



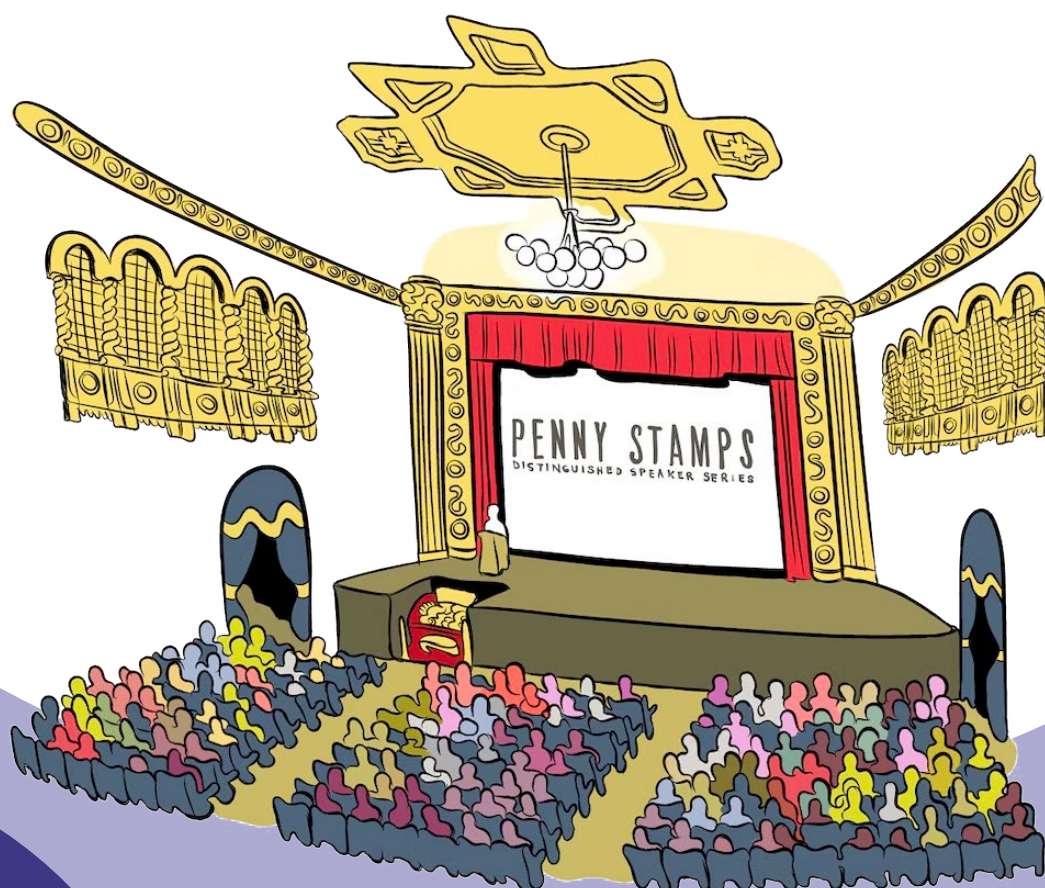
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UM Online Access Request System (OARS) Sense-making and Documentation

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Table of Contents

01	Executive Summary
02	Background & Introduction
04	Methodological Overview
05	Findings & Recommendations
15	Conclusion
16	References
17	Appendices



Executive Summary

This report is written to formalize the consulting results brought up for our client: the Stamps School of Art & Design. The main problem discussed and analyzed in the report is the inconvenience for staff in Stamps to apply for “role” access in the Stamps online request system named “OARS.” Thus, our team used a systematical consulting and contextual inquiry procedure, including background research, contextual interviews, affinity diagram, and suggestion proposal.

Before introducing our consulting results, we must first introduce “ITS,” which is the technical supporting and maintaining team behind the OARS system. They play a crucial role in our findings and recommendations as well as the future improvements of the OARS system. With all information mentioned above, below are the six finding summaries and corresponding suggestions proposed.

