building a support structure to satisfy the needs of many technological problems that surface among the community at the university. Key components such as forms-based data entry, active links, filters, escalation mechanisms, multi-platform and client access, as well as integration into existing database systems are essential to the success of any ticketing system. The resulting production ticketing system is an on-going dynamic process of making sure computer support continues to stay at the forefront of user's needs.

7. REFERENCES

- [1] PCWeek Online, "PCWeek Shoot-out scorecard: Help desk solutions," online, October 25, 1999, www.zdnet.com/pcweek/stories/jumps/0,4270,2379025,00.html
- [2] Lotus Development Corporation, online, 1999, www.lotus.com
- [3] Remedy Corporation, online, 1999, www.remedy.com
- [4] Remedy Corporation, "AR System Overview", *Action Request System 4.5 Concepts Guide*, 15-28, 1999.
- [5] Remedy Corporation, "Flashboards Introduction and Quick Start Guide", *Flashboards Getting Started Guide*, 1-8, 1999

REFERENCES

- [1] Remedy Corporation, "AR System Overview", *Action Request System 4.5 Concepts Guide*, 15-28, 1999.
- [2] Remedy Corporation, online, 1999, www.remedy.com
- [3] Remedy Corporation, "Flashboards Introduction and Quick Start Guide", *Flashboards Getting Started Guide*, 1-8, 1996.
- Other Referenced materials during the project period:*
- Remedy Corporation, (ARS) *4.5 Installation & Getting Started Guide*, 1991-2000.
- Remedy Corporation, *Action Request System 4.5 Server Administrator's Guide*, 1991-2000.
- Remedy Corporation, *Action Request System 4.5 Workflow Administrator's Guide*, 1991-2000.
- Remedy Corporation, *Action Request System 4.5 Programmer's Guide*, 1991-2000.
- Remedy Corporation, *Action Request System 4.5 Error Messages Guide*, 1991-2000.
- Remedy Corporation, *Action Request System 4.0 Concepts Guide*, 1999.
- Remedy Corporation, *Action Request System 4.0 Quick Start Guide*, 1998.
- Remedy Corporation, *Action Request System 4.0 Administrator's Guide Volume 1*, 1999.
- Remedy Corporation, *Action Request System 4.0 Administrator's Guide Volume 2*, 1999.
- Remedy Corporation, *Remedy Web 4.1 Installation Guide*, 1999-2000.
- Remedy Corporation, *Remedy Web 4.1 Administrator's Guide*, 1999-2000.
- Remedy Corporation, *Remedy Web 4.0 Installation Guide*, 1999.
- Remedy Corporation, *Remedy Web 4.0 Administrator's Guide*, 1999.
- Remedy Corporation, *Flashboards 2.0 Installation Guide*, 1997.
- Remedy Corporation, *Flashboards 2.0 Administrator's Guide for Windows*, 1997.
- Remedy Corporation, *Flashboards 2.0 Getting Started Guide*, 1997.
- Oracle Corporation, *Oracle8i Installation Guide for Sun SPARC Solaris*, 1999.
- Oracle Corporation, *Oracle8i Administrator's Reference*, 1999.
- Oracle Corporation, *SQL*Plus Quick Reference*, 1999.
- O'Reilly & Associates, *Oracle Database Administration*, 1999.
- O'Reilly & Associates, *Oracle Design*, 1999.
- O'Reilly & Associates, *Learning Perl on Win32 Systems*, 1997.
- O'Reilly & Associates, *Programming Perl*, 1991.
- O'Reilly & Associates, *vi Editor*, 1999.
- Prentice Hall PTR, *UNIX System Administration Handbook*, 1995.
- M & T Books, *Introduction to CGI/Perl*, 1996.
- J. D. Hamilton, *CGI Programming 101*, 1999.