- The first finding is a usability problem with the search function of the OARS system. More specifically, the “search feature” of the site feeds users with a burdensome amount of results which is not helping users to narrow down the scale of the problem with finding the desired role. Thus, our recommendation for this problem is to let the search feature only return results relevant to the user input and improve the keyword search tolerance level.
- The second finding shows that although the role description information is helpful, they are not consistent or detailed enough to provide users with the guidance they need in the access request process. To solve the problem, we recommend ITS update the role descriptions and explain undefined abbreviations in the online documents.
- The third finding is a lack of channels for the ITS department to communicate with users about OARS system updates. We recommend that ITS post the updated information in email newsletters or info sessions to keep the OARS users informed.
- The fourth finding indicates that ITS does not seem to be aware of the problems that users have run into while using OARS. We thereby recommend ITS conduct usability testing to better understand user needs to build a more user-friendly experience.
- The fifth finding reveals that users have solutions or workarounds for many usability issues in their heads, but these solutions and workarounds are not integrated into the system or are only available to a small portion of users. Therefore, the recommendation we propose is to share with all OARS system users central documentation as an application reference. The documentation should also be editable by the system user as a method of amendment.
- The last finding points out that there is a lack of progress indication for users to better estimate the process, and our recommendation is to add a progress bar to the user's request role interface, which can reflect the current request processing status on time.

Background & Introduction

About the client:

The mission of the Stamp School of Art & Design is to become a worldwide recognized leader in interdisciplinary art and design education to cultivate the next generation of globally competitive creative professionals who can participate and collaborate responsibly. The Stamp School offers an undergraduate degree in art and design and two graduate-level degrees: an MFA in Art and an MDes in Integrative Design.

Our clients from Stamp School need to assign roles to give specific permission to students and employees through the OARS, such as course override permission, new employee courses permission, etc. Figure 1 shows how they interact with each other and ITS staff.

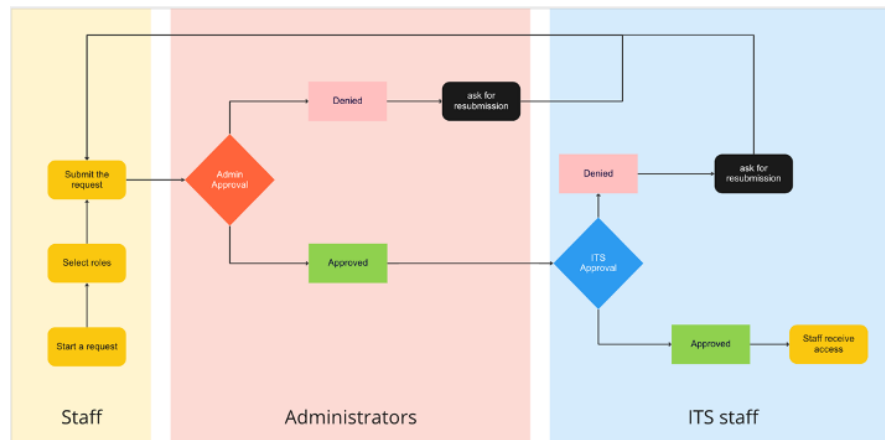


Figure 1. The user flow of using OARS to request a role

About the problem:

OARS is an online access request system to request and approve "roles." As a user of OARS, the staff of Stamp school faces many inconveniences when they need to request or copy employees' "roles" in OARS. Figure 1 shows the relationship between Stamp's staff and the OARS. Centralized documents are needed to clarify the relationships between the role, work contents, and admission courses. Hence, hundreds of employees need help finding the work contents and courses by typing their roles in the search bar. Stamps employees need to find another person with the knowledge they are looking for to guide them to make the request orally. And employers can't filter the role's rights from other employees when they copy their roles to new staff through the OARS.

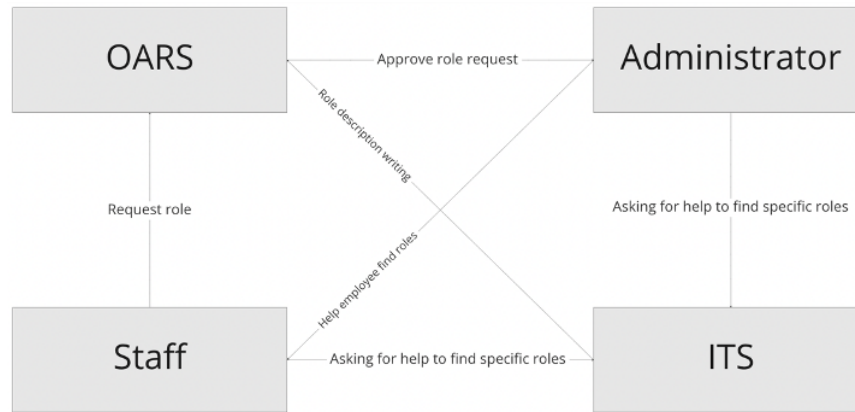


Figure 2. The relationship between clients, OARS, and ITS.

Background of OARS:

Online Access Request System (OARS) is a tool for employees to request access to administrative data in ITS-managed systems and for employers to authorize employees' requests. OARS is also used to delete access rights when an employee no longer has an administrative need for that access, for example, when an employee changes his/her role, and the employer needs to delete his/her administrative access rights. The OARS is used to request and remove access to the following systems: 1. Donor & Alumni Relationship Tool (DART), 2. M-Pathways, 3. U-M Data Warehouse, 4. Document Imaging System. University of Michigan faculty and staff have access to the University's administrative data resources related to the type of data and level of access they need to conduct University business. The role controls the areas users can see and what they can do in OARS. (The Regents of the University of Michigan, 2022)

Unit liaisons and individuals have different rights in OARS. Individuals cannot see other people's information, and they can initiate access requests for others and themselves. However, individuals don't have the authority to give permission to requests. Unit Liaisons have the authority to give permission to requests from all users in their unit. (The Regents of the University of Michigan, 2022)

Methodological Overview

This project was conducted over the course of three months and was divided into several parts, including background research, contextual interviews, affinity diagramming, and suggestions proposal. Along with the process, we pay close attention to our client's problem and adopt a user-centered contextual inquiry approach, a study method using observations and interviews to understand workflow and behaviors, to understand the interactions and problem context.

Background Research

This is the initial step of our project to understand the general problem space from diverse perspectives. Each team member takes a different perspective to probe the client's problem. Some examples include the importance and history of UM OARS, the development of access control in general, how to create a better search engine, and the cognitive process involved in decision-making. Those research broadened our understanding of problems and created a solid foundation for further interviews.

Contextual Interviews

Contextual Interviews are one-on-one interviews conducted in the user's workspace that focus on observations of ongoing work (Holtzblatt, 2005). It is an important method to gather data for design improvements. Before starting the interview, we prepared a detailed and careful proposal with questions targeting different stakeholder groups. Within the one-month interview window, we included diverse participants and scheduled eight interviews with our stakeholders, which included four administrators, three ITS representatives, and one new staff. Interviews were conducted with a combination of question-answer format and walkthrough scenarios.

Affinity Diagram

Following the interview, qualitative analysis was conducted to identify key and major thoughts from our collected data. The major method our team used is the affinity diagram. Japanese ethnologist Jiro Kawakita created affinity mapping to organize complex, immeasurable, non-repetitive, behavioral, and qualitative data using spatial arrangement (Scupin, 1997). To be more specific, we extracted our interviewee's insight from the notes taken during the interview and replays of the recordings after the interview and grouped them into more than 400 sticky notes based on their connections (Figure 3). After the grouping is formed, key themes are extracted to label each grouping. Then, those labels were grouped again to form more

overarching themes. With the iterative process, six key findings were identified to represent the core concerns of our client.

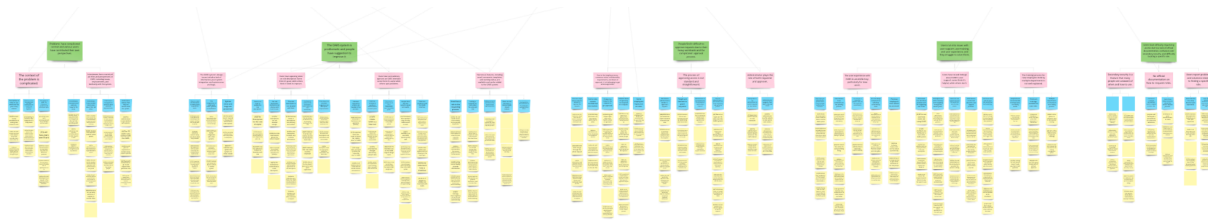


Figure 3. The affinity map

Suggestion Proposal

As a result of previous research and diagram analysis, recommendations were brainstormed and formulated targeting the specific problem we have discovered in the client's workflow. Those recommendations aim to help the client mitigate the issue from various perspectives and be practical enough to implement in the real world to some extent.

To provide more context to our recommendations, the following reports will focus on providing more details about each of our findings and recommendations.

Findings & Recommendations

Searchability & Role description

Finding 1: *There is a usability problem with the search function in the OARS system.*

Explanation: For now, users of the system can search the keywords related to their work function, such as “admin,” in the search bar. The results of specific roles that contain the keyword or its role description containing the keyword would return to the users (Figure 5). However, the search function in the OARS request system is problematic and uneasy for the user to use in the following ways.

Sub-Finding 1: Initially, the result of the search was too broad. If users only have a vague idea about what kind of roles they want to look for, for example, "administration," the search system will output a long categorized list that contains hundreds of roles. The

results are based on two criteria. For one thing, the system would return all the roles if the big categories contain the keywords - even if the specific role does not. And this criterion led to a problem in which there is no specific role to apply for; the result is returned simply because the big category contains the keyword. Aside from it, the system would also return specific roles that contain the keyword - this is what users usually desire.

Figure 4 below shows an example of a search result when entering the keyword "admin." The empty category is returned, and it is clear that the users still need to exert significant effort to locate the role they plan to request.

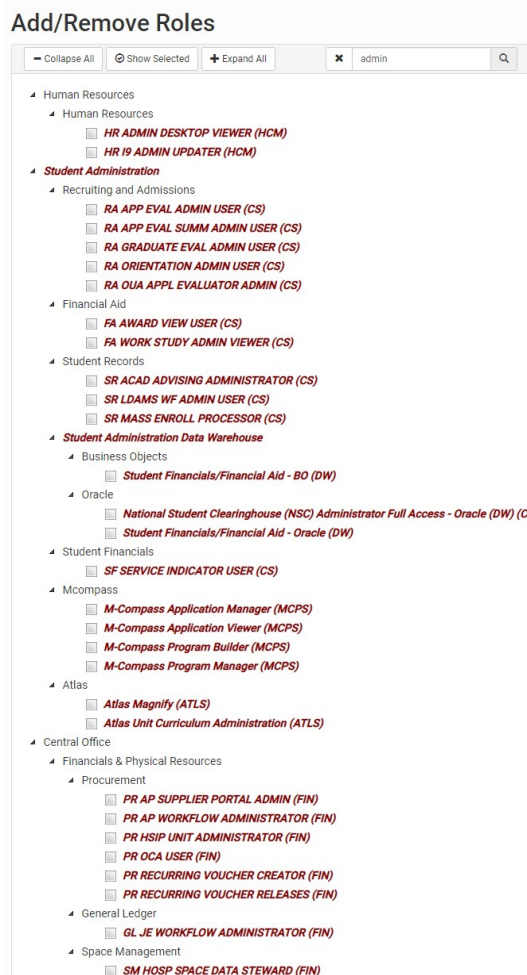


Figure 4. Search results for “admin”

Recommendation 1a (Filtering): Include a filter feature to guide users to narrow down what is desired. Some examples of the filter include what kind of system the user wants to control (ATLAS or DART) and what office relates to their desired role (Human

resources, financial aid, or campus management). Also, include a filter option for users to turn off showing the empty categories. More desirably, include a ranking system to prioritize the results based on the previous roles the user has or related roles a user with a similar title would like to apply.

Recommendation 1b (Search Algorithm): Improve the search function to only showcase relevant results according to input keywords. Some kind of keyword search algorithm shall be applied to the search function to make it filter through the gigantic chunk of data and assist users in locating a handful of relevant and possible role results. For example, when the user types in the keyword “admin,” all results that contain the keyword “admin” should be displayed, while unrelated results should be filtered.

Sub-Finding 2: The OARS search system only allows for exact matches. For example, because the role name only contains “admin,” using the keyword of “administration” would return fewer results and lead users to encounter obstacles in locating appropriate ones. Only when entering the exact name of a specific role, can the user locate the role. Below is an example showing the results when entering “FA AWAD VIEW USER” into the search bar (Figure 5). This time we received a short list of search results.

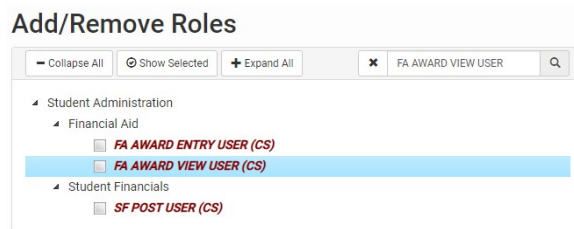


Figure 5. Search results of “FA AWAD VIEW USER”

Recommendation 1c: Display possible results if the user input does not have a direct match. This “fuzzy search” feature can aid users in locating a specific role even if the user does not know the exact name of the role, which improves the keyword search tolerance level. For example, when the user inputs the keyword “admin,” all results that include the keyword “admin” should be returned to the user, and other irrelevant information should not appear as search results.

Sub-Finding 3: The matched results are returned with red color to emphasize the relevance. But because all the results are relevant, red color is used abundantly in the interface. Besides, the keywords in the role description (part of the search criteria for matching keywords) is not emphasized in color. Those two interface designs lead users to lose focus on what to read.

Recommendation 1d: Instead of coloring the whole role name or category in red, only color the matched keyword to guide user interaction. Also, color the matched keyword in the role description to maintain consistency.

Sub-Finding 4: Also, most of the users do not know that the roles have descriptions hidden under its name. By clicking on the role names, a detailed description will be displayed. Shown below is the role description of a role called “FA AWAD VIEW USER(CS)” (Figure 6). The description is in detail, but not every user knows how to find it.

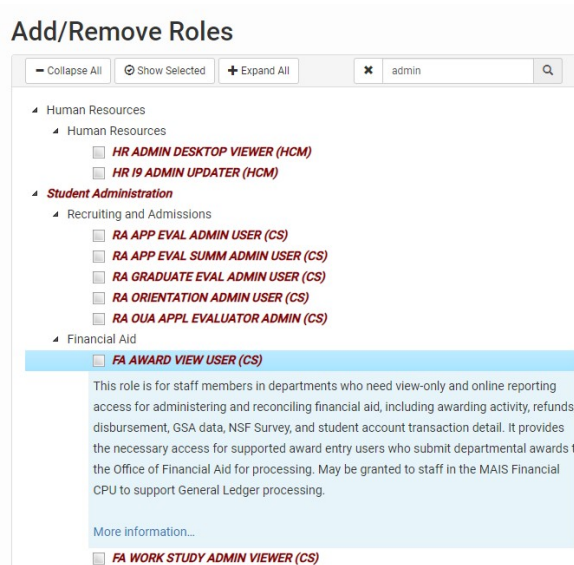


Figure 6. Expanded role description for “FA AWAD VIEW USER(CS)”

Recommendation 1e: Automatically expand the role description section when displaying search results, or add indicators for the detail section. This aims to solve the problem where users hardly know the existence of role detail descriptions. Some kind of visual cue should exist to indicate further role explanation is available.

Finding 2: *Although the newly added role descriptions are helpful, they are not consistent or detailed enough to provide users with the guidance they need in the access request process.*

Explanation: In the interviews, three interviewees expressed the need to update the current role descriptions. One interviewee pointed out that the descriptions are pulled from other systems and can be dated back to 2000. The descriptions might be outdated. Another interviewee pointed out that role descriptions are missing for some roles. For example, the role “RMJ Power Users (RMJ)” has no description.

- ▾ ITS Only
 - ▾ Production Support Roles
 - ▾ Run My Jobs
 - ☐ **RMJ Power Users (RMJ)**

Figure 7. No role description for “RMJ Power Users (RMJ)”

Another interviewee pointed out that the information in the role description is very limited. The description for the role "Space/Utilities/Plant - BO (DW)" is "Space/Utilities/Plant," which appears to be placeholder text that should be replaced with actual content.

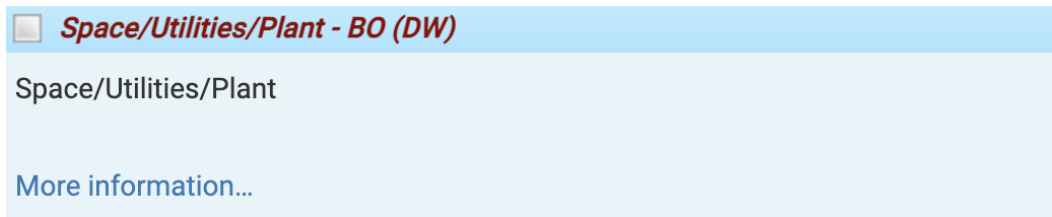


Figure 8. No content for the "Space/Utilities/Plant - BO (DW)"'s description

Moreover, some of the descriptions are unclear and ambiguous. For example, the description for the role "RA APP STATUS SETUP USER" reads, "This role is granted to a limited number of users responsible for setting up their Web App Status Self Service pages." This description did not inform users of the meaning of "limited number of users." In addition, some of the descriptions are very vague. Additionally, some abbreviations are not defined in the description, which may cause confusion. In the description of the role "CRAS(DW)," for instance, there is no explanation of what it stands for; this can cause confusion and is ineffective for searching.

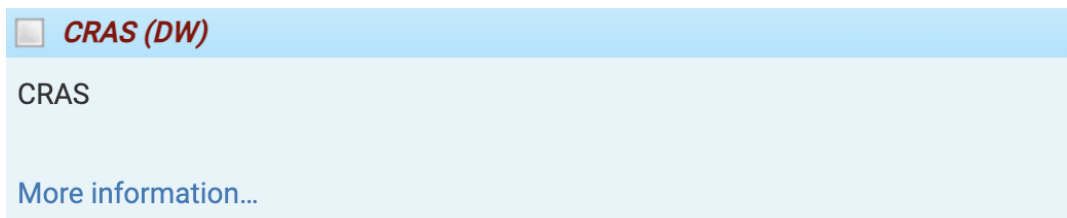


Figure 9. No explanation for "CRAS"

Recommendation 2a: The role descriptions should be updated to include specific use cases and user groups. For instance, the description for "RA PUBH EXTERNAL DATALOAD USER" is "This is for School of Public Health users only, who load external data such as Web Application files into M-Pathways." The description specifies which users may require this role and what use cases it serves. Users will be able to determine if they need the role if the description has been updated to resemble the example, and administrators will be able to decide whether to approve the roles.

Recommendation 2b: The out-of-date role descriptions should be updated to more accurately reflect the current job functions. In addition, those with a placeholder description or no description should be updated with actual content in a format that specifies the user groups and the use cases, similar to recommendation 2a.

Recommendation 2c: Abbreviations should be explained in the role description to avoid confusion, and users should be able to retrieve search results for the meaning of the abbreviations.

In general, the major problem with the OARS search system is that there is too much information provided, causing an increase in cognitive burden. In addition, another main challenge is the difficulty of designers understanding the system's user. This is to say that since the users of the search systems are not information experts, they have limited logical approaches to accessing the system. In fact, they may interact with the system in a more instinctive way, which is more or less based on previous digital interaction experience or daily life instincts. Therefore, the system designed for the public should be easy to use in a way that matches the intuition of the user group.

In conclusion, because the feature of role description targets the key concern of our client and serves the purpose of central documentation - mapping the task to the role, we specifically focused on this part and illustrated several points to improve usability and searchability. The ultimate goal is to have a detailed description and flexible search method to connect users to their desired results directly without pushing their needs back and forth.

Communication Channel

Finding 3: *There is a lack of channels for the ITS department to communicate with users about system updates.*

Explanation: As described above, the major pain point for our client is the lack of documentation to connect the duty task to the specific role name in the OARS system. And our client desires centralized documentation to help with that. However, after careful exploration of the system and analysis of the interview data, we have found that the ITS department, which is responsible for maintaining and updating the OARS system, has added a new feature of role description that partially solved the problem (Figure 4). However, we have also found that many interviewees responded that they had not heard of the new feature and had no idea it had been added to the system to assist them in finding the specific role.

Quoted from the interview notes, some of our interviewees mentioned that “it is my first time hearing about this” and “the OARS role description is not obvious.”

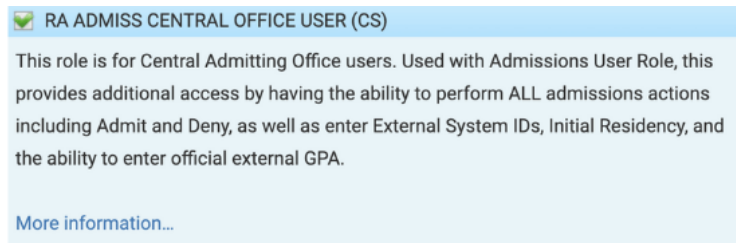


Figure 10. An example of role description

Recommendations 3a: Send out regular emails regarding the system updates with a clear explanation of how and where to use the new feature. Including the titles of potential users is also helpful to effectively transfer the messages.

Recommendations 3b: Hold information sessions about the use of OARS. It is not only a good opportunity to talk about the system updates but also a channel for delivering user problems and needs. And this is also a good place for usability testing (details are discussed below).

Finding 4: *ITS does not seem to be aware of the problems that users have run into while using OARS.*

Explanation: The lack of communication between users and ITS has created a knowledge gap between them. There are a lot of problems with the OARS system that many users have run into. In many cases, users had solutions in mind for these problems. For example, one of our interviewees mentioned, “it would be great if all roles showed up in OARS could be readily populated for specific job titles like graduate coordinator.” However, ITS is not aware of these problems since they probably have never been a user of the OARS system, and there is no channel for the users to communicate their needs with ITS.

Through observations and interviews, we have noticed that users have run into several problems with the OARS system. Users with various experience levels have mentioned different problems they have encountered.

Some mentioned the OARS system does not allow new employees to copy specifically selected roles; instead, if they wanted to gain access to an old employee’s role, they would have to copy every role. Others have mentioned not being able to achieve information about a left employee as a reference for new hires. Some ITS staff do not fully understand the problems because they are more focused on the technical aspects. The ITS department also indicated that when the unit liaison cannot solve the problem,

it will then be forwarded to the ITS, which means a lot of the small problems would not even reach ITS.

We have also found that the new hire is confused in the first place about the purpose and functionality of the OARS the whole time. They have no idea what they need to do with the system, and a lot of the technical terms used, for example, secondary security and various system names, are unfamiliar to them.

Recommendation 4a: It might be good practice for the ITS department to conduct usability testing to better understand user needs. The users can be categorized with different experience levels: new hires and experienced users. In addition, there can be users who request for themselves or others and users that approve these accesses. If these users can participate in usability testing by utilizing the OARS system, ITS would be able to find out the pain points to come up with potential solutions. Details about how to conduct usability testing and the benefits of usability testing can be found in Appendix 1.

Recommendation 4b: Create a new user handout with an introduction to the system, general use case and terms explained in detail, steps they are going to take to use the systems, and how to connect with specific resources to help them with this onboarding process.

Finding 5: *Users have solutions or workarounds for many usability issues in their heads, but these solutions and workarounds are not integrated into the system or are only available to a small portion of users.*

Explanation: In response to the difficulty in locating the positions, one interviewee showed our team a spreadsheet created by previous users to assist their department in using the system. The rows of the spreadsheet represent roles, while the columns represent specific user groups with different job titles. A special symbol will be placed in the corresponding cell if a certain user group requires a particular role. For instance, the red "x" in Figure 11 denotes that users with job title 3 will need role 1 (for reasons of confidentiality, the original spreadsheet cannot be shared; Figure 11 is a replica with a similar layout). According to the interview, the spreadsheet is mostly used by administrators in that department to determine whether or not to allow access to users. Although all of the information supplied in the spreadsheet is extremely useful, it is only available to users in that specific department of the school and only covers roles related to student business.

Roles	Description	Typical Users								Unique Users	Restrictions	Notes
		Job Title 1	Job Title 2	Job Title 3	Job Title 4	Job Title 5	Job Title 6	Job Title 7	Job Title 8			
Role 1	Role description 1			x								
Role 2	Role description 2											
Role 3	Role description 3											
Role 4	Role description 4											
Role 5	Role description 5											
Role 6	Role description 6											
Role 7	Role description 7											
Role 8	Role description 8											

Figure 11. A replica of the spreadsheet presented by the interviewee

Additionally, two interviewees mentioned the need to allow for selection when copying roles. On OARS's "Access Request" page, there is currently a section called "Copy Roles." Users can enter a person's unique name, add all of that person's roles to their own request, and submit the request (Figure 12). An administrator stated that it's helpful to look at the roles of other users when deciding whether to approve a request or assign roles to new hires with similar jobs. Currently, all of a user's roles are considered a single pack, and other users can only add the full pack or nothing; they cannot choose which roles they need. One interviewee said that if they only need a portion of a person's roles, they must screenshot or write down the roles' names before manually selecting them in the "Add/Remove Roles" section, which is time-consuming and inefficient.

Copy Roles

RACKHAM STUDENT ADMISSIONS View (IMG)
FIN RECONCILIATION View (IMG)
FA AWARD VIEW USER (CS)
FA COMMITMENT ENTRY VIEWER (CS)
FN RECONCILIATION VIEWER (FIN)
CC 3C CHECKLIST VIEWER (CS)
CC RCRS SERVICE INDICATOR USER (CS)
HR Legacy - BO (DW)
HR ADMIN DESKTOP VIEWER (HCM)

Figure 12. The current layout of search results in the "Copy Roles" section

Another workaround to get a summary of a user's role is to return to the home page, search for the user's unique name, go to the "User Security" page, screenshot the "Roles" section, go back to the "Access Request" page, and then manually pick the corresponding roles in the "Add/Remove Roles" section. This workaround is also counterintuitive and ineffective. As a result, one interviewee raised the need for an accessible view of a summary of a user's current roles on the "Access Request" page.

Home » Search » View User Security

View Assigned Roles for **User**

Unit Liaisons

Roles

User Information qianzi Lookup

Username:
Full Name:
UMID:
Employee Type:
Dept ID:
Dept Description:
Phone Number:
Access & Compliance:

Fin Access

Cs Access

Hcm Access

Dw Access

Figure 13. The "User Security" page

Recommendation 5a: As centralized documentation for all OARS system users, a spreadsheet resembling Figure 11 that covers all roles in the OARS system can be created and shared as a reference for those who are unable to locate a specific position. The documentation can also be utilized by the administrator to decide whether or not to approve a request. Administrators should also be given the ability to amend the spreadsheet and add their own notes while using the system.

Recommendation 5b: The workflow of copying roles can be optimized by adding a checkbox to each role in the search results (Figure 12) so that users can choose whether or not to add a specific role to their own request. This allows users to copy the roles of other users and make minor changes to fulfill their individual needs.

Recommendation 5c: The workflow for accessing someone's roles can be streamlined by including a summary section of a user's roles when searching for someone's unique name in the "User Information" area of the "Access Request" page. The summary section can have a similar layout as Figure 13. Like recommendation 2, a checkbox can be added to each role in the summary section so that requesters can choose whether or not to include a specific role in their own requests.

Other Usability Problem

Finding 6: *There is a lack of progress indication for users to better estimate the process.*

Explanation: After users check the role box and submit it, they can find their request information in the process table, but they don't know what's going on in the request process. The only thing they can do is wait.

Recommendation 6a: Add a progress bar to the user's request role interface, which can reflect the current request processing status on time. It is best to provide an estimated approval pass time because many staff will have a task deadline.

Conclusion

In response to the problem that The Stamps School of Arts and Design has proposed about the experience of utilizing the OARS system under ITS, our team did background research and conducted in-depth user interviews with ITS and users to identify the problems for both sides. The main problem is the lack of communication channels between ITS and the users and the missing central documentation for role descriptions. ITS newly added descriptions for the roles. However, many users were not aware of the updates. Even though there are descriptions, they are mainly outdated, in which central documentation is still necessary. The description can be refined by first including potential users, specific use cases, and user groups. In addition, when searching for job roles, it should display only relevant results and automatically expand the description for the role for a better user experience. Lastly, other than the description, the ITS should share a document that covers all the roles for users who cannot find a specific role.

To better comprehend user needs, ITS can conduct usability tests to identify pain points and determine if users have potential solutions to problems. In conclusion, the majority of problems that we identified can be resolved by implementing the recommendations we provided to create central documentation for all job roles and streamline communication between ITS and its users.

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Appendices

Appendix 1 (Usability Testing):

There are three ways to evaluate interfaces, including usability testing, experiments, and field studies. For the purpose of understanding user needs and updating system features in accordance with user needs, usability testing is the most useful method to achieve that. The standard procedure includes writing testing protocols, recruiting participants, conducting tests, analyzing data, and proposing design suggestions.

There is a list of references for detailed explanations of usability testing.

- 1: Sharp, H., Preece, J., & Rogers, Y. (2019). "Chapter 15: Evaluation Studies: From Controlled to Natural Settings. In *Interaction design: Beyond human-computer interaction*. essay, Wiley.
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